

Creationism Goes on Trial in Arkansas

In what promises to be an epic legal battle, the American Civil Liberties Union hopes to show that creationism is religion and not science

On 7 December the American Civil Liberties Union (ACLU) begins its attempt to prove that the state of Arkansas violates the constitutional separation of church and state with its statute entitled the "Balanced Treatment of Creation-Science and Evolution-Science Act." According to ACLU's legal director, Bruce Ennis, the trial, which is to be heard before Judge William Overton in Federal District Court in Little Rock, "is one of the most important First Amendment cases to be held this century."

Arkansas was the first state in recent times to pass a law requiring equal time for creationism along with the teaching of evolution in public schools. Its Balanced Treatment bill was signed into law by Governor Frank White on 19 March. Louisiana enacted a very similar law a few months later. More than 20 other states are likely to face similar equal time initiatives in the near future. The outcome of the Arkansas trial, which is expected to last 2 weeks, will be crucial to the fate of these initiatives.

The ACLU will be presenting a three-pronged case. First, it argues that creationism is not a science but a religion, and therefore the Balanced Treatment Act violates the separation of church and state clause of the First Amendment. Second, it contends that the academic freedom of both students and teachers is infringed by the law as teachers "will either be forced to teach a doctrine which they . . . believe has no scientific merit, or they will refrain from teaching evolution science at all so that they need make no 'balanced' religious presentation to 'counter' evolution."

Last, it charges that the statute is unconstitutionally vague. The law "does not give teachers fair notice of what can or what cannot be taught, and it gives school officials virtually unfettered discretion arbitrarily to enforce its provisions," says the formal complaint.

The principal thrust in the case is the first of the three complaints, and this means that the court will have to decide where the boundary lies between science and religion. "The courts are not used to dealing with this kind of question," says Ennis, "and it will therefore be a very difficult case."

Naturally, the ACLU believes its case will prevail. "But," says Ennis, "we want to do more than just win. We want the judge to make detailed findings of fact. We want him to state that there is no scientific evidence for creationism. This would give the result maximum impact in the country."

Steven Clark, the attorney general for Arkansas, is representing the defendants. He too is confident about the outcome, and he says that his expert witnesses will have no trouble demonstrating that creationism is just as scientific as evolutionary theory. "Whoever wins," he says, "it is certain that the other side will take the case to the circuit court of appeal and from there to the Supreme Court." Next week's trial therefore promises to be just the opening skirmish in a long, drawn-out battle.

The Balanced Treatment bill, which will be discussed in detail in a subsequent article, was drafted by Paul Ellwanger, head of a small group, known as Citizens for Fairness in Education, which is based in Anderson, South Caro-

lina. He consulted with lawyers and legislators throughout the country while preparing the draft bill, and then sent it to sympathetic individuals and organizations in many states. He has recently revised the draft that was used in Arkansas in light of the ACLU challenge.

that these events have attracted. He is also responsible for attempts to introduce into Congress a bill which, if enacted, would have far-reaching effects on the teaching and funding of evolutionary biology throughout the country. "I am 95 to 99 percent sure the bill will be introduced in January," says Ellwanger.

The stated purpose of the Arkansas law is to protect "academic freedom for students' differing values and beliefs."

The law requires the teaching of creationism only if evolution is taught. And it says that balanced treatment shall be given in classroom lectures, library materials, and in other educational programs.

The act lists "legislative findings of fact" which include the following:

"Evolution science is not an unquestionable fact of science, because evolution cannot be experimentally observed, fully verified, or logically falsified, and because evolution science is not accepted by some scientists."

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stitution's prohibition against establishment of religion, because it produces hostility toward many Theistic religions and brings preference to Theological Liberalism, Humanism, Nontheistic religions, and Atheism, in that these religious faiths generally include a religious belief in evolution."

"Public school presentation of both evolution-science and creation-science would not violate the Constitution's prohibition against establishment of religion, because it would involve presentation of the scientific evidences and related inferences for each model rather than any religious instruction."

The law specifically prohibits religious presentations, stating that teaching "shall be limited to scientific evidences for each model . . . and must not include

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"My group is not affiliated with any political or religious organization," says Ellwanger. "It is not a creationist organization, nor is it associated with any. I am interested simply in the fair treatment of scientific evidence for origins."

In spite of Ellwanger's limited resources and his estrangement from several of the creationist groups, he has undoubtedly generated tremendous momentum for the movement, in the concrete terms of state laws enacted and pending and in the considerable attention

any religious instruction or reference to religious writings."

Wendell Bird, an attorney associated with the Institute for Creation Research, based in El Cajon, California, and a specialist in First Amendment law, describes the Arkansas Balanced Treatment Act as "constitutionally very strong." He contends that it is entirely consistent with the neutral approach allowed by the Constitution. Bird was one of the many consultants who advised Ellwanger on the bill's drafting.

The ACLU decided to take action against the Arkansas statute within days of its enactment. The suit was filed on 27 May and it lists 23 plaintiffs, more than half of whom are individuals or organizations representing several branches of religion. "By initiating this action," states the complaint, "plaintiffs are neither antireligion nor asserting the final truth of any theory of evolution. Many of the plaintiffs are deeply religious and believe religion is important in personal, family, and community life." The ACLU was very anxious to avoid the case being branded as simply "the action of a bunch of atheists," says Ennis.

After consultation with ACLU and other lawyers in Little Rock, Ennis decided to file suit in Federal District Court rather than state court, for two reasons. First, the constitutional issues involved make the case appropriate for federal court. Second, the subject is so emotionally charged in Arkansas that a state judge who might soon be up for election would find himself under intolerable political pressure. Circuit judges, by contrast, are appointed for life and are therefore free of such immediate pressure.

Overton, who was appointed under President Carter, is a local man, a former trial lawyer, and is described as a nonsense judge. Creationists are, however, somewhat concerned by what they see as his liberal record.

The focus of the ACLU case, that creationism is not a science but a religion, will be a tough issue to encompass in legal terms. In the past, creationists have been content to allow that creationism is not a science, so long as evolutionary theory is similarly labeled. Next week's trial will be the first time that creationism will be put to the legal test as a science.

The ACLU will be calling three or four expert witnesses to try to demonstrate that creationism is not a science: Michael Ruse, a philosopher of science at the University of Guelph, Canada; Brent Dalrymple, a geologist at the United States Geological Survey, Menlo Park; Stephen Jay Gould, a paleontologist at

Harvard University; and Francisco Ayala, a geneticist at the University of California, Davis.

Any science, in order to qualify as such, must be falsifiable and have the power of prediction. Evolutionary theory, because it is a historical theory, is often said to be untestable on both counts. But, as Porter Kier, a paleontologist at the Smithsonian's Museum of Natural History, frequently points out, the confirmed discovery of a mammalian fossil in strata, say, 500 million years old would immediately falsify the theory. Similarly, prediction does not have to refer to future events, but simply be a statement about the unknown. The charge that the historical nature of evolutionary theory forbids its status as a science is not tenable, as Ruse will argue.

Ennis points out, however, that evolutionary theory is not on trial in Arkansas: creationism is. The defense will have a difficult time establishing creationism as a science, not least because Duane Gish, associate director of the Institute of Creation Research, has written the following: "We do not know how the Creator created, what processes he used, for he used processes which are not now operating anywhere in the natural universe. This is why we refer to creation as special creation. We cannot discover by scientific evidence anything about the creative processes used by the Creator." For this reason, there is no satisfactory answer to the question, "What piece of data would prove that God did not create the world and the living organisms in it?" In other words, creationism is not falsifiable.

In the many debates between creationists and evolutionary biologists (most of which, incidentally, creationists have "won") there is typically not so much a case for creation as arguments against evolution. Such arguments frequently draw on the current disagreements over the mechanism, not the fact, by which evolution operates. Clark says that scientific evidence for creationism is "the abrupt appearance of complex organisms in the fossil record and the gaps between different kinds in the record." This is a great simplification of the actual observations, and the defendants' case will be weak if it cannot go much beyond such assertions.

Simply establishing that creationism is not a science would not, however, win the ACLU's case. Creationism must be shown to be a religion if the law is to violate the First Amendment. "Creation, as used in the Creationism Act, neces-

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Diablo Canyon License Suspended

The nuclear power industry was dealt a couple of serious blows last month, all in one day. On 19 September, the Nuclear Regulatory Commission (NRC) voted to suspend the license for the Diablo Canyon nuclear power plant in California. Earlier at a House hearing, commission chairman Nunzio J. Palladino, a Reagan appointee, testified that there is a "serious breakdown" in quality control by industry and the NRC.

The Diablo Canyon plant was initially scheduled to begin low-power operation next September. But the NRC voted four to one to suspend its license because of recently discovered design errors that are related to earthquake safety (*Science*, 30 October, p. 528). The dissenting vote was cast by Reagan's newest appointee on the NRC, Thomas Roberts.

In a separate vote, the commission unanimously decided that the Pacific Gas and Electric Company (PG & E), which operates the plant, should not even be allowed to load uranium fuel into the facility. The plant is located in southern California, 2½ miles from the Hosgri fault. The license will be reissued and loading will be allowed only after completion of an independent audit of the plant's design, the commission said.

Palladino told the House nuclear oversight subcommittee, "After reviewing both industry and NRC performance in quality assurance, I readily acknowledge that neither has been as effective as they should have been in view of the relatively large number of construction-related deficiencies that have come to light." He said that the industry must "reorient its thinking" if it is to retain public confidence.

In September, PG & E notified the commission that it had inadvertently mixed up some of the charts for the plant's design. As a result, certain structural supports were located in the wrong place. Subsequently, 13 more mistakes in design and calculation were found that cast further doubt about quality control by the company.

In a prepared statement PG & E said that the company was "disappointed" that the NRC suspended the license "especially since nothing has

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sarily encompasses the concept of a supernatural Creator," argues the complaint. "The concept of a Creator is itself an inherently religious belief. Creation-science cannot be taught without reference to that religious belief."

In their formal answer to the complaint filed on 19 August, the defendants simply deny this allegation but do not explain their logic. Such an explanation will be expected in court. Meanwhile, Clark states that reference to a Creator is as irrelevant to creation science as an explanation of the origin of matter is to evolution science.

Responding to the charge of violation of academic freedom, the defendants

make the direct countercharge. "It is the plaintiffs who in reality desire to abridge academic freedom by attempting to deny the right of teachers to teach, and students to learn, about two theories of origin—rather than one. The Balanced Treatment Act therefore assures academic freedom."

Bird also points out that the ACLU is making an unwarranted assumption that all teachers believe in evolution and reject creationism. "The ACLU's position on this is both extreme and illogical," he contends. "They say it is a greater danger to offer students choice and that the only way to ensure academic freedom is to indoctrinate children in evolution science."

The ACLU expects to be accused of censorship during the trial. "This could be the linchpin of Arkansas' defense of the statute," says ACLU attorney Jack Novik. "Our response is that the ACLU's creationism lawsuit is entirely consistent with our steadfast opposition to censorship and does not make us advocates of any scientific point of view." The rationale for this is that evolutionary theory is taught in schools because it has achieved wide acceptance in the scientific community whereas creationism would be taught because the law dictates that it should. "Thus, the ACLU opposes the Arkansas creationism statute because it *mandates* the teaching of government approved doctrine—in this instance, creationism."

The run up to the trial has not been entirely smooth for the defendants. Bird wanted to play a major role in representing the state's case. Clark refused, and offered him a minor role in preparing briefs and in the pretrial discovery process. Bird refused.

Bird now says he is pessimistic about the outcome of the trial, "not because the Balanced Treatment Act is not constitutionally sound but because the attorney general is doing an inadequate job." Clark's office is inexperienced in First Amendment law and is ill prepared in the science, Bird claims. "The ACLU is putting five to ten times more effort into this case than the attorney general is," he laments.

Clark's reason for refusing outside help, says Bird, is that he plans to run as a candidate for governor and therefore wants as much media attention as possible. "I haven't made a decision about my political future," says Clark, "but in any event, that has no bearing on whether Bird is involved or not."

"If the decision goes against the Balanced Treatment Act, the publicity will be extremely harmful," considers Bird. "Nevertheless, there is tremendous public support for the presentation of both sides in the teaching of origins." A recent Associated Press-NBC News poll put the following question to 1598 adults nationwide: "Do you think public schools should teach only the scientific theory of evolution, only the Biblical theory of creation, or should schools offer both theories?" Seventy-six percent said schools should teach both.

"The question was badly phrased," says Bird. "It shouldn't mention the Bible. Nevertheless, the survey does demonstrate that the demand for balanced treatment will not go away, no matter what happens in Arkansas."

—ROGER LEWIN

Whitehead Link Approved

Edwin C. Whitehead's decade-long quest to establish a major biomedical research institute from his personal fortune has passed a crucial hurdle. Faculty members of the Massachusetts Institute of Technology (MIT) voted at a packed meeting on 18 November to approve a plan to link the institute to MIT. The plan, which has been under negotiation for more than a year, has raised strong objections from some faculty members who argue that it requires the university to surrender some of its academic freedom (*Science*, 23 October, p. 416).

Although the faculty meeting is not the final word on the proposed venture—the MIT Corporation has the final say, and it will next meet on 4 December—the vote of approval is expected to be decisive. If the faculty had voted against the plan, the corporation would almost certainly have followed suit, but most observers now expect the deal to be consummated.

Whitehead, who amassed a fortune from Technicon, a family company that pioneered in the development of precision instruments for use in clinical laboratories, has agreed to put up \$20 million to build and equip the institute, provide \$5 million a year in operating funds, and leave an endowment of \$100 million when he dies. He has also agreed to give MIT \$7.5 million to offset the costs that may be incurred by linking the university with his institute.

The most controversial aspect of the plan is that although the institute would be administratively separate from MIT, most of its researchers would be full-fledged faculty members of the university. This has led to objections that MIT will be giving up some control over the selection of its faculty and over the choice of research areas in the biology department. On the other hand, supporters of the venture argue that the link will expand the biology department at a time when federal support is diminishing, and that it offers an opportunity to bring more junior faculty into a department that is now top-heavy with senior staff.

The 18 November faculty meeting was the first opportunity for most professors outside the biology department to voice their opinions on the venture. It attracted an unusually large turnout of some 400 faculty members. After some 2 hours of debate, a motion to disapprove the planned link was voted down by a margin of about 3 to 1, according to several participants. A resolution approving the arrangement but expressing "serious concern" over some of the implications was then approved by a margin of about 8 to 1.

MIT administration members then indicated that they took the vote to mean that the faculty approves a draft agreement that was finalized with the Whitehead Institute in October. The next, and probably the final, hurdle will be the corporation meeting on 4 December.—COLIN NORMAN