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Book review

The Tangled Wing: Biological Constraints on the Human Spirit (2nd ed.)

By Melvin Konner, New York: Henry Holt and Co. Times Books, 2002. 736 pp. ISBN: 0-7167-4602-6, US\$35.00

“The Tangled Wing,” despite beginning with endearing modesty, is not modest in its scope. This second edition of the work spans topics that range from molecular genetics and neurophysiology all the way to the purported impending ecological crisis and the establishment of world peace. Konner’s delicate prose—and liberal application of literary allusion—recalls Stephen J. Gould’s touch with the pen, and the journey, though lengthy, is leisurely and scenic, as we are led through the field that Konner refers to as “behavioral biology” and its multiplicity of subdisciplines.

There are no shortage of these. The book begins with a section on “foundational” concepts, including some basics of evolutionary biology, hominid evolution, behavior genetics, language, and sex. The second major division of the book is structured around human motivational systems, including love, rage, grief, and gluttony. Each of these is covered in satisfying depth, and includes discussions of the relevant work in neurophysiology, comparative primate studies, developmental psychology, and so on. The discussions of hormone systems are of particular note here—one of Konner’s specialties, these detailed accounts will prove interesting and accessible to readers from more distant disciplines.

The balance of the work is three sections largely devoted to politics rather than science. Here, Konner mulls the import of human nature for the future and, in particular, the bounds that our evolved psychologies place on cultural change. About this he does not seem particularly optimistic. He fears economic disaster, ecological collapse, and nuclear exchange—indeed, the penultimate chapter includes a reference to a fictional apocalypse in the not-so-distant future.

This notion of biological tethers on the possible pervades the work and is the source of the metaphorical title—our biological endowment grounds the human spirit, which would otherwise, presumably, soar. Konner wrestles with the nature of the interaction between genes and environment throughout. Much of what he has to say on this topic echoes the point of view espoused by many sociobiologists and evolutionary psychologists. He suggests that seeing “innate mechanisms as separate from or opposed to behavioral change” (p. 24) and drawing “a hard line between instinct and learning. . .” (p. 28) are both “silly.” In the context of the illustrative if well-worn example of how changing diet can alleviate the effects of PKU, he talks of “the folly of partitioning mind and behavior into proportions of genetic and environmental causes” (p. 76).

And yet, at times, he seems to endorse the kind of distinction he wants to argue against. He talks about “behavioral features that. . . are fixed by the genes. . .” (p. 24) and later suggests that alcoholism in some monkeys “is almost certainly genetic” (p. 303). Later, he makes the claim that: “some traits are almost *all* gene. . .” (emphasis original), while other traits “reflect little or no genetic effect” (p. 439). It does not appear in these passages that he is referring to canalization or heritability, which would then render these claims eminently sensible. But he seems occasionally to try to partition the contribution of genes and environment for a given trait in particular organisms, which is precisely the sort of distinction he wants to deny.

This is potentially important because it illustrates an obstacle that biological-minded behavioral researchers confront with remarkable, and disturbing, consistency: assertions that particular traits have biological causal antecedents—e.g., evolution, physiology, etc.—are construed by critics as assertions that these traits are “genetically determined”—identical regardless of environment.

Why is this intuition so powerful, misleading critics across disciplines (see Kurzban, 2002, for recent examples) and even as erudite and subtle a thinker as Konner? This question is important both in the context of deepening the acceptance of biological approaches to behavior in the lay public and the academy, and in the context of pedagogy—we should understand the intuitions we face as instructors when introducing these ideas to students. Recent work in developmental psychology points to one possible answer to this question, which I sketch here.

My proposal turns on the idea that there are domain-specific cognitive mechanisms that apply different causal principles in different domains—that people use different modes of construal in understanding different aspects of the world (Dennett, 1987; Keil, 1989). So, for example, experimental evidence indicates that even very young children’s intuitive theory about the *physical* world embodies the assumption that there can be no “action at a distance”; this principle does not seem to apply in their intuitive understanding of *social* causation (Spelke, 1990).

More specifically, it has been proposed that there is a domain-specific system designed for understanding living things (Keil, 1994), and that this system embodies the notion that biological category membership is determined by an “essence,” an unobservable ill-defined something that makes the organism what it is, causing its species-specific features (Gelman, Coley, & Gottfried, 1994). An essentialist construal of an organism licenses numerous inferences about that organism, including its development, traits, and behaviors. It is not difficult to see how such a cognitive system could have been selected for—members of species share much in common because of the mechanism of descent, and a cognitive system that exploits this fact will generate many true inferences (Barrett, 2001).

Critically, an essentialist stance generates inferences that certain traits are impervious to environmental influence. For example, 4-year-old children believe that kangaroos raised by goats will nonetheless come to have pouches and hop (Gelman & Wellman, 1991). An essentialist construal implies that certain features of the organism—morphological and behavioral—are inextricably linked to the organism’s membership in its category.

Not all traits, of course, are construed to be caused by an organism’s essence. Children make different inferences about “biological properties” (e.g., eats weeds) than about

“nonbiological properties” (e.g., is dirty) (Springer, 1992). This suggests that the essentialism inference engine is selective in the traits that it assigns as caused by the organism’s essence. Loosely, then, it is possible that organisms’ traits are placed into relatively distinct categories in the language of thought: essential traits and “environmental” traits. The former are construed as impervious to change across environments vastly discrepant from the organism’s normal state of affairs, as the cross-fostering results suggest. This categorization system might embody a relatively unsophisticated view of the details of development—one possible impediment to understanding the interactionist view endorsed by biologically minded researchers. However, it is not obvious that this cognitive system would need to get its development “right” in its details in order to generate useful inferences.

This pattern appears to be true in the domain of humans as well. Without delving into the contentious questions surrounding the details of essentializing human groups (Atran, 1990; Carey, 1985), there is evidence that essentialism is applied to at least some human groups, and some traits are essentialized while others are not (Hirschfeld, 1996; Rothbart & Taylor, 1992).

So, finally, the foregoing makes it possible to make a guess about why, despite loud protestations on the part of their advocates to the contrary, evolutionary/biological hypotheses about humans such as the ones offered by Konner evoke a perception of genetic determinism. Perhaps hypotheses framed in the context of humans as biological entities prime the biological mode of construal. These arguments are then represented (incorrectly) in this categorical grammar as assertions that *traits previously outside the set of essential traits are, in fact, essential*. That is, if the language of thought includes biological (essentialized) and nonbiological traits, then the observation that trait or behavior X is evolved or has a “genetic basis” might be getting represented as a claim that the trait or behavior is a product of the species essence.

It might be even worse than that. When humans are conceived as one species among many, biological claims are taken to be claims about universal behavior. However, when human *groups* are essentialized (Gil-White, 2001), biological claims might be construed as the claim that different groups have different essences and, more specifically, that certain traits are caused by these essences. This leads to the inference that the claim made by the biologically minded researcher is that differences in the trait in question between groups are inevitable and unchangeable. In the modern political climate, it is easy to see why this understanding of claims underpinned by “genetic” or “biological” arguments elicit fierce resistance.

This analysis helps to explain why misunderstandings are so pervasive, entangling even Konner’s intuitions. Biological analyses—references to genes, evolution, and physiology—might plausibly be activating an existing, powerful domain-specific inference engine. It happens that whereas this system is well designed for many kinds of interactions with the social and biological world, it is ill-suited to cope with the details of gene-environment developmental interactions. This also explains why claims of cultural variability are offered to counter evolutionary claims (e.g., Eagly & Wood, 1999; Kasser & Sharma, 1999)—if an evolutionary argument is construed as suggesting a behavior or trait is essential, then variance on this trait would represent a contradiction.

At this point, these speculations should be treated with caution. There are no doubt many reasons that arguments in emerging disciplines are misunderstood by the broader community

of scientists. Any number of factors might be working against dispassionate and careful analysis of biological arguments about human psychology and behavior (Pinker, 2002). Konner's occasional lapses into essentialist reasoning should make us pause to consider the psychological origin of this seductive way of thinking.

Nonetheless, despite any minor inconsistencies, the primary message—that biology is indeed relevant to understanding human behavior—comes through with unmistakable clarity. On this point, Konner is unwavering. Indeed, while his voice is often conciliatory, he is appropriately strong with the environmental and cultural determinists. If he occasionally seems to endorse a certain amount of essentialism, he is firm in rejecting its polar opposite. It is difficult to envision a thoughtful reader coming away with anything less than a profound appreciation for the biology that underpins human behavior.

This is due, in part, to one of the book's primary strengths, its thoroughness. The exposition ranges across the conceptual spectrum and aptly weaves together different levels of analysis. In the chapters on emotions, we learn about relevant work in genetics, neurology, hormones, development, and behavior. Moreover, this compilation is impressively up to date, including numerous findings that postdate the first edition of the book.

One notable omission is any discussion at the cognitive level of analysis. Indeed, the word "cognitive" appears in the index only as a modifier of "therapy." This neglect is relatively benign, but will seem somewhat puzzling for those who endorse the view that the sieve of selection acts on the design of the information-processing procedures in the human mind.

For completeness, it is important to mention that politics plays a prominent role in Konner's opus. Unlike some popularizers of science, Konner is unafraid of expressing his views on policy. His particular bent is not difficult to detect and, for some, the continuous pandering to the left might get somewhat tiring. In places, it seems that he is sympathetic to the view that it is a Bad Thing that it turns out that biology is relevant to human behavior—indeed, he often seems to be apologizing for this being the case. It is almost as if, knowing that the political left has historically scorned biological approaches, he believes he must struggle to assure liberals that he is nonetheless one of them.

None of which detracts significantly from the impact of the work. With the recent tragic death of Stephen J. Gould, evolutionary biology has lost one of its most eloquent spokespeople. True, Gould was not sympathetic to the enterprise in which many of the readers of *Evolution and Human Behavior* are engaged, but he did excite a generation about the beauty to be found in the study of biology. "The Tangled Wing" reminds us that the community of biologically minded researchers in the social sciences should be thankful to have as one of their spokespeople someone with Konner's fluid eloquence, surpassing breadth of knowledge, and unyielding courage.

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