

# Why did Laboratory Sponsor Evolution Talk?

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On Dec. 13 I went to a Laboratory-sponsored talk titled "The Evolution Controversy: Why It Isn't Over." The talk was given by Philip E. Johnson, a professor at the School of Law at the University of California, Berkeley.

I came away wondering why the Lab sponsored this talk. Johnson is not trained in evolutionary biology. His credentials consist, according to the Lab's advertisement, of his having published a book and numerous articles criticizing evolutionary theory. The advertisement failed to mention that Johnson is a favorite of Christian creationists. The talk was sponsored by the Lab's Workforce Diversity and Human Resources Information Systems Group. This group's secretary told me that bringing Johnson to the Lab had been suggested by the Multicultural Steering Committee; her group had merely taken care of logistics. I hope that the Committee's bringing Johnson here was somehow based on a misunderstanding of what he supports, and that the Lab's "multiculturalism" does not include the anti-science position that Johnson espoused.

Johnson began by saying that "the controversy" is fundamentally about the origin of humans: did they result from a purely materialistic process of evolution, or from a special act of creation by God? Johnson favored miraculous creation. But instead of attempting to justify that position, or attempting to show directly that humans could not have arisen by evolution, Johnson spent most of his talk trying to discredit the entire theory of evolution.

Johnson listed conditions that he said are required by evolutionary theory, and he maintained that none of these conditions is met in nature. He claimed first that natural populations do not possess the kind of genetic variation that the theory requires.

This claim is false. Plentiful evidence of this variation comes from a variety of observations. Evolution in wild populations has been documented many times. Well-known examples are the evolution of resistance to various insecticides by many species of insects, the evolution of resistance to the myxomatosis

virus by rabbits, and the change in color of moths in response to industrial pollution. Adequate and appropriate genetic variation existed in these populations, for otherwise they could not have evolved. Another body of evidence is the success of artificial selection. Hundreds of experiments have shown that wild-caught populations typically evolve rapidly in response to selection. Evolution has been observed in a wide variety of plants, animals, and bacteria in a wide variety of traits--physiological, morphological, developmental, and behavioral. Such experiments would fail if suitable genetic variation were not present.

Johnson said the theory encounters increasing difficulty as it diverges from what he called outdated notions of single-gene effects. The mathematics of the theory of multigene evolution may indeed be difficult for many people to understand. That does not render the theory inadequate, as Johnson implied.

Johnson claimed that natural selection is not sufficiently strong or consistent to bring about evolutionary change. He ignored instances, such as those cited above, in which effective selective regimens clearly did exist in nature. He did mention computer simulations of evolution, which he dismissed as being based on assumptions of uniform and consistent selection that cannot be realized in nature. He neglected to point out that mathematical analyses and simulations are not intended to demonstrate evolution in nature. Rather they are meant to clarify conditions in which evolution can occur and to characterize rates and limits of the process. One analytical result, incidentally, is the finding that selective pressure does not have to be either constant or very large to be effective.

Johnson's final substantive criticism concerned the fossil record, which, he said, ought to show that evolution did indeed take place. He dismissed the fossil record by stating that it does not demonstrate the evolutionary origin of modern phyla, and implying that it utterly fails to support the theory of evolution. It is true that the fossil records of many modern phyla begin with the Cambrian Period, about 570 million years ago, when these groups suddenly appear as distinct entities with no prior fossils. This is a great mystery, and in isolation it could be taken as evidence against evolution. There is, however, a great deal of other fossil evidence that demonstrates evolutionary sequences. Three examples taken from many: there is ample fossil evidence of the evolution of mammals from reptile-like ancestors; the evolution of the modern horse is clearly shown in fossils; and the fossil record of humans shows an evolutionary sequence going back millions of years. If Johnson is to use one piece of the record as evidence against evolution, then he cannot in good faith

ignore the rest of it, which overwhelmingly demonstrates the occurrence of evolution.

Johnson's technical criticisms thus have no merit whatever. But there was more to his talk. He said that he was interested only in fostering rational, informed, and skeptical thinking about evolution. This claim was also false. Had he been attempting a reasoned analysis of evolutionary theory, he would have had to explain why the theory has been accepted by virtually all biologists for nearly a century. He said nothing about that. Instead, he claimed the controversy about evolution is religious on both sides.

Johnson thus ignored, and hence implicitly denied, the scientific utility of the theory. Biologists accept the theory because it works. It rests on a wide and solid empirical foundation. It explains and rationalizes a tremendous variety of biological phenomena. It accounts for things in molecular biology, genetics, cell biology, anatomy, physiology, morphology, embryology, behavior, life history, population genetics, ecology, taxonomy, biogeography, and paleontology. It is the great organizing principle of the biological sciences.

Equating the theory of evolution with a religious doctrine served Johnson's purpose in a couple of ways. On the superficial level, this supposed equivalence discredits arguments favoring evolution, particularly when such arguments are directed against religious creationism. Johnson would have it appear that evolutionists are attempting simply to impose their own dogma over that of the opposition.

More deeply, this equivalence puts evolutionary biology into the same category as religious belief. In both, it would seem, the validity of one's opinions is fundamentally a matter of doctrine or personal persuasion. Empirical observation, disproof by experiment, utility of ideas in unifying thought and in suggesting further tests--none of these, Johnson would have us believe, has any bearing on the theory of evolution, just as they have no bearing on religious truth.

Johnson said that the theory of evolution is based on what he called "naturalism." By this he meant a way of thinking that allows explanations based only on natural, mechanistic causes and that excludes supernatural or miraculous explanations. Whether naturalism is right, or whether a supernatural theism is right, is, he said, a philosophical question. He said that this is a question that evolutionists wish to avoid, because they want evolution to appear as a fact, not as a philosophical construct. Furthermore, he said, if the philosophical debate were allowed, evolutionists would have no more

standing in it than would a law professor or a garbage collector; evolutionists want to avoid the question so they can maintain their status.

Johnson's attempt to discredit the theory of evolution by drawing into question the motives of its proponents might be appropriate in the courtroom, but it does not belong in a reasoned discussion. More importantly, he neglected to point out that naturalism underlies all sciences, not just evolutionary biology. Johnson's attack on the ideological foundation of evolutionary biology was actually an attack on all of science.

Johnson's basic concern was whether the science of evolutionary biology has generated the truth. By posing this question, Johnson revealed his poor understanding of what science can do. Strictly speaking, science is not about truth; it is rather about empirically refutable hypotheses and useful theories. If Johnson wants Truth, he might look to revealed religion. If he wants the best scientific understanding of the origin of humans, he must accept the theory of evolution.

Surely the Laboratory should not again sponsor talks that attempt to undermine science.