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HUMAN NATURE AND HISTORY

DONALD E. BROWN

ABSTRACT

What motivated British colonialism? What motivated renaissance Florentines to finance their state? Why did Brazilian men find mixed-race women so attractive? What promotes falsity in reports of human affairs? Why did historical-mindedness develop in ancient Greece and China but not India? When homosexual communities developed, why did gay men pursue sexual strategies so different from those of lesbians? Why does a Heian-period Japanese description of fear of snakes sound so familiar to a Westerner? Why have rebels tended to be youngest rather than eldest siblings?

To each of these (and many other) questions part of the answer lies in specific, identifiable features of human nature. Thus human nature is and should be a subtantial concern to anyone trying to understand the past. But human nature is also an object of scientific study. This paper explores a portion of this convergence of humanistic and scientific concerns by outlining and illustrating interrelations between human nature and history.

Exploration of the interrelations between history and human nature requires a detailed understanding of what human nature is. And whatever human nature may be, it is a product of human evolution. Accordingly, key concepts in evolutionary psychology are presented to provide theoretical tools for understanding the centerpiece of human nature, the human mind.

As much as the study of history may benefit from an understanding of human nature, the study of history and the use of historical materials may also promote the scientific study of human nature. Examples are given and several suggestions are presented to forward this task.

Finally, an argument is made for a sort of back engineering in which historical events and conditions are traced to the specific features of human nature that motivated, facilitated, or shaped them. Insofar as this task is achieved, it closes the gap between recorded history and evolutionary history, between the humanities and the sciences.

I. INTRODUCTION

No one makes, writes, or reads history without the continuous causal participation of human nature. Human nature is necessarily involved in everything that humans do. It follows just as necessarily that human nature shapes the course of human affairs, the way humans perceive their affairs, and the way they represent their affairs. One can be wholly unconscious of this or, in varying degrees, one can consciously take account of human nature. However, insofar as one does so, the accounting may be in error and even the best accounting is almost certainly very incomplete.

Indeed throughout much of this century, and still today, many social scientists have held that for most practical purposes there is no such thing as a determinate human nature; or that its essence is variability; or that it consists of a very few, general traits—such as a capacity for culture and/or avoiding punishment and seeking reward. In these views, the human mind is largely a *tabula rasa* and concepts of human nature are social or cultural "constructs." For many who held or hold these views, animals may have determinate, instinctive behaviors but humans learn their behaviors from their society or culture. Among extreme views that prevailed for a period, even animals had no nature beyond what they were "conditioned" to have.

In opposition to this view it was once held and is increasingly held today that human nature—specifically, the human mind—is intricately detailed. Among the several reasons for the return to this view of human nature is, for example, the breakdown of the distinction between learned and instinctive behaviors that was brought about primarily by students of animal behavior but also, and perhaps decisively, by Noam Chomsky's powerful critique of the notion that language is learned. He argued, against the "behaviorist" view, that the mind possesses a language "organ" that is intricately detailed. By means of this organ a child normally acquires language as naturally as pubic hair. Chomsky's view of the language organ was part and parcel of a view of the mind in general as intricately detailed.[1]

However, to say that the human mind is intricately detailed, possessing the most complex structure in the known universe, is also to say that it—and, hence, human nature—is not well understood.[2] Because of its complexity, the long period of neglect in studying the mind's details, and a peculiar blindness to those details that will be described later, formidable problems confront the study of human nature.

In spite of the limitations on what we know about human nature, it seems to me that anyone attempting to understand human affairs—past or present—stands to benefit from an accurate understanding of it. In many contexts, thus, historians do and should include considerations of human nature in their work. Accordingly, I offer here some thoughts on the interrelations between human nature and history. I will be concerned not only with how consideration of human nature may be useful in understanding the past, but also with findings and trends in the scientific study of human nature. I will be particularly concerned with evolutionary psychology, which addresses not what the mind can do, but what it was designed to do. I will also be concerned with how the study of history may in turn further the scientific understanding of human nature.

1. Noam Chomsky, "Review of B. F. Skinner's *Verbal Behavior*," *Language* 35 (1959), 26-58. James L. Gould and Peter Marler, "Learning by Instinct," *Scientific American* 256, no. 1 (1987), 74-85. For an overview of the study of human nature in this century, see especially Carl N. Degler, *In Search of Human Nature: The Decline and Revival of Darwinism in American Social Thought* (New York, 1991).

2. Although for the purposes of this paper I will equate the human mind and human nature, I believe it should be borne in mind that human nature includes such matters as bipedalism, a nine-month period of gestation, moderate sexual dimorphism, and much more that is not a part of the human mind. Note also that human nature includes many features shared with other species.

Let me first give a few examples of the diverse ways in which human nature plays a part in history. Subsequent sections will give further examples to broaden the overview of topics covered in evolutionary psychology.

Human sexuality, a topic central to evolutionary psychology, provides some of the more striking examples of the ways in which human nature shapes the course of history. Preying upon our minds, eliciting powerful emotions, spurring us to strenuous activity, and embroiling us in countless quarrels that range from petty to savage, sexuality is always a deep human concern. Accordingly, Helen's face launched a thousand ships, relations between states were sealed with marriages, despots hoarded wives and concubines, while poets, storytellers, and singers have found ready audiences for endless reiteration of the themes associated with sexuality. Of course there is much more in this vein and it is well known.

The historian Ronald Hyam draws attention to the role of sex in large affairs:

> There used to be a theory that territories came under the British flag as a result of the export of surplus capital. It would be much truer to say that the driving force behind empire building was rather the export of surplus emotional, or sexual energy. The empire was a boon to the brokenhearted, the misogynist and the promiscuous alike. The enjoyment and exploitation of black flesh was as powerful an attraction as any desire to develop economic resources.[3]

The historian Marvin Becker cites sexuality in a more indirect form as crucial to the success of renaissance Florence, when the Florentine budget was financed for a period through a sort of rotating credit scheme, the *Monte della Doti*, in which individual Florentines invested to guarantee the payment of dowries for their daughters. Since a Florentine woman without a dowry had, in those times, little chance of a desirable marriage, the *Monte della Doti* harnessed the substantial reproductive concerns of Florentine families to provide the utterly crucial funds to finance the politico-economic concerns of their city.[4] The hypothesis suggested by this case, and by the one described by Hyam, is that grand historical movements may have been fueled in part by (consciously or unconsciously) tapping the powerful emotional/motivational forces that directly underpin human reproduction.

It is not only sex in general that drives or shapes human affairs, but quite specific aspects of it, such as the different forms it takes between males and females. Men are more likely to take on multiple mates when they can, but are also more likely to engage in violent competition for mates, more likely to seek younger mates, and less likely to be concerned with the social status of their mates.[5] The anthropologist Laura Betzig has documented at great length the tendency of (male) despots throughout history to monopolize women.[6]

3. Ronald Hyam, *Britain's Imperial Century 1815–1914: A Study of Empire and Expansion* (London, 1976), 135. Hyam pursues his argument in *Empire and Sexuality: The British Experience* (Manchester, Eng., 1990).

4. Marvin B. Becker, "The Florentine Territorial State and Civic Humanism in the Early Renaissance," in *Florentine Studies: Politics and Society in Renaissance Florence*, ed. Nicolai Rubinstein (Evanston, Ill., 1968), 109-139, 138.

5. Donald Symons, *The Evolution of Human Sexuality* (New York, 1979).

6. Laura L Betzig, *Despotism and Differential Reproduction: A Darwinian View of History* (New York, 1986).

In his Pulitzer-prize winning study of race and slavery in the New World, Carl Degler pondered the peculiar attraction felt by white Brazilian men toward mulatto women.[7] The hypothetical explanation that he presents is that such women represent a compromise: not as attractive as white women, but more accessible. While not clearly stated as such, this may be an insight into the male psyche, and the kinds of trade-offs that might be made as men, perhaps largely unconsciously, compute these matters. However, there is an alternative.

The anthropologist Donald Symons argues that in natural environments it is generally detrimental to be far from the mean of the population, whether among humans or any other animal species, since the mean is likely to represent the optimal adaptation to the particular environment, with natural selection pruning away the extremes.[8] This being so, it would not be unexpected that humans had evolved mean detectors and mate-selection preferences that avoid the extremes and prefer the means.

Consistent with this expectation, it was noted already in the last century that composite photos that averaged out the features of the persons depicted in them tended to be perceived as more attractive than the individuals who went into the composite. A series of experiments have confirmed that both males and females do prefer mean faces (except with respect to certain features, such as being lighter than average for female faces). Consequently, it follows that the mean in a racially mixed population such as Brazil's would not be that of a white European but something in between the features of Africans and Europeans. Thus the seemingly paradoxical preference for mulatto women may be a direct expression of human nature (though there is no reason to think that the preference has the fitness consequences now that it did in our evolutionary past). A recent study confirms what Symons's reasoning would predict, in Brazil and elsewhere.[9]

The human mind is extensively adapted to group- or coalitional living, which has a pervasive and continuous influence on human affairs. Recent work, for example, traces the origins of human intelligence to the Machiavellianism manifest in the social complexity of primate life, isolates a specific mental faculty for the detection of social cheating, suggests that the mind is specially prepared to think about human kinds (more of which later), and explores the innate "Theory

7. Carl N. Degler, *Neither Black Nor White: Slavery and Race Relations in Brazil and the United States* (Madison, Wisc., 1986), 188-190.

8. Donald Symons, "Beauty is in the Adaptations of the Beholder: The Evolutionary Psychology of Female Sexual Attractiveness," in *Sexual Nature, Sexual Culture*, ed. Paul R. Abramson and Steven D. Pinkerton (Chicago, 1995), 80-118.

9. Doug Jones, *Physical Attractiveness and the Theory of Sexual Selection* (Ann Arbor, 1996). Mate selection criteria, on which the evolutionary psychological literature is understandably rich—see a summary in Nancy Etcoff, *Survival of the Prettiest: the Science of Beauty* (New York, 1999)—is a field in which the art historian might contribute much. Also of interest to the art historian should be the literature on environmental, landscape, and architectural preferences that have sprung from studies of habitat selection. See, for example, Gordon H. Orians and Judith H. Heerwagen, "Evolved Responses to Landscapes," in *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, Jerome H. Barkow, Leda Cosmides, and John Tooby, (New York, 1992), 555-579; the earlier classic by Yi-fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes, and Values* (New York, 1974); and Grant Hildebrand, *Origins of Architectural Pleasure* (Berkeley, 1999).

of Mind" that allows humans to intuit what goes on in the minds of others.[10] No one makes sense of what others do and say—now or in the past—without these intuitions.

"Ingroup bias" is one of the ubiquitous features of our coalitional psychology, and its impact on the representation of history was noted long ago, when the Muslim historian Ibn Khaldun placed partisan bias as first in his list of explanations for why historical accounts tend to be false.[11] As perceptive as Ibn Khaldun's observation was, however, he understated the problem by tracing it to the transmission of information; it occurs, too, and with striking results, in the very perceptions of the eyewitnesses to human events.[12]

Further evidence of our coalitional psychology is found in topics we find particularly interesting. Accounts of the past, thus, are heavily weighted with social ups and downs, wins and losses. We closely attend to matters involving persons of high status and to who sides with or opposes whom. And we are more interested in concrete persons than abstractions.[13]

Although the causal chain of its consequences is quite different, the accuracy with which human nature is conceptualized may also influence history and, especially, the representation of history. As I have argued elsewhere, the recognition that there is only a single human nature (barring differences of sex and age) was pivotal to the development of a historical consciousness, such as occurred in ancient Ionian Greece and China. By contrast, in those societies or civilizations in which the psychic unity of humanity was denied, and humanity was stratified into hereditarily distinct stocks, as in Hindu India or medieval Europe, a more mythical view of the past prevailed.[14]

A few points to notice about these examples: In the case of the sexual motive and at least some aspects of our coalitional psychology there may be a significant degree of conscious awareness, and possible intentional manipulation of the rel-

10. See summaries and bibliographies in Andrew Whiten, "Machiavellian Intelligence Hypothesis" and Lawrence A. Hirschfeld, "Naive Sociology," in *The MIT Encyclopedia of the Cognitive Sciences* (Cambridge, Mass., 1999), 495-497, 579-581. See also Leda Cosmides and John Tooby, "Cognitive Adaptations for Social Exchange," in *The Adapted Mind,* ed. Barkow *et al.*,163-228; Simon Baron-Cohen, *Mindblindness: An Essay on Autism and Theory of Mind* (Cambridge, Mass., 1995).

11. Ibn Khaldun, *The Muqaddimah: An Introduction History* [1377], transl. Franz Rosenthal (Princeton, 1959), I, 71.

12. If not in the instant of perception, it is immediately downstream in the mind's processing. Two extraordinary studies are particularly revelatory of the phenomenon: Albert H. Hastorf and Hadley Cantril, "They Saw a Game: A Case Study," *Journal of Abnormal and Social Psychology* 49 (1954) 129-134; and Robert P. Vallone, Lee Ross, and Mark R. Lepper, "The Hostile Media Phenomenon: Biased Perceptions and Perceptions of Media Bias in the Coverage of the Beirut Massacre," *Journal of Personality and Social Psychology* 49 (1985), 577-585.

13. On some ideas or topics more easily capturing attention and colonizing our minds see especially "epidemiology of representations" in Dan Sperber, *Explaining Culture: A Naturalistic Approach* (Oxford, 1996). On ups and downs, see Donald E. Brown, *Hierarchy, History, and Human Nature: The Social Origins of Historical Consciousness* (Tucson, 1988), 337. Disproportionate attention to high status individuals is something we share with other species; see M. R. A. Chance, "Attention Structure as the Basis of Primate Rank Orders," *Man* (n.s.) 2 (1967), 503-518.

14. Brown, *Hierarchy, History, and Human Nature.*

evant features of human nature. Whether intentional or not, though, these are cases in which a component of human nature is exploited to give leverage on the performance of another task (as when politicians "play the race card" to further their own ambitions or when sex is exploited to sell cars).

In the case of the psychic unity of humanity, it is exceedingly unlikely that, however conscious the awareness of the alternatives, there was any intention to facilitate or hinder the development of historical consciousness. In the case of averaging as a component of facial attractiveness, the process is apparently wholly beyond awareness. It is also a case where a feature of human nature produces somewhat surprising results, depending on the population mix within which it operates.

In most of these cases note that features of human nature that are fundamentally the same everywhere played a role in events or movements that were more or less historically unique. In the case of group-think and the biases it produces, the influence of human nature was described as more continuous—yet it still manifests itself notably and decisively in specific historical events (witness the Balkans among many other cases).

II. HOW MAY WE DETERMINE WHAT HUMAN NATURE IS?

Whatever human nature may be, it is a product of that grander history, the evolution of the human species, particularly the human mind. The emerging discipline that employs evolutionary theory to understand the human mind is evolutionary psychology, which defines its subject matter as the evolved architecture of the human mind, or the set of evolved mental mechanisms that comprise the human mind.[15]

In addition to mental mechanisms, a number of other key terms will assist us in the discussion of the evolution of the human mind that follows: modularity, domain specificity, frames, the environment of evolutionary adaptedness, ultimate explanation, facultative and obligate adaptations, function and effect, gene-environment interactions, and preparedness.[16]

Within psychology, evolutionary psychology is centrally concerned with understanding the *design* of the human mind: as opposed to what it can do (which is potentially infinite or infinitely divisible for purposes of analysis), what was the mind designed to do? What recurrent problems of the past was the mind designed to solve? The answers to these questions are found in "mental mechanisms" (also referred to as modules of mind or mental organs), which are the finite, functionally discrete units of mind that were designed by natural selection to solve recurrent problems in our evolutionary past. They may be relatively simple, as in the case of brain cells in the visual cortex that respond to angled or

15. *The Adapted Mind*, ed. Barkow *et al.*

16. Useful background works include *ibid*; *Mapping the Mind: Domain Specificity in Cognition and Culture*, ed. Lawrence A. Hirschfeld and Susan A. Gelman (Cambridge, Eng., 1994); Steven Pinker, *How the Mind Works* (New York, 1997).

moving lines; others are surely complex, some probably coordinating the responses of what were once independent mechanisms.[17]

Perhaps the most famous of the complex ones, the Chomskian language-acquisition device, has already been mentioned. By virtue of its existence, children who begin before the age of six effortlessly acquire any language on earth (and, if conditions allow, more than one language at a time). Later in life, as the device deactivates, learning languages is much more difficult and generally much less successful.[18]

Many mechanisms, as in the case of the language acquisition device, operate so "naturally" and beyond awareness that there is little to draw our attention to them. This is what Cosmides and Tooby have referred to as "instinct blindness."[19] In all likelihood, we have very little insight into many of the features of the human mind. We may be aware of the outputs, but still have little or no insight into the means by which they are produced.

An important set of ideas that originates in large part outside of evolutionary psychology but is incorporated in it derives from attempts to create artificial intelligence. What these attempts show is that information-processing mechanisms simply cannot be all-purpose, or "domain general." Before a computer can process information it needs pre-existing, inbuilt "frames" that specify what is relevant input, what kind of a computational problem is being faced; so, too, the human mind must have in-built, innate frames that direct it. These frames may only direct our attention to certain topics, objects, or activities, allowing various means of learning to finish the task. In-built expectations ("naive theories") may accompany the frames. Note that both the direction of attention and the allowance for learning are programmed parts of human nature.[20] The evidence so far suggests that many mental mechanisms are indeed quite "domain specific," so that the *tabula rasa* view of the mind that prevailed in the social sciences during much of this century (and still prevails in many circles) is profoundly wrong.[21]

Whatever the mechanisms of mind may be, they evolved in the past and must find their ultimate explanations in the past.[22] Moreover, in virtually all cases this

17. The coordination of otherwise independent modules is discussed in Sperber, *Explaining Culture*, 119-150.

18. Steven Pinker, *The Language Instinct* (New York, 1994), 293.

19. Leda Cosmides and John Tooby, "Beyond Intuition and Instinct Blindness: Toward an Evolutionarily Rigorous Cognitive Science," *Cognition* 50 (1994), 41-77.

20. On the relevance of artificial intelligence, see John Tooby, "The Emergence of Evolutionary Psychology," in *Emerging Syntheses in Science*, ed. David Pines (Santa Fe, 1985), 1-6; for a parallel conclusion on different grounds, see Donald Symons, "On the Use and Misuse of Darwinism in the Study of Human Behavior," in *The Adapted Mind*, ed. Barkow *et al.*, 137-159, 142. Studies of infants show evidence of innate frames (and naive theories) for mathematics and for the behavior of inanimate objects, animate objects, and humans, i.e., naive mathematics, physics, biology, and sociology; see references in *The MIT Encyclopedia of the Cognitive Sciences*. On innately guided learning, see discussions and references below.

21. See discussions in Donald E. Brown, *Human Universals* (New York, 1991); Degler, *In Search of Human Nature*; and, under the heading "Standard Social Science Model," in *The Adapted Mind*, ed. Barkow *et al.*

22. They also have proximate (or ontogenetic) explanations in terms of the interaction of genes and environment as each individual is conceived and matures.

is a very distant past, often referred to as the EEA ("environment of evolutionary adaptedness"). Actually, the EEA is not a fixed period or place, but rather the set of ancestral environmental features that are required for the normal development and functioning of each particular adaptation. These are features that were frequently or regularly present when the adaptation evolved, which in virtually all cases was during or before the long period in which all humans were hunters and gatherers.[23] There is little or no evidence that any feature of mind—even the simplest of which is likely to be polygenic—has evolved in the evolutionarily short period of time during which humans have recorded their histories. This means that the minds given to us in our genetic heritage are the minds of hunter-gatherers.

However, genes produce whatever it is that they were selected to produce only in interaction with their environments. Present-day environments almost everywhere, and many of the environments that humans have experienced during the period of recorded history, vary in many ways from those of our hunting-and-gathering ancestors. Thus many features of human nature may not manifest themselves as they did in the evolutionary past. Indeed some behaviors may have more in common with the odd behaviors of animals confined in zoos than with the behaviors produced by natural selection in the environments in which they evolved.

Consider the following case. A few decades ago a variety of circumstances allowed the emergence of homosexual communities in various urban settings. If not historically unprecedented, this has surely been a rare occurrence. The anthropologist Donald Symons realized that these circumstances constituted a natural experiment that allowed observation of what male and female sexualities would be like when not compromised by each other.[24] The principal finding was that anonymous sex with multiple partners was widely practiced by males whereas the women tended to form more stable couples much like typical heterosexual coupling.

These findings were consistent with what Symons predicted on the basis of the very different reproductive constraints and potentials that men and women have confronted throughout their evolutionary history. No amount of "extra-pair" coupling allowed a woman to bear more children than she might have achieved with a single mate (though such couplings might increase her resources for childrearing). By contrast, the reproductive success of a man could be and often was greatly enhanced by having multiple mates.

If a woman was fertilized, she faced months of gestation if she was to bear a child (and then, in most societies prior to this century, she faced the costs of lactation and long-term child care). Under these circumstances, it paid for her to be choosy about whom she mated with, and a mate who would be around for the long haul was desirable.

23. For a more precise definition of the EEA, see John Tooby and Leda Cosmides, "Friendship and the Banker's Paradox: Other Pathways to the Evolution of Adaptations for Altruism," *Proceedings of the British Academy* 88 (1996), 119-143, 122.

24. Symons, *The Evolution of Human Sexuality*, 292-305.

If a man fertilized a woman he might have faced—and probably often did face—long-term child-care costs. But, unlike any woman, he might also have reproduced with no more than a few minutes of his time and a small amount of sperm.

Given these very different reproductive potentials and constraints, Symons argued, men and women evolved with sexual psychologies that show distinct contrasts: their minds, like their bodies, are sexually dimorphic.[25] Under most circumstances, these psychologies result in the more-or-less stable familial-reproductive patterns (including their "double standards") that, so far as we know, have characterized most societies in most times.[26] But in the radically changed environment of homosexual communities these same psychologies gave rise, at least among males, to patterns of sexual behavior with few if any precedents.

It is important to grasp the variability that is inherent in human nature, as variation is often mistakenly seized upon as evidence for the cultural or historical *rather* than natural. Many adaptive responses are by design variable, depending on the conditions. A standard illustration of one sort of variability refers to callusing. The mechanism for producing calluses is in us all, but only particular conditions will determine who gets calluses and where. Among the many behavioral examples is falling in love: the evidence is strong that it is a species-typical adaptation, but when, where, with whom, and so on are quite variable.[27] Adaptations of this sort are described as "facultative" (as opposed to "obligate").

A further example of inherent variability is provided in the evidence cited earlier that a basic determinant of facial attractiveness is being near the mean of a population, so that the most attractive faces vary from one population to another, even though the psychological machinery of attractiveness perception is species-typical. Adaptations of this sort involve "calibration" to local conditions.

Adaptations are not necessarily always "on" in two senses of the word. In the examples just given, only particular events or conditions trigger or "release" the adaptation. But many adaptations can only be released at particular stages of maturation. Thus infants go through a period of pronounced fear of strangers that will pass with time; language acquisition occurs in a delimited age range; and the syndrome of romantic love does not occur before the teenage years.

The shuffling of genes that takes place in sexual reproduction guarantees individual variability, presumably as a defense against pathogens. As a result of this gene shuffling, normal individuals (barring differences of sex and age) are universally endowed with the same mental mechanisms, though the mechanisms are built of different materials at the molecular level (much as we can build functionally equivalent houses of either brick or wood) and may thus manifest quan-

25. Compared to other primate species, such as gorillas, the sexual dimorphism of humans is moderate.

26. On the evolutionary psychology of the double standard, see Martin Daly, Margo Wilson, and Suzanne J. Weghorst, "Male Sexual Jealousy," *Ethology and Sociobiology* 3 (1982), 11-27.

27. Helen Harris, *Human Nature and the Nature of Romantic Love* (Unpublished dissertation, University of California at Santa Barbara, 1995); Dorothy Tennov, *Love and Limerence: The Experience of Being in Love*, 2d ed. (Lanham, Md., 1999).

titative differences in their outputs.[28] Variability is also the result of imperfections and compromises inherent in the development of all organisms: even identical twins develop differences, some even in the womb as well as in later life.

Finally, and very importantly, an evolved mechanism of mind has a particular function, which is its adaptive response to a recurrent problem faced by our ancestors. At the same time, though, the mechanism may have particular side effects[29] that occur so regularly, perhaps even universally, that they too might be suspected to be adaptations. For them, the functionalist theorizing that makes sense of adaptations can only be applied indirectly. In the case of humans, the extraordinary range of our behaviors are largely effects rather than functions, so that tracing behaviors back to their evolutionary foundations will often be difficult.

The issues are illustrated in recent thinking by the anthropologist Lawrence Hirschfeld on the origins of racialist thought.[30] There seem to be a great many instances in which racialist ideas are easy to acquire and difficult to eradicate (see the discussion of "preparedness" below). Moreover, there is an implicit assumption that typically accompanies the basic notion of race: the idea that an "essence" characterizes individuals in a race even if they do not look like typical members of the race. This cross-cultural patterning of racialist thought suggests some fairly direct expression of human nature.

However, during the long period in which humans evolved they were rarely if ever mobile enough to observe the physical differences between human populations that are now seized upon to define races. There is thus little or no reason to think that racialist thinking is an evolved feature of the human mind. Hirschfeld argues that racialist thinking is instead an effect of a mental mechanism designed by natural selection to process information on "human kinds," particularly the ethnic or cultural or tribal types that are distinguished from one another by culture and language. His work suggests that racialist thought "parasitizes" this mechanism. Thus, in the changed conditions in which racial differences are now perceivable, a mechanism that was designed to distinguish what are fundamentally cultural differences (in apparel, treatment of the hair and body, gait, and so on) is engaged to distinguish fundamentally non-cultural differences.

It must not be thought that effects are necessarily harmful distortions; the ability to write history or do science—and very much more—are effects. The enormous efflorescence of human culture and much of the variability that we witness from one society to another almost certainly result from the extraordinary possibilities opened up by the very rich complexity of the human mind, by the sheer number of its instincts. Because its mechanisms are numerous, their potential

28. John Tooby and Leda Cosmides, "On the Universality of Human Nature and the Uniqueness of the Individual: the Role of Genetics and Adaptation," *Journal of Personality* 58 (1990), 17-67; "The Innate Versus the Manifest: How Universal Does Universal Have to Be?" *Behavioral and Brain Sciences* 12 (1989), 36-37.

29. Side effects would include, for example, the ability of the human outer ear to hold pencils and glasses, though it was not designed to do so.

30. Lawrence A. Hirschfeld, *Race in the Making: Cognition, Culture, and the Child's Construction of Human Kinds* (Cambridge, Mass., 1996).

effects are infinite. Nonetheless, infinite effects do not obliterate the instincts, the mental mechanisms that underlie them. Thus, within the infinite variation there is still a discernible human nature, still a patterning of behavior, thought, and feeling. The great variability of human behavior is often more by way of means than of ends.

What are the clues, which a student of history might observe, that suggest a feature of human nature? First, there is universality.[31] Any trait or complex that is found in all societies got there in one of a very few ways: early invention and great usefulness,[32] cultural reflection of universal experience, and human nature. The former—such as the use of fire or cooking—are few. Cultural reflections—such as the kin terminologies that everywhere at least partly reflect the relationships entailed by sexual reproduction—are probably more numerous. But human nature may well be the most fertile source of universals.

When complexity is added to universality—in the absence of a demonstrable record of transmission from society to society—it suggests even more strongly a feature of human nature, because complex features are less likely to be invented independently. Romantic love and the syndrome of ethnocentrism are examples of quite complex and universal behaviors and traits that almost certainly are components of human nature.[33]

Cross-culturally patterned behaviors that are only nearly universal, or even less common, may still suggest specific features of human nature, so long as they are sufficiently complex and found in societies culturally isolated from one another.[34] The particular environmental conditions required to trigger an adaptive response may, for example, never have been universal or, in modern conditions, may have ceased to be universal.

Another important clue that may appear in the historical record is "preparedness." If something seems easily learned (and difficult to extinguish), that suggests human nature. As noted earlier, it is increasingly apparent that in many species, not merely humans, normal behaviors are the result of a combination of instinct and learning, in which the instinct directs attention to particular topics and the learning then results from such processes as trial and error, imitation, and practice.[35] Again, note that both the direction of attention and the programmed "learning" are natural. Typically, though, the learning is relatively easy compared to other novel tasks of similar complexity or difficulty. (As was also indicated earlier, the extraordinary interest shown in particular topics in itself suggests human nature.)

31. Brown, *Human Universals*.

32. Persistence from very early times without usefulness is a possibility. An alleged example—in which brain, bone marrow, and semen are believed to be a common life-giving substance—is described in Weston LaBarre, *Muelos: A Stone Age Superstition about Sexuality* (New York, 1984).

33. Robert LeVine and Donald T. Campbell, *Ethnocentrism: Theories of Conflict, Ethnic Attitudes, and Group Behavior* (New York, 1972); Harris, *Human Nature and the Nature of Romantic Love*; Donald E. Brown, "Are Ethnicity and Ethnocentrism Natural?" *Southwestern Anthropological Association Newsletter*, 38, no. 1 (1997),1, 4, 6, 9-10, 16-17, 19.

34. Tooby and Cosmides, "The Innate Versus the Manifest."

35. Again, see Gould and Marler, "Learning by Instinct." But also Martin E. Seligman and Joanne L. Hager, *Biological Boundaries of Learning* (New York, 1972); Richard Byrne, *The Thinking Ape: Evolutionary Origins of Intelligence* (Oxford, 1995).

An example of something easily learned and difficult to extinguish is fear of snakes. In the course of compiling a list of human universals, I was initially uncertain about whether to include fear of snakes. Human–snake interactions are ancient and death by snakebite is a real hazard, so that some sort of snake-avoidance adaptation would make sense; but some peoples worship snakes, and the fear could be a Western cultural peculiarity resulting from the bad image of snakes in the Bible. However, it was history, in the form of a Heian-period Japanese short story,[36] that convinced me that I should seriously consider the possibility of an innate fear. The story, written centuries before contact with the West, described the fear and what elicits it with such complex similarity to the way they would be described in the West that there was very little probability of an independent cultural invention. Subsequent inquiries have unearthed considerable evidence that either the fear of, or a certain wariness around, snakes is innate (among other primates, too).

Innately facilitated learning is often confined to "critical" or "sensitive periods" within which the learning is so easy and/or rapid that it has little in common with what is often understood as learning. In these contexts, "acquisition," rather than learning, better describes the process. The critical period for acquiring language, for example, was mentioned earlier. Some forms of very rapid learning are referred to as imprinting.

Particularly telling clues are specific mental deficits related to specific brain trauma. Quite a number of these have been discovered in clinical studies—the language deficits that go with trauma to the left side of the brain provide the classic case.[37] When looked for, specific mental deficits may well appear in biographies or medical treatises, where these exist, from centuries ago. If found, they provide striking evidence of domain specificity in the mind.

III. PUTTING HISTORICAL MATERIALS TO USE IN ILLUMINATING HUMAN NATURE

For many purposes, historical data are little different from ethnographic data, except that the former are more spread over time than space while the reverse is true of the latter. It is thus a shame to think of all that information in the historical records not being put to scientific use. As I have already indicated with the case of Betzig on male sexuality, historical materials can be and are used in scientific approaches to the question of human nature.

The historian Frank Sulloway provides a further example by tracing the origins of many radical ideas and movements to features of human nature that result from birth sequence: while older siblings tend to be conservative, the younger tend to be rebels.[38] This is an illuminating insight not only into the course of his-

36. [Anon], "The Lady Who Admired Vermin," in *The Riverside Counselor's Stories: Vernacular Fiction of Late Heian Japan*, transl. Robert L. Backus (Stanford, 1985), 47-63.

37. See further, often remarkably specific, examples in Steven Pinker, *How the Mind Works*.

38. Frank Sulloway, *Born to Rebel: Birth Order, Family Dynamics, and Creative Lives* (New York, 1986).

tory, but especially into the biographical element in history. At the same time, Sulloway builds upon and confirms one of the more striking findings of recent personality research: that siblings, who share the experience of a common family, have personalities as different from one another as randomly selected members of the population.

Another case has thrown light on what has long been considered one of the most important of all human universals: the incest taboo. Much of its importance rested on the claim that it distinguished humans from animals and may perhaps have been the initial cultural innovation that launched humanity onto its cultural career. This was the influential argument of Sigmund Freud (and, later, Claude Lévi-Strauss).[39] But around the beginning of this century an alternative was presented by the Finnish anthropologist Edward Westermarck who argued that avoiding incest was an adaptation, a part of human nature. It operated in such a way that siblings who grew up together had little or no sexual interest in each other. During much of this century Westermarck's views were dismissed along with nearly all other arguments for humans having particular instincts or a determinate nature.

But various lines of evidence began in the 1950s and 1960s to support Westermarck's position and to undermine Freud's, which included the further assumption that family members were especially attracted to one another. Among the crucial findings were, first, that non-human animals do avoid incest, and, second, that in some societies unusual childrearing circumstances were eliciting what came to be called the "Westermarck effect," but between children raised together who were not siblings.

The most thoroughly studied case involved the use of census records, not unlike those that would be consulted by historians for many purposes. In this case they were the household registries collected by the Japanese overlords during their period of rule on the island of Taiwan. From these records—supplemented by interviews with persons who had been affected by the practice to be described—the anthropologist Arthur Wolf extracts striking support for Westermarck.[40]

The records and interviews showed the consequences of rearing children together in the intimacy of the household and then expecting them to marry each other. In some areas, including Taiwan, the Chinese had a practice of reducing conflict between mothers-in-law and daughters-in-law by adopting a young girl and raising her, with an agreement with her parents that she would be the future bride of a son of the family that reared her. The son and his future wife thus grew up together in the same household. What Wolf's research shows is, as the Westermarck hypothesis would predict, that these marriages were disproportionately unsuccessful (so long as the children who were involved were reared during the critical period that invoked the Westermarck effect). These marriages more commonly ended in separation or divorce, more commonly resulted in

39. See either Brown, *Human Universals* or Degler, *In Search of Human Nature* for summaries and references.

40. Arthur P. Wolf, *Sexual Attraction and Childhood Association: A Chinese Brief for Edward Westermarck* (Stanford, 1995).

unfaithfulness, and were less fertile than the other forms of marriage. When changing conditions allowed young men and women to opt out of the marriages of this sort that had been arranged for them, they regularly did (though the marriages they then entered were still arranged).

Various alternative explanations of the Chinese case have been suggested, but the rich data available to Wolf have allowed him to show that the alternatives fail to explain his findings. Moreover, evidence from other places—children reared together in socialist communes in Israel and cousins who marry each other among Lebanese Muslims—also support the Westermarck hypothesis.[41]

But the historian Keith Hopkins, calling on surviving census records from Roman Egypt, has found the single known apparent counter-instance, in which brothers and sisters from various strata of society seemingly married for love.[42] While this is a striking use of historical materials by a historian to throw light on an important problem in the study of human nature, the appropriate interpretation of the Egyptian case is still in doubt. Wolf comments that if the practice really was encouraged, and if Freud was correct in thinking that family members have a natural inclination to take each other to bed, then what is notable in the Egyptian case is how few such marriages resulted.[43] In addition, there is the slenderness of the data to begin with, the remoteness in time that makes further verification difficult, the absence of information on the conditions under which siblings were raised, and the fact that it is a single case from all of known history and ethnography.

A crucial element of both Wolf's research and Hopkins's contribution was that their materials provided natural experiments that could not be duplicated in the laboratory. The discovery of natural experiments on human nature would be particularly important contributions from history.

Let me now suggest some other possible lines of research, involving such disparate matters as the sexual motive in conquest, color prejudice, and the origins of ethnicity.

One of the more significant events in history was the explosive expansion of Muslim peoples far beyond the homeland of their religion. Sexual motivation may have played a part in this event in two ways. First, Islam allowed men to have four wives and, furthermore, allowed them to keep slaves as concubines. In a stable population with a more or less even sex ratio, every man who had more than one mate generally deprived some other man of any mate. But under conditions of expansion, particularly where conquered men are killed or deprived of their mates with impunity, more and more of the conquerors may have multiple mates without depriving their fellows of theirs. Furthermore, the paradise that

41. Joseph Shepher, *Incest: A Biosocial View* (New York, 1983); Justine McCabe, "FBD Marriage: Further Support for the Westermarck Hypothesis of the Incest Taboo?" *American Anthropologist* 85 (1983), 50-69.

42. Keith Hopkins, "Brother-Sister Marriage in Roman Egypt," *Comparative Studies in Society and History* 22 (1980), 303-354. It should be noted that royals apparently married their siblings in a small number of other societies but there is no clear evidence that such marriages were consummated and, at any rate, very few people were involved.

43. Wolf, *Sexual Attraction and Childhood Association*, 429.

awaits the faithful Muslim male is stocked with virginal *houris* to attend him sexually.[44] Death in holy war sends him directly to that paradise. Although some commentators regard these rewards as metaphorical, for the rank and file very good sex must have been understood as a reward for the faithful male. There is, thus, a *prima facie* case for a strong sexual motivation in the Muslim expansion. I believe it is also the case that sexual matters are discussed sufficiently openly in Muslim literature of the period that testing the hypothesis might be easier than would be the case for British imperialism.[45]

Color prejudice, whereby persons of lighter skin are favored, is a prominent feature of the present-day world. This prejudice is found even among persons of African descent.[46] A few of the various hypotheses set forth to explain this prejudice are as follows: The anthropologist Victor Turner, working with African materials but not with reference to racial issues, found evidence to support the idea that in many if not all societies white is associated with good and black with misfortune or evil. He argued that associations were at the root of these ideas: in his African materials, good being associated with mother's milk and semen, black being associated with decay and feces.[47] Other scholars have made the association with the light of day and dark of night.

Yet other scholars, attempting to explain the specifically racial color preferences, have argued that the power and prestige of Europeans over the last few centuries, along with their ethnocentric preference for their own skin color, has made light skin the ideal. Evidence in support of this thesis has been found in the ancient Mediterranean world, where prejudice against dark-skinned Africans seems to have been muted.[48]

A more recent explanation has been formulated in terms of a specific feature of human nature. According to evidence marshaled by Pierre L. van den Berghe and Peter Frost,[49] the skin color of boys and girls is about the same until puberty, after which females are lighter; moreover, women's skin lightens during ovulation and darkens during pregnancy. Thus within a given population (that is ethnically/racially homogeneous) lightness of female skin correlates with and is a signal of fecundability, so that an evolved male attraction to or preference for lighter-than-average skin color in women has a clear adaptive rationale (if it is

44. Jane Idleman Smith and Yvonne Yazbeck Haddad, *The Islamic Understanding of Death and Resurrection* (Albany, 1981).

45. The sexual motive in conquest is probably quite common. In an epic poem that is the principal Brunei account of its origin and rise to regional hegemony—stretching around coastal Borneo, up to Manila in the Phillippines, and (according to the Brunei view) to Sulawesi off the east of Borneo—the capture of women and their removal to the homeland is a prominent theme. See Donald E. Brown, "Brunei through the *Sha'er* and the *Silsilah*," *Solidarity* 99 (1984), 10-15.

46. See, for example, Kathy Russell, Midge Wilson, and Ronald Hall, *The Color Complex: The Politics of Skin Color among African Americans* (New York, 1992).

47. Victor W. Turner, "Colour Classification in Ndembu Ritual," in *Anthropological Approaches to the Study of Religion*, ed. Michael Banton (London, 1966), 47-84.

48. See, for example, St. Clair Drake, *Black Folk Here and There: An Essay in History and Anthropology*, 2 vols. (Los Angeles, 1987), where various other theories are also summarized.

49. Pierre L. van den Berghe and Peter Frost, "Skin Color Preference, Sexual Dimorphism and Sexual Selection: A Case of Gene Culture Co-evolution?" *Ethnic and Racial Studies* 9 (1986), 87-113.

too light, however, as in albinism, it is not considered attractive). Van den Berghe and Frost's survey of the coded literature from a sample of societies throughout the world indicates that men do show this preference (occasionally it is said to be preferred in both men and women), showed it prior to contact with Europeans, and showed it even among the darker-skinned conquerors of lighter-skinned peoples (as among the Moors in Spain).

Van den Berghe and Frost's argument is about human nature, and applies to any and all societies. It suggests yet another basis for a preference for light skin that in racially complex societies might have contributed to the color prejudices of the modern world.[50] But van den Berghe and Frost caution that further research will be required to confirm or disconfirm their findings. Further analyses of historical materials seem particularly likely to be useful.

A significant issue in which historical materials clearly lie at the center of the controversy is whether ethnicity is something that human nature may have adapted to or is historically shallow, perhaps dating no earlier than the expansion of Western peoples around the world beginning in the sixteenth century. These are questions on which anthropologists are at present scandalously divided. Some consider ethnic identities "primordial" while others consider them the product of Western imperialism, falsely projected into a more ancient past.

Since our very word "ethnic" derives from a word in common use in a more ancient past (the Greek *ethnos*), part of the solution to this problem will lie in careful attention to the past meanings of words that are now interpreted as ethnic identities: did they or did they not signify ethnic identities? In this case, straightforward historical analysis is all that is required to determine whether ethnicity has the historical depth that would at least allow it candidacy as a trait of human nature.

IV. WHAT IDEAS NEED TO BE PUT IN PLACE IN A PRODUCTIVE CONSIDERATION OF HISTORY AND HUMAN NATURE?

I will offer eight suggestions. First is to acknowledge that there really is a human nature, in spite of decades of social-scientific neglect of the topic or even denials that there is such a thing. And, whatever it may be, human nature is a product of evolutionary time, not historical time. There is no reason to think that in the historic period the genetic foundation of human nature, particularly the human mind, has changed much if at all.[51] The conditions within which human nature must now develop or manifest itself have changed, of course, but no modern conditions so indelibly and thoroughly affect our development that our phylogenetic heritage may be ignored.

50. Van den Berghe and Frost also cite evidence that in stratified societies the upper strata tend to become genetically lighter, because 1) high-status men are more successful at obtaining lighter-skinned women and 2) these women coincidentally include a disproportionate sample of those who happen to be genetically lighter. The ensuing lightening of the upper strata then becomes a further factor promoting prejudice against darker skin. This occurred, for example, in Japan.

51. There apparently have been some adaptations to the dietary changes that followed the domestication of plants in protohistoric if not historic times.

2. Ideally, the theoretical framework for the study of human nature that exists in Darwinian selectionism should be exploited. Theory directs attention to problems that might otherwise be missed. In this case it also links the study of human affairs with the remainder of science.

3. We need to realize, as mentioned earlier, that we do not have a good understanding of human nature. Even if some features presently seem clear, others are murky, and some must be wholly invisible. Some things that seem to be human nature may of course turn out not to be. Thus the application of ideas about human nature to solve historical problems will not be cut and dried.

4. The idea needs to be grasped that the constants of human nature are entirely compatible with variable outcomes. The facile generalization that if something varies (say, across societies) it must be cultural (or social) and not natural is not true. Moreover, it is perhaps a general rule that runs throughout nature that particulars in all their variety are combinations of generalities. Careful thought will, of course, have to be given to how it is that constants make human history (I will return to this point below).

5. As an aid to determining what is or isn't human nature, little is more important than a comparative perspective. Only by comparing differing periods and peoples can we see what holds constant, or what shows a regular patterning that may indicate, say, a facultative adaptation. Comparison reveals what internal views of places and times easily miss.

6. In the course of comparison, an eye for similarities must be cultivated, to balance out the ease with which differences are spotted and focused upon. Both in anthropology and history there is something approaching an addiction to the unique and the different that needs correcting. This near-addiction may itself be a fairly direct expression of human nature, as humans are exquisitely adapted to see differences of many sorts among and between their fellow humans, but have almost no adaptations whatever for perceiving the common background of humanity (which explains why it took a Chomsky to discover the language instinct).[52]

7. Discovering and exploiting natural experiments performed in the course of history will be of exceptional importance. I have already given two cases, including that of incest avoidance, for which both anthropologists and historians have made very useful contributions by discovering and analyzing situations far from the normal in human affairs. Experimentally analogous situations in the past may turn out to be fairly frequent, once the right questions draw our attention to them.

8. Finally, certain pitfalls may need to be avoided, such as the allure of narrative, of subjectivity, and of personalization when these are not appropriate to the problem at hand. A particulary important pitfall, given recent archly relativist and cultural-constructivist tendencies of the social sciences (tendencies that historians have not escaped either),[53] can be avoided by employing the anthropological

52. Donald Symons, whom I thank for commenting on drafts of this paper, drew my attention to this, and various other, points that I make here.

53. Richard J. Evans, *In Defense of History* (New York, 1999).

distinction between "emics" and "etics."[54] An emic analysis consists of seeing a culture or society or period the way the locals see or saw it, using their terms, their perspectives, their values. An etic analysis, by contrast, is from the viewpoint of an objective, scientific observer and, hence, is often an outsider's view. Some anthropologists nowadays deny the possibility of objectivity, so that an etic analysis, they would say, is simply that of an outsider imposing his or her assumptions on the society or culture of another.

With regard to human nature, however, this position is an extreme extrapolation from social science's already existing overemphasis of sociocultural determinism. It needs correction by consideration of the interactions between human nature and the conditions—including those that are socioculturally and historically specific—that do indeed vary from place to place and time to time. A combination of emics and etics will go a long way toward providing that correction. Emic analyses alone have two problems. First, if they are to be analyses and not just verbatim (and untranslated) repetitions of what others have said, they always rest on some etic/objective assumptions. Second, emic analyses are often confined to what is verbalized (especially to what is lexicalized). To confine analysis to what individuals speaking their natural language readily put into words would omit an incalculably large part of what goes on in all human minds. No one should advocate such a loss to our attempts to understand human affairs. Fortunately, untutored humans are naturally endowed with a considerable capacity to infer more than what is put into words in any natural language.[55]

V. DOES HUMAN NATURE FUNDAMENTALLY STRUCTURE HISTORY?

To repeat, *nothing* that humans do is done apart from or without their nature. Earlier in this paper I quoted Ronald Hyam on two contrasting hypotheses of the motivation behind Britain's colonial expansion—one involved the export of surplus capital, the other involved sexual motives. The role of human nature in the latter case is more readily grasped, more unadulterated, or nearer to the surface. But human nature is just as much involved in the alternative, though the specifics are more obscure and perhaps more mixed in their components.

To prevent the idea that human nature influences human affairs from becoming a vacuous truism, however, will require attention to particulars: which features of human nature account for which features of history? As in the case of

54. The terms "emic" and "etic" are taken from the distinction in linguistics between phonemic and phonetic analyses. The former refers to the distinctions of sound that are perceived as meaningful in a given language, while the latter refers to distinctions of sound that characterize the language but that may or may not be perceived as meaningful by its native speakers (emically, English speakers do not distinguish initial and medial "p," but etically the former is aspirated and the latter is not). See *Emics and Etics: The Insider/Outsider Debate*, ed. Thomas N. Headland, Kenneth L. Pike, and Marvin Harris (Newbury Park, Calif., 1990).

55. Recall the earlier discussion of Theory of Mind. The concept of a non-verbal "mentalese" that lies beyond or beneath language is also relevant; see Pinker, *How the Mind Works*.

sexual motivation, sometimes the answer may be relatively straightforward. Similarly straightforward is the string of historically particular innovations that includes the megaphone, writing, semaphore, printing press, typewriter, telegraph, telephone, radio, television, fax machine, and word processor. As innovative and unique as each was, to a significant degree surely they all are augmentations or extensions of human speech. A much longer, but perhaps more complicated and ambiguous list of innovations can be attributed to the human preoccupation with sex. And we could also note the extent to which the augmentations of speech just mentioned are employed in the pursuit of sex.

Ethnocentrism, which taps human nature so repetitively, seems no small part of contemporary as well as ancient history. The ties and sentiments of kinship, along with the friendships and alliances based on reciprocity, everywhere and always shape human affairs.[56] Certainly more could be added to the list of the those features of human nature that more overtly shape human history.

This line of thought was employed in the early days of anthropology, when the invention of the spear and club were envisaged as cultural extensions of the human arm. Much later, the anthropologist-philosopher David Bidney pushed the idea further by defining culture in general as the self-cultivation of human nature.[57] Utilizing these basic ideas, a case can be made for a sort of back engineering in which not only specific features of culture but of society and history, too, can be traced to specific elements of human nature that motivated, structured, or facilitated them. This is not to say that the task will be easy or even to say that we now know how to do this. Methods will have to be worked out.

The historian Carlo Ginzburg, in a paper entitled "Morelli, Freud and Sherlock Holmes: Clues and Scientific Method," employs the basic idea.[58] He posits a mental mechanism (without actually using this term) for "conjectural reasoning." This mechanism evolved in response to the problems faced by hunters, so that by means of this mechanism hunters could determine by minute observations of their environments the whereabouts of prey. From the observed they could project to the unobserved, distant from them in time and space. Once this mechanism existed, however, it could be put to other uses.

Thus Ginzburg goes on to argue that whether it is the art historian or the psychiatrist or the detective all use that same mental mechanism to pursue their crafts. Medical diagnosis and science in general depend upon it. Thus Ginzburg neatly illustrates the idea of a mental mechanism that evolved with a particular function in the EEA subsequently having diverse highly significant effects in the

56. Kinship and reciprocity, issues of moral significance everywhere, provided the contexts for theoretical solutions to the Darwinian puzzle of how altruism could have evolved. For a brief summary of these seminal contributions to human evolutionary biology, and a further explanation for the evolution of altruism, see Tooby and Cosmides, "Friendship and the Banker's Paradox."

57. David Bidney, "Human Nature and the Cultural Process," *American Anthropologist* 49 (1947), 375-399. Useful terms for thinking about adaptations and their culturally diverse effects are presented in Sperber, *Explaining Culture*.

58. Carlo Ginzburg, "Morelli, Freud and Sherlock Holmes: Clues and Scientific Method," *History Workshop* 9 (1980), 5-36.

world we now inhabit. To be sure it is a hypothesis only: we do not yet know that conjectural reasoning is a distinct module or that it was specifically hunting that posed the problems it was designed to solve. Various lines of research and more fully developed arguments will be required to confirm, refine, or disconfirm Ginzburg's argument.[59]

What I am suggesting here is a form of reductionism, but not one in which complex phenomena are reduced to the overly simple. The mind is an exceedingly complex entity, and much that seems so easy and simple to us—such as speaking—is far, far more complex than we realize. Earlier, I noted the phenomenon of instinct blindness: we are largely blind to all the mental machinery that has proved so adaptive that it operates automatically and beyond awareness. The details of the mind's complexity, however, were placed there by our evolutionary history; when we find ways to reveal those details we will at the same time reveal much of our very ancient past.

Thus, linking the study of human affairs to human nature will not only yield a fuller understanding of those affairs—present as well as past—it will complete a link between history as historians generally understand the term and history as evolutionary biologists understand it. This unification of human knowledge seems to me to be a worthy goal.

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59. The hypothesis that human intelligence emerged to solve subsistence problems is the principal alternative to the Machiavellian intelligence hypothesis mentioned in an earlier note. See a discussion in Byrne, *The Thinking Ape*.