BOOKS: ANTHROPOLOGY

How We Got Here and Where We Are Going

Mark Ridley

What does evolution have to tell us about human values and the human prospect? Most biologists' answers, I suspect, would fall somewhere between "nothing" and "nothing much." But in *Human Natures*, Paul Ehrlich takes a more positive view. In his words (though I should say that he usually expresses himself more elegantly than this): "consideration of the evolutionary past of our human natures can be helpful in thinking about sensible approaches to broad social, environmental, and philosophical problems."

Human Natures
Genes, Cultures, and the Human Prospect
by Paul R. Ehrlich
Island Press, Washington, DC, 2000. 543 pp. $29.95. ISBN 1-55963-779-X.

Considerations of this kind are the topic of Ehrlich's final two chapters. He leads up to them with a narrative of human evolutionary history. Along the way, he reviews the basics of evolutionary biology, the fossil evidence of human origins, language and the origin of culture, religion, food and sex, the agricultural revolution, and the rise of states. The themes of these chapters will be familiar to professional readers, but Ehrlich's synthesis is superb. It is based on a huge range of reading: the 330 pages of the main text are supported by 180 pages of notes and references set in smaller type. Moreover, the references are focused and modern; they are not an antiquarian list of classic contributions. The result is that Ehrlich's narrative itself is impressively up to date. The paleontology and archeology, for example, build on Klein's 1999 and 2000 accounts (*1*). Recent thinking on the origin of language and the Neolithic revolution is all there. Almost the only piece of "living-fossil" thought that I detected was in some sharp remarks, buried in an endnote, about cladism. Ehrlich was one of the founders of a competing school of taxonomy, called phenetics, and his comments may be indulged. Few other biologists, however, would deny that cladism has won. Ehrlich may still want to make a stand for phenetics, but he is on a battlefield that has been lost and is now almost lonely.

The material is presented in an introductory fashion, perhaps for a college-level audience. For most of the topics Ehrlich covers, he looks at the main positions and draws sensible (and, where appropriate, noncommittal) conclusions. On concealed ovulation, for instance, he discusses five papers and concludes "although there has been some fascinating speculation, science has not yet produced a persuasive, complete story of the significance of concealed ovulation." But *Human Natures* is a personal account, not a textbook, and Ehrlich occasionally dispatches his opponents with a sneer rather than arguing against them in a balanced way. Indeed, on one page he dismisses the global fishing industry and multinational corporations (apparently all of them) with an apparent wave of the hand. Readers, however, will easily adjust to these asides, and, for a student audience, the author's enthusiasm more than makes up for his occasional lack of balance. Ehrlich includes his readers in the arguments, and his pleasure in thinking about science clearly comes through. "I could be wrong here," he notes at one point: "Differences of opinion among well-informed people such as Chomsky, Pinker, Lieberman, and Bickerton are standard in science and one of the things that makes science so much fun."

Two general, somewhat political themes run through the narrative. Anti-racism is one. Ehrlich gives an exceptionally clear account of the genetic evidence against race, and does not get bogged down in the statistical indexes. He illustrates how human variation is discordant for different characters, rather than falling into racial clusters, and he explains how hardly any genetic differences exist between races. If you sample two random copies of a random gene from two random human beings, there is about an 86% chance they'll be the same and a 14% chance that they'll differ. If you sample the same way, but from two human beings of the same race, the chances are more like 86.5% and 13.5%. Practically all human genetic variation lies within, rather than between, racial groups.

The other theme is that individual genes cannot specify much of the details of human behavior. Ehrlich here favors what might be called a "poverty of the gene numbers" argument. Human beings are built from 60,000 or so genes, which simply is not enough to specify many of the 10^{14} to 10^{15} synapses in the brain. For this reason, Ehrlich concludes that most of our behavior cannot be directly genetically controlled.

Ehrlich finally turns to what evolution has to tell us about human affairs. He begins with the compelling examples of antibiotics and pesticides, which almost certainly would not be used so indiscriminately if evolution had been factored in. He looks at some plausible if untested arguments about our possibly out-of-date dietetic preferences for fats and sugars, and about the virulence of infectious diseases.

He finishes with some ecological speculation. He suggests that on current trends we are heading for an ecodisaster. "The need for a novel evolutionary approach can be seen in the most critical mismatch between biological and cultural evolution: the fact that the design of the human perceptual system makes it especially hard for people to recognize the most serious environmental

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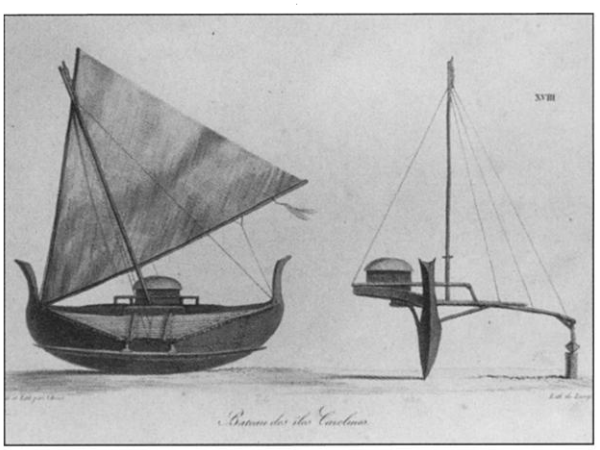
BROWSINGS

On the Road of the Winds. An Archaeological History of the Pacific Islands Before European Contact. *Patrick Vinton Kirch.* University of California Press, Berkeley, 2000. 446 pp. $45, £28.50. ISBN 0-520-22347-0.



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Building on the recent explosion of findings from archaeological excavations and a wide range of anthropological disciplines, Kirch synthesizes some 40,000 years of human adaptation to Oceania. His account highlights the landscape changes that followed from the development of intensive economic systems and the growth of large populations. He also discusses the complexities of the indigenous trading systems and sailing technology, such as this Caroline Islands sailing canoe drawn by an artist who accompanied the 19th-century Russian explorer Otto von Kotzebue.

problems." Fact? Well, maybe. An assertion like that makes me immediately wonder whether there is no bio-cultural mismatch and whether we might not be well aware of our environmental problems. Ehrlich can also sound casual and high-handed about political change; democracy does not get a look in. On one page, we learn that population growth is to be reversed, that consumption is to be reduced, and that our sociopolitical system "must undergo dramatic revision." He laments that various international bureaucracies "still have not gained significant regulatory control over the way human beings treat one another." I'd like to have heard more (indeed, anything) about the votes of ordinary citizens.

But I do not wish to end on a negative note. Human evolution is the greatest story in history, and it is the topic of fast-accumulating evidence and a head-spinning scope of thought. We need new, sensible introductory syntheses every two or three years. For reasons implicit in the length of Ehrlich's reference list, we do not get them that often. Ehrlich's approach in *Human Natures* was not inspired by how to win friends and influence people—evolutionary psychologists will (with good reason, I fear) dislike it. But I doubt whether anyone will write as good a book of this sort on this topic for another two or three decades.

References

1. R. G. Klein, *The Human Career: Human Biological and Cultural Origins* (Univ. of Chicago Press, Chicago, ed. 2, 1999); *Evol. Anthropol.* **9**, 17 (2000).

NOTA BENE: FILMS

Seven Scientists Up Close

Me & Isaac Newton
Michael Apted, Director
First Look Pictures, Los Angeles, 2000. See: http://www.clearblueskyfilms.com/documentaries/main/

Over a good dinner or a drink, scientists can often be coaxed into summoning up memories of what inspired them to choose a life of research. The more articulate of the species will also enlighten us on what it means to be a scientist and do science. Such reflections form the core of Michael Apted's new documentary film *Me & Isaac Newton*, which profiles seven researchers who are also superb communicators.

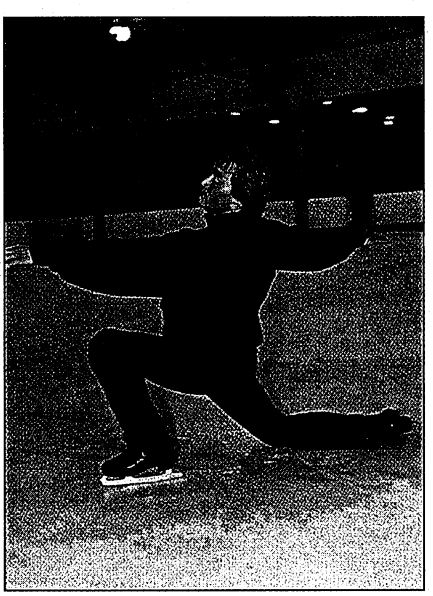
The seven come from a wide spectrum of fields and career points; they range from Maja Mataric, a young robotics researcher at the University of Southern California, to the late Nobel laureate Gertrude Elion, who never finished her Ph.D. but spent many decades searching for new cancer drugs with great success. With *Newton*, Apted is following the map of his earlier film *Inspirations*, in which he profiled seven artists, probing their work and their motivations. The new film also recalls Apted's most famous documentary work, the series of *Seven Up* and its sequels, which recorded the lives of a handful of British schoolchildren at seven-year intervals up into adulthood. Success with this technique absolutely demands the choice of charismatic, articulate people and Apted has been savvy in his selections.

He lets his subjects talk at length about their early influences and fields of research. Individual styles and motivations are diverse. Ashok Gadgil, an Indian physicist who works on developing cheap water purification systems, wouldn't dream of doing science unrelated to social good. Michio Kaku, a theoretical physicist at the City University of New York, wants to "read the mind of God." Cognitive scientist Steven Pinker relates that he grew up in a Jewish community in Montreal that was verbal and argumentative. From his childhood he developed a love of reasoning through debate and, perhaps not surprisingly, chose to study the human mind through human language.

The story of MacArthur Fellow Patricia Wright is remarkable. As a housewife in Brooklyn in the 1960s, she became interested in the antics of her pet owl monkey. From there, she got funding to answer her questions and won a position at a university (in that order), and then went on to study endangered lemurs in Madagascar. The interviews with Gertrude Elion are a particular treasure. She died a few months after filming, but we see her both feisty and generous with high school kids who are thinking about a life in science. We are also granted entry into the very personal feelings of Karol Sikora, a World Health Organization cancer researcher interested in gene therapy, who grapples with religion and medical ethics while agonizing over the problem of delivering health care to the developing world.

We also see these scientists wrestling with what makes science different from other human activity. All agree that it means a willingness to be grandly wrong—"sticking your neck out," as Pinker puts it—which is not often a comfortable place to be. And we see that these seven scientists, all exceptionally successful in their fields, have other thoughts and concerns. In fact, the film's title comes from a remark by Michio Kaku that while relaxing on the ice-skating rink, he can empty his mind. "There is nothing except me and Isaac Newton" controlling the glide and spin of his figures on the ice.

Other filmmakers have passed through some of this territory before, notably Errol Morris who explored themes of creativity with *A Brief History of Time* (about Stephen Hawking) and *Fast, Cheap, and Out of Control* (about four unusual individuals with widely diverse interests). But Morris sometimes strives to be entertaining by using his subjects almost as comic props in a big joke, complete with hyperclose closeups, funny music, and clever editing. It's good, effective stuff, but at the cost of really finding out what makes these people tick.



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Apted, instead, opts for a quieter style, which might be surprising given his forays into mainstream feature filmmaking such as the recent James Bond movie *The World Is Not Enough*. This less flashy approach forces him into a much tighter corner. Thoughtful talk is intercut with scenes of labwork and exotic locales, but the price Apted pays is that his subjects come off seeming a bit too self-serious. What's missing in some cases is more evidence of the mental playfulness required of a creative researcher, something that came through strongly in his *Inspirations*. Some of this is unavoidable, as Apted himself has acknowledged. Making lab procedures and theoretical ideas visually compelling is tough under any circumstances. Nonetheless, with this film Apted has created an engaging field report on why scientists do what they do.

—DAVID VOSS