

Stephen Jay Gould

An Interview

Brian J. Alters

Recently, Stephen Jay Gould visited my class to answer students' questions. Most of the two-hour discussion concerned the creation/evolution issue in relation to science education. Unfortunately, the answers were only enjoyed by this small group; however, Dr. Gould graciously agreed to take time out of his very busy schedule to be interviewed for *ABT* readers. Stephen Jay Gould has won a long list of prestigious awards for both his excellence in paleontological research and his literary achievements; among them are the MacArthur Foundation "Genius" Fellowship, the Silver Medal from the Zoological Society of London, and a Pulitzer Prize Finalist. He teaches biology, geology, and the history of science at Harvard University.

Alters: U.S. Biology educators are on the front line defending the scientific factuality of evolution against multiple-pronged creationistic attacks. Many of these educators consider your writings to be the most authoritative on the subject, and most creationist leaders consider you the principal evolutionist and anti-creationist. Do you gladly accept these roles?

Gould: Oh, I'm certainly happy to be the whipping boy of the creationists; I think that's an honor—that's a clear honor. After all, they used to distort Darwin, then in the last generation Dobzhansky, and now they're distorting me. That's fine. Some evolutionary biologists say that I'm laying myself open to it by stirring up a certain amount of controversy within evolutionary theory. They argue that we should all stick to the straight and narrow or else the creationists will make hay of our discord. I think the only honorable intellectual response to that is to say that, "Look, we can't cover up debate within our field. Debate within a field is healthy; that's what we must point out to the public." The fact of evolution is well established. We debate as any healthy science does; we debate mechanisms; we have different ideas about how evolution occurs. That's all within a context of having no

doubt that it occurs. I think to suppress debate within a field and rally around the flag of some nonexistent consensus about details of mechanisms would be intellectually dishonest. So I say we have to foster debate within the field while making it clear to everyone that we have no doubt of the phenomenon; we are only arguing about the mechanism.

Alters: While teaching my science education classes here at Harvard, I found that approximately 20% of my graduate students freely admit that they do not find the evidence for evolution compelling. How do you feel about your own institution sending out science educators who reject the factuality of evolution?

Gould: That really is astonishing. I'm used to hearing all sorts of surveys that say half of Americans don't believe—I've always considered creationism to be a regional phenomenon. It's, after all, a consequence of the history of pluralism within Protestant churches; it's a movement of the fundamentalist fringe. I didn't think it was widespread anywhere else, and the fundamentalist Protestant fringe is largely a rural southern phenomenon—that's oversimplifying—but you're not used to running into creationists in New England. New England, particularly the Boston area, is quite intellectual; you don't have many intellectual creationists. Its religious base is obviously Catholic, and there are not many Catholic creationists because reading the Bible literally has never been an issue in Catholic circles. In my own undergraduate students, I have not run into many creationists. So it's surprising for me to hear that; although I suppose the graduate school recruits students from throughout the country, so you're getting pretty much a cross section.

Alters: Do you concur with Richard Dawkins when he wrote that, "It is absolutely safe to say that, if you meet somebody who claims not to believe in evolution, that person is ignorant, stupid or insane (or wicked, but I'd rather not consider that)."

Gould: It depends upon how one construes the word "ignorant." That is, if by ignorant one means in the literal sense someone who is just unaware of the evidence, then I suppose it's right, but that's a non-interesting statement. I think what Richard means in

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that statement is the usual vernacular meaning that ignorant may be a stupid person, and I think that's not right. The phenomenon of creationism is not a phenomenon of stupidity; it's a phenomenon of the irrationality of the true believer. There are many smart people who have various irrationalisms because of their psyche, their religious upbringing, or whatever. They believe something so deeply that they are not able to turn their constituted and perfectly well-working rational structures upon it. Of course, some creationists, that is people who have it as a political ideology in the service of something else, who are using creationism to try and bring about a right wing theocracy in the country—they may be wicked. Others are truly ignorant in the sense that they are just not able to assess the evidence. I would say a large number of your day-to-day creationists are people who aren't stupid. They may not be well educated, but they are just not inclined to open their perfectly well-functioning minds to this subject because it is so important to the health of their psyches that they believe that humans are special in that sense of having been created. So I think Richard's statement is too strong because I assume he means ignorant in the usual vernacular sense of a stupid person in general.

Alters: Does it concern you that after so many years of popularizing the science of evolution, the polls continue to state that approximately half the people in the U.S. reject evolution as factual?

Gould: Yes and no. Yes, because you don't like to see a great degree of ignorance in the technical sense of being unaware of things. No, because almost anything you test people on, they don't know. It's just the nature of education in the country; it's part of the history of American antiintellectualism, and even though people put their hours in in schools, their hearts aren't in it. I don't know if that many people probably know why there are seasons—probably the same number of people know how many days it takes the Earth to go around the sun. How many people could identify the century in which Millard Fillmore was President, if they even know he was? There is so much ignorance in the country that I don't know that half the people not understanding a basic fact of biology is any greater degree of ignorance than half the people not understanding basic facts of most other subjects. If I thought it was 50% in truly active hard-line, thought-out opposition to evolution, I would be very discouraged. I think most of that is soft or passive opposition and therefore correctable with decent education.

Alters: You have written multiple times to the effect that the creationist leaders are basically a very small camp of Protestant fundamentalist literalists. Does

this small camp have a large effect on approximately half the nation or do you see their effect as minimal?

Gould: First of all, they're pretty well organized politically, and they have dedicated organizations, and they raise a lot of money; so they make a certain amount of fuss. They certainly force us to spend a lot of time challenging them in courts and fighting in local school boards. If they didn't exist at all and there wasn't that tradition, then probably you wouldn't have this 50% passive rejection. Since everyone would be teaching evolution and teaching that it wasn't incompatible with religion, you probably would have a high degree of acceptance. It would be passive acceptance, but at least it would be acceptance. So yes, I do think they have an influence beyond their numbers.

Alters: Have you seen any major shifts in the creationist strategies over the decades?

Gould: Yes. Their shifts in strategy are mostly forced upon them by the political nature of the legal struggle. In the '20s their strategy was to get legislatures to pass anti-evolution laws. John Scopes was convicted under a statute that said it was a crime to teach that man is descended from a lower order of animals. In 1968, the Supreme Court threw those kind of laws out on First Amendment grounds. That is when the creationists switched to this strategy of inventing this oxymoronic term "scientific creationism" and claiming that they weren't religious at all but were rather just presenting an alternate science. It happened to square remarkably well with the Bible, and then they weren't asking to kick evolution out because the court said they couldn't do that. That's when they started these equal time laws, and they were successful in the late '70s. They got two statutes passed in Arkansas and Louisiana. Then we beat them in Arkansas and Louisiana by summary judgment; it went to the Supreme Court and we won there in 1987. So that pretty much closed off the state legislative root, which had been their main strategy since the '20s. The current main thrust of trying to take over the local school boards dates directly from the defeat in the Supreme Court.

Alters: What would you recommend biology instructors do to help counteract creationist pseudoscience?

Gould: The obvious one is not just to push for the inclusion of evolution—it has to be more than that; you have to push for the inclusion of evolution as the focal concept of the life sciences. I think it's important that biology educators not soft pedal evolution or teach it as a small and peripheral voluntary subsidiary topic at the end of a long course. I think one needs to teach it on day one and point out that it's the central concept and unifying notion of the biological sciences. You were reminding me that Dobzhansky's most

famous quotation, "Nothing in biology makes sense except in the light of evolution," was actually a title of a paper he wrote for this journal, and that's right; it has to be placed centrally. The worst thing that happens is that creationists often become effective because cowardly teachers or teachers under pressure just leave evolution out. After all, there is no law that states you have to teach evolution. We have to be strong and overtly explicitly teach evolution as a central concept.

Alters: Some science educators advocate bringing up the topic of creationism in the biology classroom in order to demonstrate how science differs from other ways of knowing and to demonstrate why creationism is not science. What do you think about this strategy?

Gould: I think it depends on the nature of one's classroom and who's there. It is a perfectly honorable strategy. My only fear is that in certain circumstances, particularly in a classroom where one has a lot of creationists, it might just lead to an endless haranguing political debate. After all, it's not in itself a scientific topic, but science instructors teach scientific methodology—what is science and what isn't science—and here's a very good example of something that is masqueraded as science. So to bring it up in order to show why it isn't—I guess my feeling is that's a perfectly valid and, in fact, pedagogically a very interesting approach, but I would only do it if it would be effective.

Alters: It has been your policy not to publicly debate creationists. Do you discourage others from publicly debating creationists?

Gould: Absolutely. I think it's a great mistake. It's a political mistake. This is a political struggle; it's not an intellectual struggle. The intellectual issue of evolution's factuality was decided a century ago. We, therefore, have to decide on what are politically good strategies. Debate is a very bad strategy for every reason I can think of. For example, scientific issues aren't settled by debate. Debate is an art form about how to win arguments; it's not a mechanism for discovering truth. But that is just the theoretical argument. The tactical argument is that as a strategy it can only benefit creationists, and that's why they push it. They don't care whether they win or lose; it's only important to them that it happens. Because if the debate happens, it's a lot of publicity for them that they don't otherwise get; it makes them look not as marginal as they really are. They can say: "How can you deny us equal time? So-and-so debated us on a major college campus, and you're saying we're not serious. If we're not serious, why are they debating us?" Now that's a two-edged sword because if you

refuse to debate them, then they'll say, "These cowards won't even debate us." On the other hand, they're shouting only to their own true believers. So I think it's very bad political strategy outside of the fact that it's not good scientific procedure.

Alters: What one book would you recommend a creationist read?

Gould: That's hard because you have to get into books that are written to people who are generally not educated in biology. The trouble with my writing is that I presume a certain basic biological knowledge. And I wouldn't recommend Dawkins' books, although he is a very good writer, because he's so rhetorically antireligious; he's just not respectful enough of the positions. I might recommend my recent essay on the Pope's evolution statement in *Natural History*. I might be tempted to give them a book like Richard Leakey's abridged version of Darwin's *Origin of Species*. Also, the National Center for Science Education (NCSE) is the leading organization in America that is actively fighting creationism and is publishing good literature to help that fight along.

Alters: Which of your books would you recommend for a biology instructor who has never read Stephen Gould? Why?

Gould: Probably *Full House*. On the other hand, if they have never read any of my essays, I think my favorite two essay books are *Bully for Brontosaurus* and *Dinosaur in a Haystack*. But *Wonderful Life* is such a marvelous story that I think it's worth reading.

Alters: When writing your 15 books, who do you picture your audience to be and how do you decide on the subjects of your books?

Gould: My audience is clear to me and is quite specific; I write for the intelligent lay person. My audience is the thoughtful, nonscientific public who are willing to put a little work and intellectual effort into things. Because I write monthly essays, about half my books are collections of those essays. The other books have been responses to particular things. I wrote the *Mismeasure of Man* because I was upset by the misuse of evolutionary arguments in the service of racism. I wrote *Time's Arrow Time's Cycle* because, as a geologist, the issue of time is so fascinating. I wrote *Wonderful Life* because nobody knew the story of the Burgess shale outside of paleontology and, because it was a story about two-inch-long invertebrates, I knew that unless somebody conveyed it to the general public, no one would ever get the message. I wrote *Full House* because I thought I had a quite different way of viewing some simple aspects of the world that was based on an interesting philosophical twist that

broke through the Platonic tradition of just looking at essences and focusing instead on variation.

Alters: And your most recent book, *Questioning the Millenium*?

Gould: I confess, for the first time in my life, I've written something trendy—a little book on the millenium. I call it a rationalist's guide to an arbitrary transition. It's about why the name for a thousand-year reign for Jesus on Earth became a secular passage of a thousand years. I think there are many interesting themes there.

Alters: You have been quietly working on and off on one lengthy book now for more than 10 years. Would you give us a brief summary?

Gould: Basically it has a format similar to my first book, *Ontogeny and Phylogeny*, in that the first half is history of science and the second half is current status. Basically, I try to define the essential properties of Darwinian argument—what are the minimal set of claims one has to make to call oneself a Darwinian—to

see yourself in that tradition. So I do that exegesis, then trace the history of 19th century debates about these Darwinian centerpieces, and use all that to show how all the interesting proposed revisions of Darwinian theory today really go right back to these central points; namely, the level of selection, the extent of adaptation, and the probability that natural selection as Darwin saw it occurring can be extrapolated to explain all events at all scales.

Alters: Is it near completion?

Gould: I should be finished in the summer of 1998. I will probably publish it in 1999 or maybe I'll wait till 2000, just because it's a good year for such things.

Alters: What do you hope for the future of your students?

Gould: I just hope that with so many temptations in the world to just go out and make a lot of money, and with so few scientific jobs available, that they maintain their love of research and continue to dedicate themselves to finding out more about the history of life.

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