

HOW HUMANS ADAPT

"Man is a singular creature. He has a set of gifts which make him unique among the animals: so that unlike them, he is not a figure in the landscape -- he is a shaper of the landscape."

Jacob Bronowski

"This ancient pattern of restrained reproduction appears optimal for the production of healthy, intelligent young. A return to such a pattern after nearly 10,000 years of high fertility is not in opposition to human nature or reproductive biology. It would, in fact, be most compatible with the patterns of parental investment and reproductive biology shaped by millions of years of evolutionary history."

Jane Lancaster

How do we adapt to booming population and disappearing resources? How can we unlearn cultural prejudices that keep us from adapting for long term survival? Can our knowledge of how humans adapted biologically and culturally in the past give us insights for the future? Do we no longer have the biocultural checks and balances of the past? These serious and wide-ranging questions are explored with varying pessimism and optimism buttressed by scores of research cases in a recently published interdisciplinary collection of essays, How Humans Adapt: A Biocultural Odyssey (Donald J. Ortner, editor. Washington, D.C.: Smithsonian Institution, 1983, pb. \$9.95).

This stimulating book records the Smithsonian Institution's Seventh International Symposium of the same title, organized by Donald Ortner, at the National Museum of Natural History, November 8-12, 1981. Such renowned scholars as René Dubos, James V. Neel, Jane Lancaster, L.L. Cavalli-Sforza, Asa Briggs, Lawrence Angel, Betty Meggers, Napoleon Chagnon, Stephen Toulmin, and Mary Catherine Bateson joined with about 45 other participants in the scholarly dialogue on how humans did, do, and will adapt. Included in the published volume are essays, bibliographies, commentaries, and discussion notes. Brief editorial summaries highlight the major ideas in each essay. Anthropologists, geneticists,

historians, biologists, philosophers, economists, demographers, and theologians ponder human's past and possible fate in hopes that collective insight will bring new understanding, if not new solutions.

The essays move from the past behavior of hominids and the consequences of agriculture to an analysis of present



earth resources, health changes, urban environments, and food in developing countries, and end with the future of democracy, education, and ethical issues. No one agrees on what should be done about the many problems raised but several often contradictory solutions are offered.

For secondary school teachers this book is an excellent reference and a window on an international meeting of scholars debating intriguing topics with spirited and sometimes humorous exchanges. For the anthropologists How Humans Adapt shows how other disciplines treat adaptation. The scholars good naturedly criticize each others' methods, challenging for example, whether an anthropological or historical approach better illuminates the unconscious pattern of marriage choices.

Running through most of the essays are nagging worries about the disastrous rate of population expansion and the threat of nuclear war and tensions about the value of individualism and the validity of sociobiology (see especially the exchange between Toulmin and Chagnon). Most essayists wrestle with the relationship between culture and biology; one is surprised by the emphasis on cultural adaptation by Cavalli-Sforza, the geneticist, and Kenneth Boulding, the economist. All agree that agriculture led to more and more births and altered attitudes to favor unbridled fertility.

Looking for insight from the past, Jane Lancaster, a primatologist, reviews non-human primate data and asserts the value of hunter/gatherer reproductive and child care patterns for humans today. For example, unlike non-human primates, human females have a camouflaged time of ovulation which means a male worries less about competition and spends more time with a female and her children. Human juveniles, unlike other animals, do not feed themselves and in hunter/gatherer groups juveniles are not expected to contribute to the food supply. There is a high level of care with adults indulgent toward the child, and menopause, apparently unique to humans, allows the last child to reach adulthood under her/his mother's

care. The hunting/gathering pattern consists of: 1) a long period of sterility following menarche, 2) late age for first birth, 3) continuous nursing (two or three times an hour), 4) long lactation (often 4 years), 5) low natural fertility, 6) four year birth-spacing, 7) low frequency of menstruation, and 8) early menopause. Unlike most women today who spend much of their reproductive years menstruating, hunter/gatherer women spend most of their time nursing. Lancaster encourages us to return to the hunter/gatherer model as one way to control population expansion that is especially plaguing Third World countries.

For other scholars the past does not illuminate the future. Mark Cohen, an archeologist and commentator, cogently argues that crowding stresses humans because they lose control of their actions and privacy and are overwhelmed by too many interactions and too many decisions. Humans have devised ways to handle these stresses which the hunting and gathering way of life did not have to deal with at all. Cohen asserts this lack of crowding explains the lack of sturdy shelters, clothing, and other formal ways to divide and schedule interactions among hunter/gatherers. For James Neel, a geneticist, the present genetic problems are not ones that our ancestors struggled with. From studying the Yanomamo and other groups, Neel argues that beneficial genetic diversity has decreased due to the decimation of "primitive" groups and that disadvantageous diversity has increased due to improved medical care for individuals with birth defects and to increased mutation rates from nuclear warfare.

Disavowing Neel's gloomy view, Cavalli-Sforza, as a "geneticist of culture" champions the supremacy of cultural adaptation over biological. He points out that the recent studies in the U.S. (1974), U.K. (1976), and

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France (1982) indicate that poor children adopted in families of high socio-economic standing show practically no intelligence difference from children born and raised in higher classes. Recent twin studies in 1981 and 1982 have revised the estimate of genetic heritability of I.Q. from 70% to 80% down to 30%. Cavalli-Sforza states we exaggerate our problems. Both advances and problems are increasing he argues but cultural evolution is rapid and more solutions exist today than ever before.

Echoing the idea that cultural adaptation is quicker and more flexible than biological adaptation, Ortner rejects cultural laissez faire and thinks cultural innovation is "crucial to the future of human society". So whatever encourages responsible and informed individual creativity may help solve future problems.

What can be done about the desperate shortages of food and energy today exacerbated by rising births in many less developed countries? Edward S. Ayensu, a biologist, encourages use of all edible foods, low technology with the exception of inexpensive imported computer technology, and avoidance of heavy dependence on steel production. Nevin Scrimshaw, a nutritionist, focuses on increasing the variety of foods and reducing our dependence on animal proteins. If people do not have enough nutritionally well-balanced food to eat, they will not be able to do as much productive work and will be more susceptible to disease. A former physician in India, George Carstairs, warns that high technology is not the answer, either, in medical care in developing countries.

For the future the essayists argue the moral necessity of curbing individualism, while paying more attention to the community. Global cooperation and sharing are needed, values interestingly integral to the lives of hunters and gatherers. More effective family planning is necessary of course, and education needs to foster individual creativity. The city will be home for more and more people and, according to Asa Briggs, our stereotype of the city as a hostile environment is false.

Although the general educated lay audience will not find How Humans Adapt easy to digest given the length (560 pages) and the scholarly language used in many articles, the book is useful for persuading us that modern culture cannot sustain the reproductive behavioral patterns that were suited to the first agricultural societies. The book encourages us to break out of our often tunnel vision by revealing many interdisciplinary insights. The dialogue of scholars suggests that we are biocultural beings for whom, as Kenneth Boulding argues, catastrophes are part of human adaptation and peace may be more probable than destruction -- because it is a better idea. Who can argue with that?

JoAnne Lanouette