BOOKS: PSYCHOLOGY

Humans Really Are Different

Richard A. Shweder

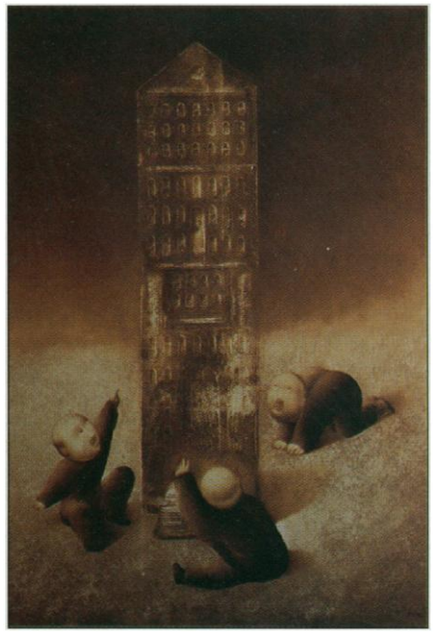
The expression "seductive ideas" is Jerome Kagan's euphemism for popular fallacies in the behavioral sciences, and he overturns far more than three of them in this brilliant and provocative book. Kagan, a professor of psychology at Harvard University, is a near-legendary figure in the field of child development. It is accurate, but superficial, to describe *Three Seductive Ideas* as a critique of some baneful errors committed by social scientists, which are unmasked by one of psychology's most erudite and rigorous experimentalists: Accurate because Kagan's treatise is a contravention written by a master of the trade. Superficial because the book deserves to be read more deeply. Kagan offers a candid defense of the moral and spiritual nature of human beings, written in opposition to several powerful intellectual currents, including evolutionary psychology, computational neuroscience, and cognitive ethology.

Three Seductive Ideas
by Jerome Kagan
Harvard University Press, Cambridge, MA, 1998. 240 pp. $27.50. ISBN 0-674-89033-7.

Groucho Marx once quipped "Whatever it is I'm against it!" Kagan, however, is a more discriminating skeptic, and he has very good taste. Three big ideas top his hit list of fashionable yet dubious assumptions.

The first idea is "infant determinism," the notion that the attitudes, aptitudes, and sentiments of adults are decisively shaped by their experiences in the first two years of life. "Somewhere in America today," Kagan writes, "a mother-to-be is playing a cassette recording of a Beethoven sonata near her abdomen in the hope that her unborn child will become sensitized to good music." Kagan disputes some highly publicized claims by neuroscientists that parents can stimulate creativity, smartness, and brain development in their infants by looking at them and bathing them in talk. Don't be seduced, he says. "No scientist has demonstrated that particular experiences in the first two years produces a particular adult outcome in even, say, one-fifth of those exposed to that experience." In discussing current concerns with an infant's attachment to its parent, he comments: "I suspect that most of the men who committed those terrible atrocities [in Bosnia, in Rwanda, in Nanking] had loving parents during their childhood years."

The second doubtful assumption is "hedonism," the notion that human beings are primarily motivated by a desire to maximize pleasure and minimize pain. "Today," Kagan writes, "evolutionary arguments are used to cleanse greed, promiscuity, and the abuse of stepchildren of moral taint." We should not be seduced by the ideas that nature is "red in fang and claw" and that human beings bear the indelible stamp of their animal origins, he cautions. Instead, he identifies the most powerful motive for human beings as the desire to gain and maintain a feeling of virtue, the desire to be "good"—a desire unique among sentient animals. With regard to their moral sense, Kagan suggests, human beings are demonstrably a special creation.



The third idea on Kagan's hit list is "abstractionism," the notion that the real causes of behavior are deep, law-like, and small in number, and remain the same across species, cultures, epochs, everyday contexts, and experimental task environments. Kagan speaks out against psychological abstractions (including the famous "g" factor of "IQ" and various other supposed global traits such as "neuroticism" or "emotionality"). Again, we should not be seduced. "Psychological traits are not stable structures hidden deep in the person's core." Different methods (for example, a self-report and various physiological measures) for assessing the "same thing" ("anxiety," for example) do not correlate. Given that research findings are local and method-dependent, he cautions us not to draw overly ambitious generalizations about all human beings. Speaking as a developmentalist, he suggests that even our norms for mental health should not be overgeneralized. "The belief that humans can and should be free of anxiety," he argues, "is one of the distinguishing illusions in Western thought in this century."

Kagan's critique of "abstractionism" allies him with an impressive yet curious assortment of scientists and humanists from Johann Herder and Giambattista Vico to Franz Boas, Lee Cronbach, Donald Campbell, Walter Mischel, and Clifford Geertz. They have called for the creation of a social science database founded squarely on what Geertz terms "thick description." They have argued that in the social sciences, "generalizations decay" (Cronbach) and that "higher-order interactions are the rule, and main effects, ceteris paribus generalizations, the rare exception" (Campbell). In *Three Seductive Ideas*, Kagan puts the message this way: Observe behavior, specify the context, and pay attention to local cultural and historical meanings, and you will be less tempted to make unwarranted claims about abstract traits or universal psychological processes.

Of course the idea that generalizations in the social sciences are typically restricted in scope is not news, and it has long been suspected that one of the reasons human behavior is so context- and meaning-sensitive has something to do with the "spiritual" nature of human beings. Here spiritual is a code word for a type of being—let's call it a human being—who is free and willful enough to do things for reasons, self-conscious enough to entertain ideas about the significance of its experiences, planful enough to be aware of the long-term consequences of its actions, and transcendental enough (sufficiently divinely inspired) to be motivated by a desire to be "good" and to feel justified in what it does. "A hairless gorilla with a big brain" does not quite capture the nature of such a being.

Kagan fully appreciates that point. He is critical of evolutionary psychologists because they see too much continuity between human and non-human animals and make a travesty of human morality by reducing it to beastly selfish motives. He is critical of cognitive ethologists because

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they see too much continuity between human and non-human animals and attribute human-like conscience, morality, and mental life to monkeys and other non-human animals. Rejecting both views, Kagan suggests that there is no non-human animal model for human pride, shame, and guilt, because the presence of the concern with right and wrong and the desire to feel virtuous are "like the appearance of milk in mammalian mothers, a unique event that was discontinuous with what was prior." In other words, "Not even the cleverest ape could be conditioned to be angry upon seeing one animal steal food from another."

In the end it appears that Kagan is quite prepared to defend, on scientific and secular grounds, the dualistic Cartesian claim that human beings have a soul, and non-human animals do not. That message may be out of favor these days, or against the current. It may surprise Darwinians, materialists, and reductionists of all sorts. At the very least, however, it calls for a deep reading of this rather courageous book. The idea of the duality of human nature (of meaning over and above mechanism, of mind over and above body, of angel over and above beast), and of the remarkable discontinuity of human nature from everything that came before, is alive and well for Kagan precisely because he has such high regard for facts. What exactly was "Descartes' error" anyway?

BOOKS: DEVELOPMENT

A View from Switzerland

Claude Desplan

Describing the intellectual lineage of an eminent scientist is as difficult as tracing the events that led to a major discovery. In his book, *Master Control Genes*, Walter Gehring gives a precise personal view of his own lineage and of the process that led to the discovery of the homeobox, the "Rosetta stone of developmental biology." The book is in part a textbook and in part a historical perspective. Its overview of biology in general and of developmental biology in particular emphasizes Swiss contributions over the last century.

Gehring's chronology of important steps towards understanding the genetics of development begins with Friedrich Miescher's 1871 discovery of nucleic acids, which he called "nuclein." In letters to his uncle Wilhelm His, a famous embryologist, Miescher formulated ideas about nuclein as the hereditary material. He proposed the very interesting model that hereditary information is stored in the particular stereochemical forms of a given molecule. His contributions are slowly being rediscovered, and this book will help this revival. A century later, molecular biology has established many more principles of genetics. The molecular era of developmental biology, however, had to await the advent of recombinant DNA technology and the realization that homeotic genes were the "key to understanding development."

Master Control Genes in Development and Evolution
The Homeobox Story
by Walter J. Gehring
Yale University Press, New Haven, CT, 1999. 254 pp. $35. ISBN 0-300-07409-3.

The author provides colorful examples of *homeosis* (the "change of something into the likeness of something else"), ranging from early discoveries of William Bateson and Edward Lewis (*1*) through his own findings on the molecular aspects of the homeotic genes. Gehring's mixture of scientific facts and history, with his very personal interpretations, will interest developmental biologists. In particular, his account will help them relive the very exciting time that preceded the discovery of the homeobox, which is portrayed more as a revolution that came with the development of the techniques of molecular biology than as a race between rival teams. One feels the excitement in the lab where much of this happened and sees how, in retrospect, things could have been predicted; this is science with passion. Scientists working in developmental biology will recognize the characters and interactions in this story, and will be able to follow the events that led to identifying the homeobox. Readers from other fields will enjoy this first part for its personal character and its historical perspectives.

The second part of Master Control Genes will reach a different audience. It is a more detailed and difficult survey of the different modes of development in a series of organisms, from worms (the "European mode of development," where lineage is critical) to mice (the "American mode of development," where who you know matters more). This survey leads to a description of research that followed the discovery of the homeobox, especially the major contributions that came out of Gehring's lab. The focus on fushi tarazu (ftz) neglects much of the work on the identification and molecular studies of other segmentation genes, but it is clear that ftz is a powerful paradigm. Through the descriptions of the technical advances that were used to study ftz, we can recognize how much of that period's progress was achieved by adapting to higher organisms techniques developed for bacteria. Even structural studies of the homeodomain were then at the forefront of technology. Ten years later these procedures may seem routine; these chapters help explain how many of the tools of modern molecular genetics (promoter fusions, mis-expression experiments and, most importantly, enhancer traps) were developed.

The phrase "master control genes" in the book's title may irritate some developmental biologists. Gehring's description of the genesis of the experiment "redesigning the body plan of the fly," where mis-expression of the homeotic gene *Antennapedia* (*Antp*) led to the transformation of an antenna into a leg, and his conclusion from that experiment that *Antp* is "a master control gene for leg morphogenesis," may enhance their annoyance. Separated from all the hype, however, the experiment shows that homeotic genes confer identity to the cells, even if this is "only" a positional identity. Thus, the results represent a landmark, despite not providing a molecular explanation for transdetermination, which remains the holy grail for Walter Gehring.

Although *Antp* may not be the holy grail of the leg, *Pax-6* comes close to exhibiting the effects expected of a "master regulator of eye development." Gehring's account in the final chapter is surprisingly modest, considering that the ability to induce ectopic eyes in *Drosophila* by mis-expressing the *Pax-6* gene from any species still remains one of the most striking experiments in biology. Whether *Pax-6* is the "master gene," or is only a critical regulator sitting near the top of a hierarchy of genes, its potency and its conservation demonstrate its critical importance in eye morphogenesis.

Master Control Genes offers a vivid introduction to recent findings on how genes control development. In reading it, the layperson will also learn a great deal about the process of discovery through Gehring's particularly warm and personal perspective. Developmental biologists might not care as much about the technical descriptions, but they, too, will enjoy Gehring's accounts, which may seem like looking back at old family movies from their youth.

Notes

1. Bateson described a large collection of homeotic variations, including transformations of antennae into legs or hind legs into hind wings (in insects), and eye into antennae in crabs. Lewis devoted most of his career to an extensive genetic analysis of the *bithorax* complex in *Drosophila*.

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