

ecologists' leaders — and by the views of the authors themselves on the stances the movement should take.

After a brief introduction to the basic features of the French nuclear programme and the history of anti-nuclear action up to 1979, the book plunges into the arguments of the group meetings. The reports of these discussions give the reader a direct account of the points of view and styles of thought of some French anti-nuclear circles. Herein lies one of the values of the book, although the details of who said what are often rather lengthy and repetitive, and there must be considerable uncertainty as to how typical the opinions expressed are of the movement as a whole.

The authors' intention is, however, not just to document the various views held by French nuclear activists. Their main aim is to outline Touraine's vision of the anti-nuclear movement's potential social role and to report the history of his attempt to convert the activists to that view. For Touraine, a social movement first has to identify its adversary; this he sees not in industrial society, capitalism or the nuclear industry as such, but in "technocratic power". Secondly, the movement has to recognize the "stakes" of the struggle. Here, Touraine rejects the fundamental opposition expressed by many anti-nuclear protesters and suggests that they should formulate concrete "counter projects" such as alternative forms of energy production with a positive effect on employment. In short, Touraine and his colleagues want to lead the anti-nuclear groups to more pragmatic forms of political action. At the same time they perceive the groups as the central agent of social change and modernization. In opposing "technocracy" they lead the way towards the "post industrial society". In the end, though, the authors succeeded in converting only a limited number of activists to their position.

Finally, what contribution does *Anti-nuclear Protest* make to our understanding of the nuclear issue? The authors' approach leaves many questions open. There is, for example, no convincing attempt to show where the political support for a transition to a post-industrial society might come from. Moreover, the book's account ends in 1979, contains no new material or updating, and is in certain respects already overtaken by events. Nevertheless, Touraine does a service by extending our conception of the anti-nuclear movement beyond the traditional one of a single-issue pressure group. By representing anti-nuclear protest as part of a wider process of potential political change, this book, like Wynne's, raises questions far beyond its specific subject matter and will be an important reference point for future work in the area. □

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Talking patterns

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The Myths of Human Evolution.

By Niles Eldredge and Ian Tattersall.
Columbia University Press: 1982. Pp. 196.
£15, \$22.50.

AN INSPIRATIONAL 1972 paper by Niles Eldredge and Stephen Gould has provoked fruitful empirical work and active debate about whether evolution proceeds mostly by phyletic gradualism or by punctuated equilibrium (Stanley's "rectangular" evolution). Characterization of evolution within the hominid clade was traditionally based on assumed gradualism and some anthropologists still dogmatically defend pan-gradualism among hominids. Eldredge now joins Ian Tattersall, an anthropologist at the American Museum, to counter these Darwinian gradualist young and old fogs in a new book on human evolution. The authors undertake their mission with revolutionary fervour, arguing rectangular evolution for the hominids and their culture, even insisting that we must grasp the episodic nature of change in order to understand where our species is going.

The first four chapters outline the development of gradualism and the case against it. This third of the book is lucid and literate, reading so smoothly that one may slip past unsupported or overstated arguments such as "... speciation is what triggers all but the most trivial examples of adaptive change" (p.62). The authors warn: "... reductionism pervades the minds of most active scientists today" (p.13). They also dislike creationism, sociobiology ("biological determinists") and myths. Despite some overdone dialectic — "The myth that change itself produces new species is gone. Instead it is new species that produce change" (p.61) — much of this section is enjoyable and I even agreed with parts of it.

Chapters 5 and 6 comprise the hominid half of the book. They differ little from sections of introductory anthropology textbooks except where the authors offer revisionist historical accounts of discovery and interpretation of the hominid fossils. For example, we are told that Louis Leakey "quickly swallowed his disappointment" when Olduvai Hominid 5 didn't substantiate his preconceptions about early true man in eastern Africa. In fact, Leakey was so convinced that this fossil was his pre-conceived true man that he proposed the outrageous name *Titanohomo mirabilis* for it before formally naming it *Zinjanthropus* and describing it as man's direct ancestor!

Eldredge and Tattersall actively perpetuate some myths in their effort to promote punctuated evolution. For instance, the authors note episodic change in the "sudden" appearance of Oldowan stone tools. How one wonders, could the first

stone tools gradually record themselves? The authors are also content to invoke Mary Leakey's myth that the Oldowan tool "kit" consisted of a wide variety of functionally distinct tools used by food-sharing hominids occupying shelters they constructed at home bases. Binford's appropriately entitled *Bones: Ancient Men and Modern Myths* has done much to eradicate such tales.

In summing-up Eldredge and Tattersall claim that they really did look for gradualism but just couldn't find it. They announce that they have "debunked" and "skewed" the myths of gradual biological evolution and cultural development, concluding: "The patterns, in other words, speak for themselves. They are there for all to see. We have not simply invented them to fit a set of preconceived notions" (p.176). I remain sceptical of this but satisfied that the authors could make radioactive decay appear punctuated — all you have to do is look closely enough.

It is not clear who the book was written for. There is no preface. If intended for the popular audience, why the detail? I stopped on p.144 to note all cranial capacities, dates and specimen numbers — the results: 800; 1,000; 1,000; 2,000; 1.7; 800; 700,000; 450,000; 900; 1,200; 1.6; 0.4; 0.5; 1.2; 3,733; 900; 1,200; 1.2; 1,100. Yet, amazingly, the book is devoid of references and lacks a bibliography. For these reasons it misses popular, student and professional audiences. This is sad because there are some good things in here.

Lennon and McCartney wrote: "You tell me that it's evolution — well you know, we all want to change the world". Eldredge and Gould were revolutionary in insisting that palaeontologists should treat stasis as data but we cannot change the world of the past to fit our preconceived notions no matter how much we might want to. The history of the hominid clade simply lacks adequate documentation to choose between gradualist or punctuated alternatives on most scales. Evolution on the molecular level clearly proceeded both ways. There is good palaeontological reason to suspect that the rectangular model best accommodates Pliocene and early Pleistocene hominid evolution. On the other hand, Cann's recent analysis of the human mitochondrial genome suggests that anatomically modern humans could not have arisen in a recent speciation event. Could feedback between complex social interaction, technology and Pleistocene hominid morphology have provided the gears for the motor of natural selection to turn in producing one of the few cases of Darwinian gradualism on a geological time scale? It is too early for definitive answers just yet, but it is worth remembering that Homer's myth did become Schliemann's Troy. □

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