

two volumes, the first of which was devoted to Lewontin's more technical contributions to evolution. In this second volume, the authors discuss interconnected historical, philosophical and sociological aspects of evolutionary thinking. These are all broad subjects to which Lewontin has actively contributed. He has been responsible for exposing common scientific and logical errors, and challenging accepted views of society, evolutionary biology, and the relationships between them. Lewontin is one of those rare individuals who is an excellent scientist, has a deep social commitment, and is also a true intellectual. The volume starts with a typical Lewontin essay followed by an interesting interview, and both give the reader a strong flavour of Lewontin's concerns and attitudes. Lewontin is clearly also a great teacher, who has influenced all of the people that have studied and worked with him (and many of those that have just read him). The 26 essays following Lewontin's own essay and the interview were written mostly by former students and colleagues, and all testify to this fundamental influence through adopting his deeply skeptical, critical attitude. Not all are in agreement with him, although most are, but they are all sensitive to the historical framework in which genetic and evolutionary ideas have developed, to conceptual issues, and to the political influences and effects of past and present evolutionary ideas.

Thinking about Evolution does require that you make the effort of thinking, which is refreshing and much needed in these days of cheap preaching of biological wisdom. Most of the contributors avoid the inflated rhetoric associated with the 'Darwin Wars', although the views of the authors are quite clearly critical of the selfish gene view of the world. The essays cover many subjects, and, inevitably, not all are of the same quality and eloquence. For example, I was not very convinced by an essay defending neo-Darwinism, nor impressed by an essay advocating a Platonic approach to the study of cognition and rationality, but most essays in the volume are both readable and informative. We learn, for example, that eugenic arguments were not so much the result of bad biology, but rather due to bad politics; that genetic studies of the Indian caste system lead to a better appreciation of social determinism, not genetic determinism (there is great genetic overlap among the castes). We also learn how population genetics developed in early 20th century France, how economic interests define genetic thinking and practices in agriculture, about the many methodological problems in behavioural genetics, and about the effects of social and economic interests on the increase (and more rarely, the decrease) of cancer. There are also interesting essays on philosophical issues, mainly about units of selection and the constructive aspects of organism — environment interactions. The breadth of the book is in a sense a virtue, but the lack of a strong common thread among the different essays makes continuous reading tedious. I certainly recommend the book, and I believe it will be very useful (in spite of its forbidding price) for teachers of the history, sociology and philosophy of biology. Some essays, mainly the historical and 'political' ones, may also interest evolutionary biologists and geneticists; they provide a useful

antidote to the naïve beliefs in genetic utopias that are so fashionable today.

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Genes, Peoples and Languages. Luigi L. Cavalli-Sforza. Penguin Books, London. 2000. Pp. 228. Price £18.99, hardback. ISBN 0 713 99486 X.

Anthropological genetics is a fascinating field that provides us with a reflection of our past; a view of our species' history based on patterns of genetic diversity among and within living human populations. Genetic data can be used to detect signatures of past history that might otherwise be unavailable, dealing with events before written or oral history. The study of the genetic history of humans is also often difficult to understand from a literature necessarily laden with complexities of molecular biology, population genetics theory, and statistical methods. Teaching this subject is often complicated by a lack of material clear enough to present to the non-specialist. Fortunately, *Genes, Peoples and Languages* helps fill this void. This book provides a non-technical summary of relevant work on human genetic diversity and history, much of which has been dealt with in the comprehensive publication *History and Geography of Human Genes*, written by Cavalli-Sforza, Menozzi, and Piazza (1994, Princeton University Press).

The book is organized into six chapters. The first nicely introduces the use of genetic data for analyzing population history, covering a variety of topics in a clear and non-mathematical presentation, including 'race', molecular biology, genetic distance, and isolation by distance. The second chapter reviews the evolutionary forces and gives one of the clearest discussions I've seen on building evolutionary trees (even though I would argue that trees are not always the most appropriate way to illustrate genetic distances between populations *within* a species). Chapter three discusses the ways in which genetic data have been used to help reconstruct the origin of modern humans, including discussion of 'African Eve', Y-chromosome polymorphisms, and microsatellite DNA. Discussion of these technical issues is done clearly and concisely, although I disagree that the data provide strong support for a recent African origin of *Homo sapiens*. I would argue that the data are also compatible with a much older history of the lineage leading to modern humans that includes genetic contributions from 'archaic' humans outside of Africa. Chapter four focuses on the genetic evidence for late Pleistocene and Holocene population expansions, with primary attention given to the work of the author and colleagues on the demic diffusion of agriculture from the Middle East into Europe. Chapter five reviews the author's work on correlations between genetic and linguistic 'trees', arguing for correlated

dispersions of genes and culture. The link between language and genetics is expected as a result of gene flow, although I wonder how much of this correlation might reflect isolation by distance rather than large-scale dispersions and migrations. As with the modern human origins debate, alternative models often can be applied to the same patterns of variation. Chapter six describes briefly some of the author's ideas regarding cultural transmission and evolution with particular attention to linguistics, providing a link with earlier chapters.

Although I disagree with some of Cavalli-Sforza's interpretations of the modern human origins debate, I thoroughly

enjoyed this book. It was clear and informative, written by a pioneer in anthropological genetics. The easy-to-understand treatment of genetics and population genetics, combined with a reasonable price, make this book worthy of consideration in a variety of anthropology and biology courses.

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