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Evolutionary Psychology: The Academic Debate

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Argument

This article examines some ideological issues behind the academic debate that surrounds a new field called evolutionary psychology. Evolutionary psychology has emerged as the most popular successor theory to human sociobiology. Its proponents search for evolved psychological mechanisms and emphasize universal features of the human mind. Its proponents also self-consciously resist engaging other social scientists studying the same field of problems. Specifically, I find that the evolutionary psychologists shortchange practitioners from the fields of biological anthropology, empirical linguistics, and developmental psychology. By doing so, they miss the opportunity to benefit from work that could contribute to an enhanced, albeit modified evolutionary psychology. I make the plea for a more expansive discussion.

Introduction

This article examines some ideological issues behind the academic debate that surrounds a new field called evolutionary psychology. The evolutionary psychologists, most notably John Tooby, Leda Cosmides, Steven Pinker, and David Buss, wish us to see evolutionary psychology in an essentialist manner as the application of the principles of evolutionary biology to a massively modular human mind. They frequently write for a popular audience; however, their popular orientation has not prevented other social science academicians from criticizing their works and responding officially to their ideas in more academic (as well as in popular) genres. So there is an academic debate occurring despite a certain lopsidedness in the debate due to the failure of the evolutionary psychologists to respond adequately to their critics and to take account of the evidence put to them for consideration.

In particular, I submit that the evolutionary psychologists have shortchanged practitioners from the fields of biological anthropology, empirical linguistics, and developmental psychology. I therefore take representative voices from these three fields and delineate the give and take that must occur between them (even if it has not transpired in actual fact) in order to illuminate the issues that come more clearly into focus when their dialectical exchange is thought through. Specifically, I rely on Barbara King to represent biological anthropology, George Lakoff and Mark Johnson to provide the perspective from empirical linguistics, and Annette Karmiloff-Smith to stand in for developmental psychology.

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These researchers push important issues. King raises the question of the relevance of comparative data to an understanding of evolved human cognitive capacities. Notably, the evolutionary psychologists confine their study strictly to the human mind. Lakoff and Johnson challenge the evolutionary psychologists on the legitimacy of speaking of modularized and autonomous compartments of reason. Instead, they maintain that the mind's modularity is contraindicated by the common derivation of language and reason from our embodied experiences in the world in a similar fashion to other cognitive categories in general. Finally, Karmiloff-Smith brings the key concept of development to the fore and the question of whether incorporation of the biological facts of development, which are trivialized by evolutionary psychology, forces the core tenets of evolutionary psychology to give way.

With these issues pressing, I consider it odd that the evolutionary psychologists should put their view forward as a rejoinder to the idea that human beings have no nature at all, not as a response to, nor in dialogue with, any of the proponents of the theories just mentioned. Drawing attention to the terms of the debate they set, the evolutionary psychologists claim that the Blank Slate Doctrine is responsible for the exclusion of the facts of evolutionary biology from any discussion of human nature and psychology. More provocatively, they say that supporters of the Blank Slate in the academy possess the "mentality of a cult" and that they have turned the discussion of human nature into "a heresy that must be stamped out" (Pinker 2002, x).

One ought to see things another way. By taking the Blank Slate as their target, which is but a caricature of the stances of those they do consider, the evolutionary psychologists miss the opportunity to deflect the charges leveled against them by very worthy contenders as well as to profit from insights they could thus incorporate into their work. The time has come to wrest control of the language of evolutionary psychology away from the circle of researchers with whom it is currently identified and expand its authorship base. I defend this thesis below.

The Blank Slate – Target or Trouble?

Scholars and scientists with a revolutionary mission are notorious for taking on big targets to ready the intellectual terrain for their ideas. In the 1950s, for example, the philosopher A. J. Ayer targeted metaphysics. In his (small and) provocative book, *Language, Truth and Logic* (1952), Ayer "eliminated" metaphysics in chapter 1 thereby banishing the "superstitions" of his readership, then moved on to discuss the new function of philosophy (in chapter 2) and the nature of philosophical analysis (in chapter 3) for the tradition of thinking (called logical positivism) which he thus imported to the English-speaking world.

Similarly, the evolutionary psychologists have identified a target, which they seek to overturn, in order to be positioned to advance their ideas to receptive readers who have been freed of their superstitions and prejudice. That target – the Blank Slate

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Doctrine – encapsulates a view of human nature. Specifically, it states that the human mind has nothing in it to start out with and contains only what is put into it via the senses (and filtered through one's cultural lens) at the end. The evolutionary psychologists turn against the Blank Slate just as Ayer turned against metaphysics. Steven Pinker professes that the Blank Slate is truly held by academicians (politicians and public intellectuals) and is not merely conjured for rhetorical effect. At the same time he confesses that few intellectuals really believe it deep down (Pinker 2002, 422). Pinker's confession raises the obvious question: "why, then, all the fuss?" The more a rhetorical ploy he makes the Slate out to be, the less impressive his efforts to overcome its privileged status in the academy. Ultimately, Pinker discloses that, in his opinion, the real motive his counterparts have for supporting the Slate is political. Associated with it are the values of truth and decency which he aims to pry loose from the doctrine and realign with his nativist view (ibid., xi).

Following Pinker, John Tooby and Leda Cosmides – the first an anthropologist, the other a psychologist – show that the Blank Slate (or *tabula rasa* empiricism) is integral to the Standard Social Science Model (SSSM) for the organization of the sciences. According to Tooby and Cosmides, the SSSM justifies the social sciences' autonomy from biology (Tooby and Cosmides 1992, 23). By denying that human nature "can play any notable role as a generator of significant organization in human life" the SSSM "removes from the concept of human nature all substantive content, and relegates the architecture of the human mind to the delimited role of embodying the 'capacity for culture'" (ibid., 28). Against this model Tooby and Cosmides oppose their own Integrated Causal Model (ICM) – a model designed to amend the defects of the SSSM's "impossible psychology" (ibid., 34) by returning the nativist elements of our nature back to the equation and granting the biological side its priority place.

Notably, the ICM is a transdisciplinary perspective having the same transdisciplinary aims that sociobiology had before it. It constitutes a paradigm or worldview that seeks to break down the barrier that "logically insulates the social sciences from the rest of the natural sciences" in order to unify all the sciences (ibid., 48). In short, evolutionary psychology is not just a hybrid field created at the interstices of evolutionary biology and cognitive psychology – academic territory they clearly seek to own. The evolutionary psychologists are also concerned with changing disciplinary identities if the presently accepted postulates of those disciplines pose a challenge to evolutionary psychology, and not merely to facilitate syntheses between the accepted postulates of disciplines. Tooby and Cosmides seek to change the structure of knowledge with the ICM, and hence, knowledge itself.

Pinker, Tooby, and Cosmides counter the Blank Slate Doctrine with three affirmations: (1) that the mind is massively modular; (2) that this massively modular mind has been shaped by the processes of natural selection over evolutionary time; and (3) that it is adapted to the Pleistocene conditions of our past. Why Pleistocene conditions? Because these are the conditions under which humans lived most of their lives; hence, natural selection has had time to establish, but not to displace,

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the various features appropriate to Pleistocene conditions. Modern minds, according to evolutionary psychology, are "adapted to the Stone Age, not the computer age" (Pinker 1997, 42). This explains why we fear spiders, snakes, and darkness, not cars and electrical outlets (Buss et al. 1999). In fact evolutionary psychologists believe that our responses to problem situations give us clues to the past. They tell us the relevant features of the ancestral environment from which we evolved (Tooby and Cosmides 1992).

Like Tooby and Cosmides, Pinker identifies the Blank Slate Doctrine rather loosely with empiricism (Pinker 2002, 10), an identification that measurably increases the momentousness of the attack being made by ratcheting it up in scale albeit at the cost of some distortion. For empiricism is just a much larger, more heterogeneous and subtle tradition than the Blank Slate taken by itself which may, presumably, be subsumed by it, but to which it ought not be essentially connected. At least today's empiricists (I have in mind philosophers of science like Helen Longino 1990 and Bas van Fraassen 1980) do not accept the mind's total emptiness or its passivity in the face of environmental influences. Instead, they take the view that empiricism is a justificatory approach, a theory of knowledge, not a theory of mind or human nature, and while these sorts of theories are necessarily linked, they are nevertheless not mandated one by the other. Hence, contemporary empiricist philosophers may express their commitment to the idea that no belief can be justified without appeal to experience, at the same time they withhold their commitment to the idea that there is nothing at all in the mind before experience occurs.

Compromising the accuracy, if not propriety, of their attack on the theory of the Blank Slate is the fact that, as Pinker himself points out, not even Locke, its purported originator, subscribed to the doctrine. That is to say, Locke did not really espouse the view that the human mind is a purely empty and passive receptacle at birth – that there isn't anything inside it that is innate. Somewhat inconsistently, in my view, Locke held that the human mind possesses certain primitive (intuitive) resources for thinking logically (such as, for instance, the law of non-contradiction (Locke [1689] 1952, Book IV, chap. 2, 1) that are conditions for its functioning as a mental entity at all. As Pinker puts it, Locke explained in circular fashion, "how the mind understands by invoking something called 'the understanding'" (Pinker 2002, 34).

In addition, and just as significantly, Locke believed that the human mind contains moral archetypes (Locke [1689] 1952, Book IV, chap. 4, 8). So Locke's empiricism was not of the absolutely radical sort that would make his theory of mind a true exemplification of the Blank Slate Doctrine. Locke was only more or less guilty of endorsing it and less so if we consider moral archetypes to be rather substantial additions to any conception of the mind's intrinsic nature. Obviously, too, Locke recognized what evolutionary psychologists duly note: that a blank slate can't *do* anything (Pinker 2002, 34). Inertness in its fullest (most deleterious sense) is its correlative notion. Many, I suspect, are likely to find this phlegmatic quality a more objectionable feature of the Slate than its nature as a medium with writable properties. However, even Pinker suggests (although he may not mean to) that the passivity of people needn't follow from

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the hollowness of their minds at birth since the mind that has no inherent structure "can be inscribed at will by society or *ourselves*" (ibid., 2; emphasis added).[1] This asserts the issue: How far can one depart from the Blank Slate theory and still be thought to adhere to it? Who really holds the doctrine?

In *The Blank Slate* Pinker tries to pin the doctrine on a diverse conglomerate of academic intellectuals in contemporary culture. In writing a popular book for a broad and general audience, Pinker's purpose is conspicuously not to educate the masses regarding the perniciousness of a doctrine that has trickled down to them and which, he wishes to advise, they should forthwith abandon.[2] This goes directly contrary to his own good sense of their intelligence and determination to resist writing works that, as he himself puts it, have been dumbed down (Pinker 2001, 91). When writing for the Third Culture, that culture that includes rather than excludes the scientist as literary intellectual, one writes simultaneously to one's colleagues as well as the public (Brockman 1995). Part of what we learn from Third Culture manifestos, therefore, is to be wary of what the experts believe.

We also learn from Pinker that the Blank Slate Doctrine has insinuated itself into the scientific thinking of behaviorists in psychology, relativists in cultural anthropology, constructionist thinkers in neuroscience as well as evolutionary biology, and for that matter, any social constructionist thinker who might come along. Pinker does his best to establish the pervasiveness and obstinacy of the doctrine in the current academic and popular/political scene. He reinforces its irksome permeability by making a case for the Slate's compatibility with romanticism, encapsulated by Rousseau's conception of a Noble Savage, and Descartes' Ghost in the Machine, also known as mind/body dualism. It is, however, almost too easy a point of criticism that the Noble Savage, being noble, can't be blank and so, as the philosopher Colin McGinn explains, these "quite distinct ideas" are "in clear tension with each other" (McGinn 2002, 4). A formally similar point of criticism can be made about dualism, particularly dualism of the Cartesian variety, for while the mind is conceived as an entity independent of the flesh for Cartesian dualists, it is an entity associated with "goodness" in nature while the body is (like "society" in Rousseau's view) associated with corruption.[3]

[1] At another point, in *The Blank Slate* Pinker says that the character of the "we" (or the "I") doing the inscribing is the crucial fact and the Slate's inscribers are deficient. Biological hunks of matter are not likely to inscribe other biological hunks of matter (or themselves) in the most "socially salutary way" (Pinker 2002, 28).

[2] After all, the masses are, Pinker notes at the very outset, Judeo-Christian believers (Pinker 2002, 2).

[3] To be fair, Pinker argues in favor, not of the identity of these doctrines as one might expect or in favor of their shared (overlapping) essential feature(s), but in favor of the compatibility of these doctrines – a rather loose compatibility at that – compatibility in terms of what one view adds to (or how it otherwise completes) the others. So the Slate and the Ghost-in-the-Machine go together because: "If a ghost is to be at the controls, the factory can ship the device with a minimum of parts. The ghost can read the body's display panels and pull its levers, with no need for a high-tech executive program, guidance system or CPU. The more not-clockwork there is controlling behavior, the less clockwork we need to posit" (Pinker 2002, 11). Loose associations eventually lead to ungrounded claims, however. For instance, Pinker says Rousseau associates blankness with virtue rather

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Representatives in all these fields are not going to take Pinker's charges lying down. Social constructionists will be the first to mimic the objection of the empiricists and say that theirs is not a theory of mind, but a theory of knowledge, too, not any more logically tied to the proposition that human nature is empty from the outset than is empiricism. In fact, many social constructionists may find evolutionary psychology's conception of a person wholly compatible with their views about how knowledge is produced, circulated, and validated and can join Pinker in his contention that "while conflict is a human universal, so is conflict resolution" (Pinker 2002, 58), a contention that is specifically borne out by their theories. For social constructionist theories, by taking account of their actors' (mainly scientists' and technologists') interests, power needs, and negotiating skills, purport to show how their protagonists use these interests, needs, and skills to effectively bully or cajole other actors (mainly scientists and technologists but also interest groups and other public entities) to come to accept their views about the nature of Nature. Indeed, the main actors in a scientific network are presented in model evolutionary psychology terms as "high spec, specialized problem solvers just waiting to spring into action" (Pinker 1998).

Additionally, it will not pass the notice of psychologists that behaviorism, which evolutionary psychologists attack as a Blank Slate theory, was Darwinian in its foundation sharing "with all systematic psychologies since Wundt . . . the conviction that human psychological processes have evolved, are present in lower forms of life, and are the outcome of transactions between the organism and its environment" (Robinson 1995, 350). Even the eminent philosopher W. V. Quine found the need to stress the point that "innate biases and dispositions are the cornerstone of behaviorism" (Quine 1969, 96). Jean Piaget also stands as a salient reminder that psychology did not commit itself wholesale to the Blank Slate (or SSSM) in the twentieth century, not to mention the eminent evolutionary psychologist James Mark Baldwin (1861–1934), author of the theory of Organic Selection.

At the same time, anthropologists will urge that whereas, perhaps, some wayward practitioners have gone the route of embracing something approximating the Blank Slate Doctrine many have rejected the notion that the mind is born an empty vessel. Indeed, the argument is made that the important conclusion reached by anthropology in its very early years when Darwinism was in its infancy, was that cultural phenomena could not be reduced to psychological phenomena (Brown 1999, 119). This caused anthropologists to bracket the psychological facts and withdraw from evolutionary theorizing, but this is not the same as to say that they denied the existence, influence, or relevance of these facts upon culture altogether.

Anthropology did not remain withdrawn. Pinker overlooks a major tradition in anthropology – the structuralist tradition of Claude Lévi-Strauss. Lévi-Strauss sought to discover the mind in its most primitive state (Gardner [1985] 1987, 238). Pinker

than with nothingness (ibid.). So far as I can tell Rousseau never mentions blankness, the blankness of our nature or anything else in his writings. Therefore Pinker has no basis for saying what he associated with it.

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is therefore grossly mistaken when he says that since Franz Boas anthropologists have believed that only the collective mind belonging to culture, not individual minds, count (Pinker 2002, 23). Lévi-Strauss affirmed, as do the evolutionary psychologists, that certain mental properties determine the way language operates. He provides anthropology with the resources for integrating human cognition in with evolutionary theory. In fact, Lévi-Strauss lays the groundwork for anthropology's ability to answer the question of "how culture is possible, how it is constituted, and how it is acquired" (Gardner [1985] 1987, 256) – precisely the question that Tooby and Cosmides attempt to answer in their theory's manifesto, "The Psychological Foundations of Culture" (Tooby and Cosmides 1992).[4]

Evolutionary psychology's treatment of constructionist neuroscientists is a central concern. Suffice it to say, that if as these neuroscientists claim the brain participates in its own construction as it interacts with its internal and external environments, a process Pinker calls a "mystery" but which he concedes nevertheless occurs (Pinker 2002, 91), then the idea that it has no nature of its own is – at a most basic level – contradicted. The brain's plasticity, so understood, is surely not tantamount to nothing. Furthermore, the Blank Slate is contradicted, at a rudimentary level, when evolutionary biologists, such as Richard Lewontin, maintain that human beings are capable of negating and thereby transcending the constraints imposed by their physiological organization (Lewontin 1981); for to transcend and negate implies that there is *something* substantial there to be transcended and negated. Once more, the question becomes: Who among the aforementioned theorists really subscribes to the theory of the Blank Slate? Is it, perhaps, not the target evolutionary psychology needs to overturn to instigate its conceptual revolution?

Enter New Voices

The Blank Slate proves to be a porous doctrine, with many half-hearted supporters, if any supporters at all, a conception embraced by and associated with academicians in every possible discipline and yet not sufficiently embraced by any particular discipline to constitute the threat the evolutionary psychologists make it out to be. The Blank Slate is diversionary serving principally to enable the evolutionary psychologists to overlook researchers who are right there in the trenches practicing science alongside them. Barbara King in biological anthropology, George Lakoff and Mark Johnson in empirical linguistics, and Annette Karmiloff-Smith in developmental psychology are

[4] Anthropology has a rich and diverse tradition. The metaphor of the Mind as a Blank Slate never permeated the understanding of all its practitioners. Today some anthropologists are even attempting to wrest control of cognitive science from evolutionary psychology by proposing their own transdisciplinary terms for research. Tim Ingold, a colleague of Barbara King's, falls into this group. He tells us that his aim is to lay the foundation for an "adequate integration of anthropology within the wider field of biology" (Ingold 1990, 208).

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good examples. They are the social science counterparts to the evolutionary biologists most vocally rebuked by the evolutionary psychologists in the public forum. These figures' criticisms are as important as those of the late Stephen Jay Gould, Steven Rose, and Richard Lewontin. Yet, these thinkers have fallen off – or better yet, they have been deliberately forced off – evolutionary psychology's conceptual radar. And they are forced off the radar because they are worthy opponents of evolutionary psychology whose perspectives need to be paid serious attention.

Biological anthropologists, empirical linguists, and developmental psychologists have made significant advances in their thinking on the evolution of cognition. To marginalize them is to ensure that bits of knowledge deriving from their fields are submerged. This knowledge issues from the different kinds of questions that they raise about how our cognitive capacities evolved and the different model conceptions of a person with which they work. If, as Alfred North Whitehead instructed, one ought not focus chiefly on the intellectual claims the exponents of a position defend, but rather on the fundamental assumptions which they (unconsciously or otherwise) presuppose, then these marginalized views may tell us something significant about what evolutionary psychology takes *as obvious that may not be obviously so*.[5]

For example, many biological anthropologists urge that evolutionary psychology is an objectionably anthropocentric perspective, that it obscures the centuries-old debate that rages over the question of man's continuity (or discontinuity) with the rest of the animal kingdom. Thus, many biological anthropologists regard the species-specific form of language found in humans as differing from other non-human primate communication schemes in degree, but not in kind. Predictably, biological anthropologists also tend to reject syntax as definitive of language and alternatively take the view that language is "composed of various critical components or as complex communication that results in cohesive social groupings" (King 2002, 20). Biological anthropologists take *human* as "animal" as their working model conception, not *human* as "thinking machine" in the manner of evolutionary psychology.

Empirical linguists bring to the table an emphasis on the universal experiences of people as neurological beings. They regard the mind, fundamentally, as an embodied entity and argue that people have evolved to develop richly constructed cognitive systems through their sensorimotor interactions in the world (Lakoff and Johnson 1999). Accordingly, the empirical linguists reject Chomsky's poverty of stimulus argument which says that children acquire grammar on the basis of little instruction and meager data; hence, the general rules of language must come from the mind itself (Chomsky 1975, 10, 144, and 1980, 35). The poverty of stimulus argument is used to buttress the case for the innateness of language enthusiastically embraced by evolutionary psychologists and many other thinkers. Consistent with their denial of

[5] This is a liberal application of Alfred North Whitehead's dictum that philosophy and the sciences in any given period are governed by a seldom mentioned and taken for granted set of assumptions (Whitehead 1925, chap. 1).

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this view, empirical linguists rebuff the idea that the mind is comprised of a multiplicity of specialized modules or mini-computer programs that processes information, which figuratively at least, grounds a formal, more disembodied conception of the person. With respect to language, empirical linguists emphasize the importance of meaning over syntax and grammar.

Finally, developmental psychology is an important perspective to bring forward if only for the reason that historically, after the advent of genetics at the beginning of the twentieth century, the notion of development has been glossed over by evolutionarily oriented thinkers. As it turns out, evolutionary psychologists have glossed over it as well. Evolutionary psychology has been criticized for conceiving development, even though it may require triggering and maintenance by environmental factors, as nothing more than an automatic process set in motion by our genes. For developmental psychologists this is a limited, one-sided notion of development that belies real epigenetic developmental processes (Lickliter and Honeycutt 2003). Developmental psychologists, like the biological anthropologists and empirical linguists before them, are also uniquely poised to speak to the issue of human variability – to aid in resolving the diversity of unity question raised 2500 years ago by the Greeks, the question of how the Many and the One, human nature and human variability, can be reconciled. Developmental psychologists take the "growing child" as their working model conception of a person.

While the theories that issue from the aforementioned perspectives are not nativistic in the content-rich manner of evolutionary psychology, they nevertheless draw attention to details that show that the supposedly Blank Slate was already substantially marked up to begin with. Hence, they are not expressions of the Blank Slate either. Nor are they identical or necessarily cohesive views. Yet the Doctrine of the Blank Slate is so constructed as to force the neglect of these in-between theories and overshadow the interdisciplinary conversation that should be taking place among their proponents. It is time to bring their voices into the fray.

Biological Anthropology

To start, let us consider the difference biological anthropology makes to the theory of evolutionary psychology. Since evolutionary psychology's choice metaphor is that of the mind as a thinking machine, it should come as no surprise that its exponents disclose the mind's inner workings through the process of reverse engineering rather than through animal study as the biological anthropologists do. Indeed, the decision to delimit their theory's application to human beings only is one whose justification gets reinforced when language is identified with syntax, a feature which animal systems of communication show not the least sign. At the same time, the evolutionary psychologists use the term "instinct" to describe the mind's many modules – precisely that feature of our animal nature that theorists most often deny in order to underscore

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the respect in which humans are special. Clearly, the evolutionary psychologists are ambivalent about the nature of humans as animals. On the one hand, they acknowledge that humans possess innate predispositions just like all other creatures. On the other hand, they resist making cross-species comparisons. The modern chimpanzee has no special status, according to evolutionary psychology, since chimpanzees are our closest living relatives due to the accidents of extinction (Pinker 1994, 346).

Evolutionary psychologists work hard to upgrade our understanding of what evolution is and what it can accomplish by identifying our cognitive abilities up with the finesse and power of the computer rather than down with apes and animal minds. Tooby and Cosmides tell us that "the rise of computers . . . completed the conceptual unification of the mental and physical worlds by showing how physical systems can embody information and meaning" (Tooby and Cosmides 1992, 20). Accordingly, Pinker insists that it is wrong to believe that evolution can only fashion "stupid instincts and fixed action patterns." Everything changes, he maintains, once it is granted that evolution equipped each member of the human species with a "neural computer." We evolved from apes, Pinker admits, but "that does not mean we have the same minds as apes" (Pinker 1997, 23–27).

Of course, Barbara King does not believe we have ape minds either. However, she does believe that a commitment to disclosing a full evolutionary picture compels us to take a comparative view and, therefore, entails a close analysis of primates (King 1994a, 2). Unless we examine primates "we cannot know which communicational abilities evolved only in the hominid lineage and which have longer evolutionary histories" (King 1999, 22). Broadening our understanding of what language is in order to take account of the primatological data also positions us to distinguish the question of the origins of linguistic behavior, i.e., the question of what monkeys, apes, and hominids do and how they structure their communicative behavior from the question of the origins of language *per se* (King and Shanker 1997, 93–94). (Pace evolutionary psychology, King also finds that chimpanzees do have special status due to our close genetic and anatomical relationship [King 1994b, 131]).

There are good reasons for finessing the impasse between the evolutionary psychologists and King by taking King's side – broadening our conception of what language is and bringing primates in. The first is that evolutionary psychology, as a new theory, says nothing to mollify the long-standing objection of critics concerning the natural selection of a language module (what Noam Chomsky called a language acquisition device [LAD]). The objection is that such a module or device requires all the neurophysiology implied by the syntactical deep structure to be frozen and fixed in place all at once. From an evolutionary perspective, this is considered to be an extremely implausible view (Burian 2005, personal communication). Obviously, if the natural selection of language is in trouble, then alternative accounts of its origination not only deserve a fair hearing, but also ought to be sought.

Further, as the archeologist Steven Mithen points out, "mate choice, detection of cheaters in social exchange, and care of infants are not problems specific to humans"

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(Mithen 1997, 102).[6] As a consequence, it is conceivable that "those modules in the human mind relating to social activity and mate choice" may have "evolved long before the time of the common ancestor to chimpanzees and humans" (ibid.). Along with King, Mithen therefore agrees that evolutionary psychology should encompass the application of the evolutionary perspective across the species as well as across the disciplines (see also Heyes 2000).

Taking an enlarged perspective also provides biological anthropologists like King with the incentive to relax their defensive posture[7] and confront the one evolutionary possibility upon which their own research forecloses: the possibility that human language is a spandrel, a by-product of some naturally selected-for feature, not a selected-for feature itself. Theoretically speaking, only by relaxing the imperative to see selective pressures everywhere, and looking just at what monkeys, apes, and human do, can human linguistic ability be recognized as an emergent property of other adaptive cognitive features. More than that, from a more encompassing perspective biological anthropologists are better poised (and motivated) to identify the cognitive powers that underlie linguistic ability, not merely linguistic precursors, such as the ability of primates (and other animals) to parse the world conceptually and to make generalizations about it instinctively (as animals clearly come equipped with these abilities without the benefit of instruction [Edelman 1992]). At the present time, however, due perhaps to evolutionary psychology's over-emphasis on contentful instinctive capacities, King and her colleagues concentrate their focus strictly on what is overlooked in that analysis, namely, social learning.

Evolutionary psychology's willingness to engage other scientists in discussions regarding the nature of *human* as "animal" would signal its effort to contribute to empirical research of the sort that extends knowledge. Helen Longino puts forward the mission of knowledge-extension as an important goal of scientific inquiry and one that is separate from and independent of the pursuit of truth, which is another goal (Longino 1990, 32–37). Any scientific theory, Longino points out, can be measured against both criteria, faring well in one area, less well in the other. However, by delimiting their theory to the human mind, the evolutionary psychologists impede knowledge-extension.

Mithen even shows that the choice can be made to give priority to knowledge-extension at the (possible) expense of correctness or truth. He does this in his own research when he invokes the controversial notion of recapitulation to model the

[6] Robert Foley also points out that there are good reasons for placing human cognition and sociality "well back within primate evolution" (Foley 1996, 196).

[7] The biological anthropologists feel pressure to discontinue their contributory research as evolutionary psychologists assert the demand for their withdrawal. Hence, in the anthropological literature we find such titles as "The Expulsion of Primates from the Garden of Eden" (King and Shanker 1997) and "The Anthropomorphic and the Skeptical" (Taylor 1994). In the latter essay its author, the anthropologist Talbot Taylor, describes the prejudicial systems of measurement utilized to compare human and nonhuman primate forms of communication. The substance of the former essay is self-explanatory.

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prehistory of the mind. Mithen is convinced it would be "a missed opportunity verging on academic negligence" if he were to ignore the idea of recapitulation (Mithen 1996, 63), whether it is correct or not – for it carries the enticing possibility that the developmental stages children's minds go through parallels the evolution of ancestral minds (ibid., 64). The empirical linguists, Lakoff and Johnson, would not find Mithen's decision the least surprising. It fully accords with their dictum that truth takes second place to understanding (Lakoff and Johnson 1980).

Empirical Linguistics

While the evolutionary psychologists deprecate the value of comparative data to their theory, the value of linguistics, on the other hand, is manifest, at least linguistics of the Chomskian variety, which Pinker effectively explicates in *The Language Instinct* (1994). The language module is among the most important mental modules that the evolutionary psychologists find. However, Pinker and the other evolutionary psychologists never acknowledge that alternative accounts of our linguistic prowess are proffered and that the issue, that of explaining the ease with which human language is learned, is not settled. For George Lakoff and Mark Johnson our percepts and concepts are intimately connected. This leads them to agree with the biological anthropologists that language and reason are evolutionary. That is to say, language and reason build on and make use of "forms of perceptual and motor inference present in 'lower' animals" (Lakoff and Johnson 1999, 4). Language and reason are not independent faculties of the mind.

The idea that metaphor and metonymy are major modes of thought, another of Lakoff and Johnson's major theses, is also all but denied by the evolutionary psychologists. Indeed, Pinker states explicitly that metaphors may provide a way of expressing our thoughts, but they are not always the best way of expressing them. Humor is a superior means. "The complete process of understanding is better characterized by the joke about the two psychoanalysts who meet on the street. One says, 'Good morning'; the other thinks, 'I wonder what he meant by that'" (Pinker 1994, 230).

One may be stymied by Pinker's response since it does, after all, involve metaphor – the metaphor that communication is like a joke. One ought not be, however, for what Lakoff and Johnson wish to impress is that the metaphors we live by function unconsciously and automatically (just as our cognitive modules do on evolutionary psychology's account), even though we may be able to pick them out when we focus on them. Lakoff and Johnson maintain, in contrast to Pinker, that communication is like sending – something they encapsulate in "the conduit metaphor" (Lakoff and Johnson 1980 and 1999). So they disagree with Pinker. Still, their disagreement, Lakoff and Johnson want to say, is really over which metaphor is better for describing the communication process, not whether metaphor is involved at all. For this reason,

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Lakoff and Johnson urge that without the framework for thinking that metaphors provide we would not be aware of anything at all (Lakoff and Johnson 1999, 11).

Generally speaking, the evolutionary psychologists exemplify extremely well the centrality of metaphor in cognition with their allusions to thinking machines and computational processes, Blank Slates, Swiss Army knives, and other such notions. However, Lakoff and Johnson also believe that the computer metaphor has served to throw the evolutionary psychologists' thinking off course rather than open up promising lines of inquiry. For if our minds are hard-wired to categorize like computers, as they claim, then our nature as embodied *neural* beings cannot matter to self-understanding. With its hardware/software distinction, the computer metaphor leads the evolutionary psychologists to precisely this conclusion; namely, that "the interaction of neurons, hormones, neurotransmitters, and other organic aspects" of the brain is not necessary for understanding its cognitive mechanisms as information-processing systems (Tooby and Cosmides 1992, 64–66). "Much of great interest can be learned by investigating the brain in neurobiological terms," Tooby and Cosmides admit, "but its adaptive dimension will remain invisible unless and until its mechanisms are described in a language that is capable of expressing its informational functions" (ibid., 66). Valerie Hardcastle and David Buller have pointed out the problem with this position. It is that unless computational models are understood as "hypotheses about the information processing occurring in identified processes of the brain . . . no possible empirical evidence can (dis)confirm them" (Hardcastle and Buller 2000, 319).

On the other hand, Lakoff and Johnson face their own problems. Taking the view that syntax is symbolization and that symbolization "is just a way of discussing neural connectivity," they arrive at the position that the "*grammar of a language consists of the highly structured neural connections linking the conceptual and expressive (phonological) aspects of the brain*" (Lakoff and Johnson 1999, 498; emphasis in original). This raises the question of how neurons and cells in the body and brain treat the concepts they embody as embodied concepts. Lakoff and Johnson's identification (reduction) of concepts to neural structures is no answer. Nevertheless, the issue their theorizing raises is significantly different from the one which the evolutionary psychologists leave us with, since it encourages further analysis and thereby paves the way for knowledge-extension rather than closing off an avenue of knowledge-making.

In fact, Gerald Edelman has sought fit to theorize about the mechanisms of conceptual embodiment that Lakoff and Johnson's linguistics requires. Suffice it to say that developmental experiences are central to Edelman's view. He hypothesizes that people's experiences result in neuronal maps in the brain taking shape that are associated with important behavioral functions (Edelman 1992, 83). These developmental experiences are epigenetic in nature which means that certain experiences must take place before other formative experiences can occur. This helps explain why human language cannot be a "totally genetic innovation" for the empirical linguists (Lakoff and Johnson 1999, 6). At the same time, Edelman faces the rather substantial burden of showing that the neurophysiological processes he describes hook up properly with

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the linguistic and semantic roles they are intended to explain.[8] More work here (very important work) is needed.

The evolutionary psychologists do not appreciate epigenesis for epigenesis gives greater play to the role of the environment in determining development than that of a mere triggering effect. Epigenesis thus contradicts evolutionary psychology's assumption concerning the mind's hard-wired modularity. It also contradicts evolutionary psychology's emphasis on the role of the Pleistocene past in shaping minds and bodies today. For if our brains and organs are the products of "highly plastic responses to environmental inputs" (Hardcastle and Buller 2000, 321), the "here and now" becomes important. Overall, then, there are good reasons for looking upon Lakoff and Johnson's views with favor. Not only do they provide an appealing linguistics which links body with intellect, morphology with mind, and, as a consequence, sees language as a means of expressing psychological meaning (rather than as a means for mirroring an inert external world "out there"), it can also accommodate even as it overlooks evidence from developmental neurobiology.

Developmental Psychology

Developmental psychologists such as Annette Karmiloff-Smith have significant contributions to make to evolutionary psychology since they bring the integrative concept of development front and center rather than backing into it as the empirical linguists did. Karmiloff-Smith subscribes to "architectural" nativism – the idea that the brain does not come pre-structured with content-rich representations as the evolutionary psychologists suppose, but rather that it comes prestructured to "progressively *develop* representations via interaction with both the external environment and its own internal environment" (Karmiloff-Smith 1992, 10; emphasis in original). This leaves room for the rich constructivist processes for which she finds ample evidence. These innately-specified predispositions are what have been formed, and hence, selected-for by evolutionary processes. Therefore, for Karmiloff-Smith grammar *per se* is not "evolution's gift to the human species, but rather the capacity for learning grammar" is evolution's gift (Karmiloff-Smith 2001, 219).

The evidence for epigenesis is *the* reason evolutionary psychology's assumption regarding the mind's hard-wired modularity ought be modified rather than raised to the status of a metatheoretical assumption. Indeed, it is the reason why the evolutionary psychologists' combinatorial explosion argument against domain general mechanisms is not foolproof (as well as its poverty of stimulus argument and its argument that human plasticity renders people susceptible to social coercion and manipulation by the

[8] This standard was suggested to me by Richard M. Burian, Department of Philosophy, Virginia Polytechnic Institute and State University (personal communication). I take responsibility for bringing it specifically to bear upon Edelman's 1992 work.

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powerful). For the choice is not between domain general mechanisms that lack the special processing rules required to narrow down the infinite number of possibilities that arise as solutions to problem-situations and domain specific modules that come equipped with these special processing rules. There is a third alternative; namely, the conception of a mind that is responsive to rich constructivist processes that regulate development; a mind that comes predisposed to respond to certain features of the environment and which changes over time so that it is eventually able to respond intelligently to more and more. The upshot is a system that is far more "flexible in the face of change" with "fewer upper bounds on complexity" than one developed under tight genetic control a là evolutionary psychology (Karmiloff-Smith 2000, 184).

Developmental psychology makes important contributions to the other fields, too, through its core integrative concept. Yet, as previously indicated, evolutionary psychology's focus on the Blank Slate forces attention away from the interdisciplinary conversation that is taking place (on some matters) and should be taking place (on other matters) among these practitioners. For example, biological anthropologists draw the particular lesson that "'complementarity approaches,' those that speak of 'biosocial influences'," fail to take into account that processes of development are at once wholly biological and wholly social (e.g., how a child learns to walk [King 2000, 154; Ingold 1998]). Following Karmiloff-Smith, King has become a systems thinker who appreciates that natural selection pressures are modified by complex interactive processes that involve systematic feedback. Thus, King finds that the tool-using behavior of West African chimpanzees is "co-constructed across the generations (see King 1999), and in so doing selection pressures are altered" (King 2000, 155). For King, as for Karmiloff-Smith, knowledge is often embedded in social interactions, contained in the structure of an infant's relations with conspecifics, and hence, neither exclusively inside the infant nor outside in the situation (King 2002, 86–87; Karmiloff-Smith 1992, 23–124).

The broader reach of the perspective from developmental psychology also places its researchers in a position to elaborate upon those aspects of human cognition that are special as well as to make informed claims regarding the capacities of other species based upon comparative data. King is notably reticent about referring to the internal representational skills of the monkeys and apes she studies. She sticks firmly to the view that knowledge is best understood not in representational terms but in terms of social interaction (probably because her subjects do not speak). "Testing hypotheses to prove or disprove" whether and how non-human primates store information is "beyond the scope" of her research (King 1999, 43).

Karmiloff-Smith does not shy away from theorizing about the representational abilities of nonhuman primates, however. Taking children as her main subject of study, Karmiloff-Smith has a basis upon which to draw analogies between the abilities of young children and primates who demonstrate comparable abilities. Karmiloff-Smith points out that research indicates nonhuman primates are able to make and perceive distinctions in their communicative calls. This means that the acoustical ability to process sounds rapidly even when they vary in duration, interval, order, stress, and

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pitch is not exclusive to humans. Karmiloff-Smith concludes that Rhesus monkeys, who appear proficient at discriminating different food calls, probably "have developed internal representations of the different types of food and have categorized these according to acoustic differences in the associated calls" (Karmiloff-Smith 2001, 213).

Karmiloff-Smith's observation that humans as apart from monkeys and apes also "go beyond successful behavior" to exploit their linguistic knowledge (Karmiloff-Smith 1992, 32) is one that King might wish to bear in mind as she conducts her future research. King is certainly well disposed to accept Karmiloff-Smith's contention that "human language is 'new' in evolutionary terms only in that it makes novel uses of old capacities." Such capacities, Karmiloff-Smith says, "are described as 'old' because they are the result of gradual evolutionary adaptation and have their roots in our common ancestry with other primates." The specialized circuits for language in the human brain are not innate, but emergent features. "Language does *become* a specialized function of the human brain, but it does not start out that way" (Karmiloff-Smith 2001, 221; emphasis in original). Notably, though, this is a point King could never get at, not only because her focus is not on humans *per se*, but because she tends to equate developmental flexibility with social learning only.

Yet, the former does not necessarily entail the latter at all. Development also involves species-specific neurological changes that are not learned (Karmiloff-Smith 1992). So for Karmiloff-Smith what is truly special about the human brain is the neurocomputational properties it possesses so well-suited to processing the rapidly spoken sequences of language (Karmiloff-Smith 2001, 222). Again, this point would likely remain hidden from King's view since biological anthropologists are not going to find useful (since their subjects do not acquire speech) many of the new experimental paradigms that developmental psychologists now have available for studying language acquisition, which enables them to go beyond purely observational research and chart brain activity (Karmiloff-Smith 2001). Nevertheless, having this knowledge can only positively impact the experimental and observational data that the biological anthropologists collect. Interestingly, evolutionary psychology's emphasis on the speed of the brain's processing powers turns out to be a feature of some consequence after all but not one spurred on by, or directly associated with, the stresses and strains our ancestors faced living under the harsh conditions of the Pleistocene.

Relative to the empirical linguists, the developmental perspective of psychologists like Karmiloff-Smith adds the depth that is missing. Lakoff and Johnson maintain, as did Karmiloff-Smith's teacher Jean Piaget, that language is not an independently developing capacity at all but the product of the general structural organization of sensorimotor intelligence. In other words, language makes use of general cognitive capacities. Accordingly, Lakoff and Johnson find that linguistic categories reduce to cognitive categories just as they do for Piaget (Lakoff 1987, 57; Karmiloff-Smith 1992, 35). Again, like Piaget, Lakoff and Johnson see syntax and semantics as deriving from "embodied" sensorimotor and conceptual capacities (Piaget 1955; Karmioff-Smith 1992, 35; Lakoff and Johnson 1999, 479).

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Still, while Lakoff and Johnson provide a highly interactionist view of human cognition, it is a view which, as we have seen, generalizes over and therefore misses the developmental process itself as a crucial feature of embodied being-in-the-world interactions. One of the ways in which a developmental perspective adds depth to Lakoff and Johnson's linguistic one is the improvement it allows in their interpretation of how image-schemas function in cognition. For both sets of thinkers image-schemas are non-propositional conceptual structures that shape thinking. Developmentalists show that these schemas operate between language and perception, thereby facilitating semantic development. They describe image-schemas as emerging through a process that starts with perceptual primitives that later become redescribed into these schemas, and then later into language.

Karmiloff-Smith takes this process of redescription one step further through her introduction of the notion of representation redescription (RR). RR is the process whereby "information *in* the mind subsequently becomes explicit knowledge *to* the mind, first within a domain and sometimes across domains" (Karmiloff-Smith 1992, 18). RR is set up to happen once knowledge relevant to a particular domain has been mastered. It then "becomes applicable beyond the special purpose goals for which it is normally used and representational links across different domains can be forged" (Karmiloff-Smith 1994, 706). This is a concept Lakoff and Johnson could never have arrived at, however, since it involves understanding a piece of knowledge as domain-bound first before it becomes available for redescription to the rest of the mind.

It is worth noting, though, that the nuances of Karmiloff-Smith's view of linguistic development are ones that Lakoff and Johnson are predisposed to reject. For they take the position that image-schemas *are* the perceptual primitives and that they cannot be further broken down. Lakoff and Johnson cite recent neural modeling research to support their claim that the very same mechanisms responsible for perception and human sensorimotor abilities *could* be responsible for the conceptualization involved in language acquisition (Lakoff and Johnson 1999, 38). In fact, this was precisely Piaget's view.

But Piaget's view is being challenged in the light of a growing literature on infant development that shows representational competency emerging earlier than he thought. Piaget considered the infant's ability to form concepts as a higher order form of representation dependent upon developments occurring in the sensorimotor stage – the sensorimotor stage being the earliest stage in the development of cognition. In the sensorimotor stage, Piaget thought infants lacked the wherewithal to access any representational knowledge for recall or thinking. The developmental psychologist Jean Mandler now finds, to the contrary, that infants are capable of symbolic activity and representational recall very early on. Mandler believes this calls for a change in our understanding of the foundations of a symbolic or representational system in humans. She argues specifically that "an accessible conceptual system develops simultaneously and in parallel with the sensorimotor system, with neither system being derivative from the other" (Mandler 1988, 113). She proposes that infants are capable of processes of

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"perceptual analysis" – the name she gives to the mechanism that enables infants to encode information into an accessible system. Lakoff and Johnson overlook details of this sort. Nonetheless, details of this sort bear decisively upon the structure of the human cognitive architecture which they are concerned to discover.

Lakoff and Johnson also link modularity theory (which they regard as faculty psychology incarnate) to our cognitive unconscious. Doing so enables them to say that modularity thinking is not only a part of the Western mythos; it's a part of the human logos. They claim it is a way of thinking about cognition instantiated neurally in our brains. Lakoff and Johnson believe that we cannot help but think that the mind is composed as modularity theorists suggest (Lakoff and Johnson 1999, 414). Interestingly, this reasoning can be turned around to explain Lakoff and Johnson's own failure to take account of development in their theorizing. Simply put, the Container Metaphor leaves no room for growth (see Ingold 1998).

Can it be that this metaphor intrudes on Lakoff and Johnson's analysis causing them to treat the mind in the complete and bounded terms that is at the root of their failure to take development seriously?[9] We all get thrust into the world and come out with understandings in common. The role of the environment is highly general and abstract on such an account. It is as if they substituted the "Mind as Container" metaphor on which they claim their opponents rely with the "World as Container" metaphor. While this metaphor highlights our universal experiences, it hides the fact that developing organisms have unique experiential histories, a fact that leaves room for individual as well as cultural variability in their embodied understandings.

What Karmiloff-Smith would point out to them, though, is that "domain-specificity seems to win out over domain-generality in the early stages of language acquisition" (Karmiloff-Smith 1992, 35). She would point out that their stance, like the Piagetian, predicts that linguistic retardation should accompany severe cognitive retardation; however, it often does not. Studies show that children with hydrocephaly and spina bifida, as well as Williams Syndrome, demonstrate severe cognitive impairments while language ability remains intact (ibid.). And while it is not explicitly a part of Lakoff and Johnson's view that infants start out as purely sensorimotor organisms who lack the capacity to form concepts accessible for thinking until they reach a certain stage in their development (at which time they are able to transform their motor and perceptual schemas into symbolic concepts),[10] it is nevertheless relevant to their view that the research indicates overwhelmingly "that infants process linguistic data in linguistically

[9] In *Philosophy in the Flesh* Lakoff and Johnson emphasize that "contrary to long-standing opinion about metaphor, primary metaphor is *not* the result of a conscious multistage process of interpretation. Rather it is a matter of immediate conceptual mapping via neural connections" (Lakoff and Johnson 1999, 57).

[10] While Rosch, whom Lakoff cites, has done some work in the area of child development, Lakoff and Johnson never mention development in *Philosophy in the Flesh* (1999) or *Metaphors We Live By* (1980), and Lakoff only does so briefly in *Women, Fire and Dangerous Things* (1987). In the latter book, Lakoff states that children master basic level categories by the age of three, but that earlier on the categories mastered are different from adult categories (Lakoff 1987, 49–50).

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constrained ways." These constraints or "attention biases serve to build up linguistically relevant representations, not solely domain-general sensorimotor ones" (Karmiloff-Smith 1992, 32–33).

Further, since they give short shrift to development, Lakoff and Johnson overlook the importance of explaining conceptual change and even suggest, were it to occur, it would be slight and partial (Lakoff et al. 1999, 18). The topic of conceptual change leads to contemplation of crucial issues for cognitive development and cognitive anthropology, such as, the question of whether cognitive development in all cultures requires conceptual change and how far these developments take the culture from the conceptual systems they were born with as children. There arises the possibility that epigenetic conceptual development is responsible for cognitive incommensurability among cultures (Carey and Spelke 1994, 194). In their failure to take account of development, Lakoff and Johnson merely posit with a minimum of empirical support the universality of the metaphors we live by as a consequence of people's common subjective experiences. On their account, what we are born with, in a somewhat static fashion, remains.

More interesting still is that research indicates pronouns like "you" and "I" are not extensions of gestures or non-linguistic pointing. If these pronouns were extensions of gesture that would constitute support for the idea that sensorimotor action is a basis for the domain-general acquisition of language. As it turns out, the data show that the child's acquisition of personal pronouns is an integral part of domain-specific language development (Karmiloff-Smith 1992, 39). This finding reflects adversely on the biological anthropologists' hypothesis that orderly gesturing in apes is a precursor to human syntactical ability. For the data undermine the domain-general link in humans between the (cognizance of the) sign and its referent upon which this evolutionary scenario relies.

In all, we find that the juxtaposition of the aforementioned views reveals how each of the perspectives challenges and alters the others and especially how "development" challenges and alters them all. In a manner similar to the developmental process itself, we are able to see that it is through the unanticipated connections generated by continually reconstituted disciplinary interrelationships that enhanced perspective is achieved and knowledge is advanced. To this end, equality of intellectual authority, eschewed by the evolutionary psychologists, is essential.

Evolutionary Psychology in Context

The sociologist Ullica Segerstråle has written a complete and authoritative account of the sociobiology debate up to the year 2000. Segerstråle had the privilege not only of interviewing the key players; she was present at crucial meetings and conferences – a "witness to the beginning and evolution" of the conflict (Segerstråle 2000, vii). Her work, *Defenders of the Truth*, was composed with the insight that comes from participating in events as they unfolded and from the considerable knowledge that

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hindsight brings. By contrast, evolutionary psychology represents science still in the making at its incipient stage.

Given its recent beginnings, only a forward-looking analysis of evolutionary psychology is possible but such an analysis need not be a drawback. Indeed, during the original development of a theory, we are inclined to be more wary and critical of the new ideas we are asked to believe than when we are considering established science. Methodology is more likely to be scrutinized; scientists should not be surprised when even the lay person digs up references and exposes empirical shortcomings: "a pinch of ethnographic evidence, a tablespoon of generalizations from the contemporary scene, many assumptions about our savanna-loving ancestors, and large chunks of psychological surmise – served up with the certitude of a scientist. But let the buyer beware: when you pick apart the ingredients you discover they are not what Pinker says they are" (Ferguson 1998). With this remark the journalist Andrew Ferguson launches his critique of the single study Pinker produces, conducted by Martin Daly and Margo Wilson, to support the claim that neonaticide "has been practiced and accepted in most cultures throughout history." By contrast, the conclusions of established science are often remembered at the expense of their empirical warrant, flimsy or not.

Segerstråle's insight was that the scientists involved in the sociobiology controversy all perceived themselves as defenders of the truth with a capital "T" – the problem being they had different conceptions of where the truth lies. The insight I seek to bring forward relative to the debate over evolutionary psychology concerns objectivity. It is that objectivity with a lower case "o" is best achieved by expanding consideration to all the scientific viewpoints bearing on the field of problems at issue. I have tried to show this by illuminating the benefits evolutionary psychology gleans *about its own knowledge* from these other viewpoints.

The controversy sparked by sociobiology erupted on the field of evolutionary biology and the quarreling parties were mainly evolutionary biologists (Segerstråle 2000, 3). The advent of evolutionary psychology (and its incarnation as a transdisciplinary perspective) has resulted in laying bare the social sciences as new terrain for carrying on the battle. Whereas sociobiology's imperialistic intention with respect to the social sciences was among its most glaring features at its inception, its impact was only felt in the general form of a genetic determinism deemed *prima facie* objectionable by the disciplines through which this repercussion reverberated.

The social sciences remained insulated; testimony to this is reflected in reports that as late as 1994 there still existed experts in psychology unaware of the relevance of Darwin's ideas to their work (Crawford and Krebs 1998, 485).[11] One of evolutionary psychology's notable accomplishments has been the infusion of evolutionary perspective into the methodology of the social sciences. Its impact on the social sciences must now be reconsidered. As Darwin envisioned psychology being laid on a new foundation

[11] Noted as the personal communication of another psychologist to Crawford, April 11, 1994, in Crawford and Krebs 1998.

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(Darwin [1859] 1964, 488), one hundred and fifty years later, evolutionary psychology claims to have discovered its composition. Not everyone is convinced that the newly laid groundwork is the genuine article, however.

Biological anthropologists, empirical linguists, and developmental psychologists have made significant advances in their thinking on the evolution of cognition. Their research represents alternative points of entry into, and interaction with, evolutionary theory. While their contributions have been marginalized, at this early stage it is not too late to attend to their work and integrate their discoveries. It is in their critical edge, not in their confirming ability, in their differences from, not their similarities to, evolutionary psychology that these researchers have something to contribute to evolutionary psychology. In Foucauldian terms, it may be the case that the discourse of evolutionary psychology was born out of its exclusivity, its distancing itself academically from knowledge-makers in competing fields (inasmuch as newly constructed discourses, which hide subtle relations of power, operate through institutional practices of exclusion, not inclusion [Foucault 1977, 101]).

But there is another side to the picture. The other side shows that power/knowledge, so constructed, is isolating. Power/knowledge built on relations that lack reciprocity jams communication channels. This leads to weakness, not strength. In order to prevail, resistance to new knowledge becomes necessary. Thus, evolutionary psychology has been criticized for neglecting findings even in evolutionary biology. According to Leland and Brown, "the fact that few evolutionary psychology studies refer to the findings of modern evolutionary biology reinforces the suspicion that evolutionary psychology has become detached from recent developments in evolutionary thinking" (Leland and Brown 2002, 187).

If it is to flourish, evolutionary psychology must demonstrate a willingness to engage other researchers on equal terms. Science is a process. How science is practiced and whose voices are heard crucially influence the scientific products and theories that emerge. Add to this the fact that scientific debates aired in the public forum have profound societal effects – legally, morally, and politically – and the importance of guarding against miscarriages in its results is underscored. The issues of abortion, birth control, sexual discrimination, and homosexuality all invite a Darwinian analysis. Evolutionary psychologists must be held accountable as attorneys, judges, and policy officials take an interest in their theory.[12] Effectively, Joseph Rouse's question: "About whom and past whom do they speak?" (Rouse 1996, 247) demands our consideration.

Conclusion: Expanding Perspective

In light of the above, I suggest an approach to objectivity delimited to disciplinary interrelations worthy of exploration and development: I maintain that interdisciplinary

[12] Lionel Tiger, an anthropologist at Rutgers, says he knows of at least one Supreme Court justice and several Pentagon officials interested in applying evolutionary psychology in their professional work (see Horgan 1995).

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objectivity is a feature of the (e)quality of research relations and not a feature of the standard to which the practitioners of some fields subscribe to justify their competing claims to authority vis-à-vis one another. Interdisciplinary objectivity is expressed in the nature of the involvement of a field's practitioners with practitioners in other fields, their motivation to facilitate global interconnections between theories, and their proclivity to attend to data provided by external fields concealed from their own perspective. Interdisciplinary objectivity is exhibited in researchers' receptivity to exploring where those data belong in the overall field of constructed knowledge – recognized to be a messy hodgepodge of claims which aims, nonetheless, at common causes and explanations. Interdisciplinary objectivity is not a standard of authority but a relation among authorities. It's about practices of engagement, not terms for disengagement.

This adjusts the modernist view of academic disciplines and disciplinary relations to the postmodern realities of interdisciplinarity. The modernist view supposed that sharp and institutionally well-defined disciplinary boundaries existed and should be respected. Practitioners in disparate fields laid claim to authoritative jurisdiction over their particular areas of competence and agreed not to tread on the competencies of practitioners in other fields. Thomas Kuhn described the modern academic situation when he commented that unless practitioners share a paradigm they rarely investigate the same problems (Kuhn [1962] 1968, 161). This is no longer the case. Sharing problems is now the rule rather than the exception. Disciplinary relationships are taking shape among practitioners whose interests were formerly viewed as unrelated. As social conditions change, so too do conditions for the validation of knowledge. Whereas, objectivity first depended upon the individual and his resourcefulness as an impartial spectator,[13] then on the claims of the (well-defined) discipline and prerogatives of the expert, objectivity now depends upon (fuzzy) disciplines and what outside experts have to say about the connections they can make to a researcher's work.

Interdisciplinary engagements facilitated through boundary-crossings are inevitable and desirable as well as the norm. A new approach to objectivity that paves the way for knowledge-production by eschewing the hegemony of any one field (without denying centrality of subject matter) and promoting effective communication among all fields is in order. This means precisely that the rhetoric of partisan practitioners asserting issues closed when they are not, findings factual when they are not, deflecting focus away from areas of potentially productive research, or forcing focus upon research that blocks such efforts, obstructs objectivity by submerging latent knowledge from full view.

Evolutionary psychology's exponents are more or less guilty on all these counts. They have dismissed comparative data from biological anthropology by fiat; they have embraced the Blank Slate discourse displacing a roomier developmental one; they have affirmed the mind's hard-wired modularity against the evidence from neurobiology;

[13] In this instance, gender-neutral phrasing would be inaccurate, since the impartial spectator of the Western intellectual tradition was male.

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and they have promoted a research program, i.e., that of describing the mind's many modules, based upon all these unwarranted claims.

Yet, the more bits of knowledge we have, the greater the possibility that objectivity will elude us; hence, the greater the need for effective disciplinary and interdisciplinary communication and criticism. Indeed, we may not always know prospectively whether our efforts at interdisciplinary objectivity will prove to be auspicious. The phenomenon of "objectivity luck" inheres as much in the practice of science as "moral luck"[14] inheres in moral activity. Only the clashes produced by the situatedness of our findings in the field of overall data indicate we are close. These clashes instantiate the connection our findings have with data prized by *other* research communities. They resemble the clashes with reality about which Karl Popper speaks, clashes that occur when novel predictions extend reality beyond the scope of our formerly limited perspective.

Evolutionary psychology's longevity depends upon adjusting its claims to authority to bring them into line with the disciplinary realities of postmodern academia. Otherwise, it faces the prospect of being left behind even as it receives credit for having popularized (in a favorable way) the conversation now taking place on human cognition, credit that its predecessor theory, sociobiology, never managed to achieve. The conception of *human* as "thinking machine" may generate compelling insights but so too have the conceptions of *human* as "animal," as "embodied," and as "child." Evolutionary psychology needs these outsider views from biological anthropology, empirical linguistics, and developmental psychology to keep the conversation going as much as they have demonstrated their reliance upon it to clarify their own accounts.

In summary, it is detrimental to science for the evolutionary psychologists to act autonomously. By insulating their core tenets and elevating them to the status of meta-theoretical claims prematurely, the evolutionary psychologists render these tenets impervious to critical examination rather than openly negotiating their empirical warrant. This strategy may have helped to make them popular but it cannot make them right.

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[14] See Williams 1985 for further elucidation of this term.

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