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borders on sophistry. The complexity that Mr. Berlinski apparently fears holds as true in the development of the heart as it does in the brain—try, for example, to predict the exact location of capillaries in identical twins.

But we do not need to invoke mystery or magic to explain the development of the heart, and Mr. Berlinski never gives us a cogent reason for thinking that the situation is any different with the brain. Biology may be more complicated than mathematics or the idealized science that Mr. Berlinski longs for, but the fact that something is complex does not mean that it is not lawful.

GARY MARCUS
New York University
New York City

TO THE EDITOR:

The prospect that centuries of religious, intellectual, and cultural reference points will melt into an unrecognizable new landscape of scientific knowledge understandably provokes unease, visceral resistance, and even alarm in those who sense the magnitude of the coming changes. These feelings are even sharper for evolutionary psychologists, because our work forces us to live within the strange realities of this barely explored new world. This sense of impending dislocation creates an appetite for seemingly authoritative dismissals of the primary claims of evolutionary psychology, which leading intellectual journals accordingly feed. The appeal of these crafted dismissals is that they give permission to intellectuals to think the convenient: that they do not have to deal with this new world, or revise or surrender any of their beliefs or intel-

lectual allegiances because—what a relief—it is a spurious revolution. Time to sleep.

Yet critics typically fail to take the one step that is indispensable to making their criticism authoritative or even germane: they do not actually read the primary literature or know its content, and so doom themselves to arguing with their own confusions, trafficking in myth, rumor, mischaracterization, and irrelevancy. A brief letter can catalog only a few such confusions present in David Berlinski's essay.

Natural selection is not "a freefloating form of agency" but an observable, well-modeled physical process like osmosis or convection, deductively entailed by the application of set theory to self-replicating physical systems. Mr. Berlinski's claim that "field studies have proved notoriously inconclusive when it comes to natural selection" betrays a striking unwillingness to expose himself to the primary literature, in which predictions derived from selectionist theories beautifully explain thousands of observations with economy and mathematical elegance.

More substantially, evolutionary psychologists are supposed to be abashed because Mr. Berlinski has held us up to his Procrustean "model for what science should be"—Newton's use of differential equations to describe mechanical systems—and found us guilty in his imagination of an insufficient use of differential equations. However impressive this is meant to sound to the mathematically untrained, it provokes laughter in practicing scientists, who use a broad array of mathematical and formal tools in their work. It reveals a basic misunderstanding of the nature of sci-

ence, no more trenchant than criticizing evolutionary psychologists for not wearing lab coats. Sciences progress not by superstitiously aping the surface forms of past successes, but by applying or inventing whatever formal tools are made necessary by the nature of the phenomena under study. The evolved informational and regulatory functions of the brain are better captured by computational formalizations than by differential equations.

Since Newton, a broad array of new mathematical tools has been developed and applied to an enormous range of sciences. Logic, set theory, combinatorics, probability theory, statistics, algorithmics, geometry, information theory, signal-detection theory, control theory, game theory—all play an active role in evolutionary psychology, alongside differential equations. Examples include kinematic geometry in Roger Shepard's evolutionary approach to psychophysics, which led to his National Medal of Science; frequentist approaches to probability, used by ourselves and Gerd Gigerenzer to explore evolved mechanisms for judging risk; and our reliance on game theory and various standard and non-standard logics to investigate evolved reasoning programs enabling human cooperation. Much of the edifice of modern science, from the discovery of the genetic code, to biochemistry, cell biology, developmental biology, immunology, neuroscience, zoology, and geology would not pass Mr. Berlinski's superstitious test, because their rich content is not expressible by differential equations.

Mr. Berlinski's other major argument is that the findings of evolutionary psychol-

ogy are essentially "trivial." This is the standard claim of critics who wish to be evasively deflationary, without having to assume the burden and risk of showing how any specific findings are actually wrong. Although some findings of evolutionary psychologists may turn out to be wrong, the charge of triviality betrays an elementary unfamiliarity with the field.

Here are some nontrivial discoveries. The laws of thought are not the laws of logic, and do not consist primarily of general-purpose, content-free learning rules (as previously believed). Human rationality is achieved through a heterogeneous collection of reasoning specializations, with their own theoretically predicted, proprietary, nonstandard logics ("innate ideas"), whose diverse structures reflect the structures of various enduring, ancestral adaptive problems. The foundation of human economic activity is an evolved neural mechanism specialized for reasoning about exchange. Evidence confirms the predicted existence of a previously unknown mechanism designed to use ancestrally reliable cues to detect close genetic relatives, to intensify family love toward those individuals, and to activate sexual aversion toward them (i.e., Freud had it exactly wrong). The moral sentiments so far investigated have the characteristics predicted by the hypothesis that they evolved as game-theoretic solutions to the adaptive problems posed by small-group interactions.

Other studies have unpacked the evolved functional logic of anger, mapped the cognitive machinery that causes humans to see each other as members of coalitions, showing how this turns

on and off the tendency to categorize others racially; and identified theoretically predicted, previously unknown factors that place children at greatly increased risk of physical and sexual abuse. Our colleagues' research on universals in mating and sexual attraction, which Mr. Berlinski derides as trivial, falsified mainstream anthropological theories and formed the basis of a sweeping explanation of cultural swings in sexual mores (see James Q. Wilson, "Sex and the Marriage Market," in COMMENTARY, March 2002). More fundamentally still, the theoretical tenets that have ruled the social sciences for the last century—for example, that human mental content is predominantly the arbitrary local product of social conditioning acting on a blank-slate mind—have been decisively falsified.

This is not a trivial harvest for two dozen researchers, working almost entirely without funding for the past two decades. Such a small group would have had no impact if the ideas were not broadly correct, well-grounded in the natural sciences, and theoretically and empirically powerful. Who knows what might be accomplished if the enterprise were ever funded, or if critics felt an obligation to learn its content and report it accurately?

JOHN TOOBY
LEDA COSMIDES
*Center for Evolutionary
Psychology
University of California
Santa Barbara, California*

TO THE EDITOR:

To the layman, David Berlinski's arguments may sound erudite and incisive, but to the scientist they are sophomoric and outlandish.

"Natural selection," he informs us, "is certainly not a force of nature" because the only basic forces of nature are gravitation, the electromagnetic force, and the strong and the weak force. This is like claiming that Hemingway was a poor writer because he used words, whereas we know that the only basic units of written communication are letters of the alphabet.

Mr. Berlinski tells us that the great biologist Motoo Kimura showed that the bulk of genetic evolution is due to "random drift" rather than to natural selection. This may be true—the strength of selection at genetic loci is still not fully understood—but Kimura and his colleagues never doubted that phenotypic traits that impose fitness costs on their bearers (e.g., the human brain, with its huge energy needs) cannot persist except through natural selection.

Mr. Berlinski's goal is to criticize the efforts of evolutionary psychologists to treat the human mind as an evolutionary adaptation. But he shows his misunderstanding of the real issue in the following paragraph:

Thus, when Steven Pinker writes that "nature does not dictate what we should accept or how we should live our lives," he is expressing a hope entirely at odds with his professional commitments. If ordinary men and women are, like [Pinker] himself, free to tell their genes "to go jump in the lake," why then pay the slightest attention to evolutionary psychology—why pay the slightest attention to Pinker?

The answer is completely transparent: nature strongly affects, but most likely does

Why Is the US Holocaust Memorial Museum Silent About Arab Anti-Semitism?

- The US Holocaust Museum has NEVER had a program, exhibit, lecture or web page devoted to current Arab anti-Semitism.
- Yehuda Bauer, director emeritus of Yad Vashem, writes: "The language of Islamism is plainly and clearly a genocidal one. They are striving for a repetition of the mass murder of Jews."
- Yet the Holocaust Museum, the US authority on genocide, is silent. It is the silence of the 1930's. It is the silence that pretends there is no danger, and encourages inaction.
- The core of the Museum's mission is public education. It applies this to Rwanda, the Sudan and Darfur. But on Arab genocidal incitement against Jews, silence.

The Museum Director challenges audiences:
"What would you have done then?"

We ask the Museum: What are you doing now?

Ask the Museum to change its policy of silence. Write or call:

Fred Zeidman, chairman of the Board
202-488-0400 ext.489
fzeidman@woodrock.com

Sara Bloomfield, executive director
202-488-0400 ext.415

Please join us

Holocaust Museum Watch