

cal claims. But that's all I want to claim for it. You can't make the direct empirical statement that mammals arose from non-mammals."

Lewontin had made what seemed to me to be a deduction—a materialist's deduction. "The only problem is that it appears to be based on evidence derived from fossils," I said. "But the cladists say they don't really have that kind of information."

"Of course they don't," Lewontin said. "In fact, the stuff I've written on creationism, which isn't much, has always made that point. There is a vast weight of empirical evidence about the universe which says that unless you invoke supernatural causes, the birds could not have arisen from muck by any natural processes. Well, if the birds couldn't have arisen from muck by any natural processes, then they had to arise from non-birds. The only alternative is to say that they did arise from muck—because God's finger went out and touched that muck. That is to say, there was a non-natural process. And that's really where the action is. Either you think that complex organisms arose by non-natural phenomena, or you think that they arose by natural phenomena. If they arose by natural phenomena, they had to evolve. And that's all there is to it. And that's the only claim I'm making."

He reached for a copy of his 1982 book *Human Diversity*, and said: "Look, I'm a person who says in this book that we don't know anything about the ancestors of the human species." (He writes on page 163: "Despite the excited and optimistic claims that have been made by some paleontologists, no fossil hominid species can be established as our direct ancestor. . . .") "All the fossils which have been dug up and are claimed to be ancestors—we haven't the faintest idea whether they are ancestors. Because all you've got, and the cladists are right. . . ." He got up and began to do his famous rat-a-tat-tat with a piece of chalk on the blackboard. "All you've got is *Homo sapiens* there, you've got that fossil there, you've got another fossil there. . . . this is time here. . . . and it's up to you to draw the lines. Because there are no lines. I don't think any one of them is likely to be the direct ancestor of the human species. But how would you know it's that [pat] one?"

"The only way you can know that some fossil is the direct ancestor is that it's so human that it is human. There is a contradiction there. If it is different enough from humans to be interesting,

then you don't know whether it's an ancestor or not. And if it's similar enough to be human, then it's not interesting."

He returned to his chair and looked out at the slanting rain. "So," he said. "Look, we're not ever going to know what the direct ancestor is."

What struck me about Lewontin's argument was how much it depended on his premise that all organisms have parents. In a sense, his argument includes the assertion that evolutionary theory is true. Lewontin maintains that his premise is "empirical," but this is so only in the (admittedly important) sense that it has never to our knowledge been falsified. No one has ever found an organism that is known not to have parents, or a parent. This is the strongest evidence on behalf of evolution.

Our belief, or "faith," that, as Patterson says, "all organisms have parents" ultimately derives from our acceptance of the philosophy of materialism. It is hard for us to understand (so long has materialism been the natural habitat of Western thought) that this philosophy was not always accepted. In one of his essays on natural history reprinted in *Ever Since Darwin*, Stephen Jay Gould suggests that Darwin delayed publishing his theory of evolution by natural selection because he was, perhaps unconsciously, waiting for the climate of materialism to become more firmly established. In his 1838 *M Notebook* Darwin wrote: "To avoid stating how far, I believe, in Materialism, say only that emotions, instincts, degrees of talent, which are hereditary are so because brain of child resembles parent stock." Darwin realized that the climate had changed—that evolution was "in the air"—in 1858 when he was jolted by Alfred Russel Wallace's paper outlining a theory of the mechanism of evolution very similar to his own.

The theory of evolution has never been falsified. On the other hand, it is also surely true that the positive evidence for evolution is very much weaker than most laymen imagine, and than many scientists want us to imagine. Perhaps, as Patterson says, that positive evidence is missing entirely. The human mind, alas, seems on the whole to find such uncertainty intolerable. Most people want certainty in one form (Darwin) or another (the Bible). Only evolutionary agnostics like Patterson and Nelson and the other cladists seem willing to live with doubt. And that, surely, is the only truly scientific outlook. ■

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