

# The Arkansas Creationism Trial Forty Years On



Michael Ruse

## 1 Prologue

**Q:** In connection with the attributes of science and this issue of testability, does the concept of falsifiability mean anything to you?

**A:** Yes. The concept of falsifiability is something which has been talked about a great deal by scientists and others recently. It's an idea which has been made very popular by the Austrian-English philosopher, Karl Popper. Basically, the idea of falsifiability is that there must be, as it were, if something is a genuine scientific theory, then there must, at least, conceivably be some evidence which could count against it. Now, that doesn't mean to say that there's actually going to be evidence. I mean, one's got to distinguish, say, between something being falsifiable and something being actually falsified

But what Popper argues is that if something is a genuine science, then at least in the fault experiment, you ought to be able to think of something which would show that it's wrong.

For example, Popper is deliberately distinguishing science from, say, something like religion. Popper is not running down religion. He's just saying it's not science. For example, you take, say, a religious statement like God is love, there's nothing in the empirical world which would count against this in a believer. I mean, whatever you see—You see, for example, a terrible accident or something like this, and you say, "Well, God is love. It's free will," or, for example, the San Francisco earthquake, you say, "Well, God is love; God is working his purpose out. We don't understand, but nothing is going to make me give this up."

Now, with science, you've got to be prepared to give up.

**Q:** I was going to ask you for an example of falsifiability in the realm of science.

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M. Ruse (✉)  
Florida State University, Tallahassee, FL 32306, USA  
e-mail: [mruse@fsu.edu](mailto:mruse@fsu.edu)

**A:** Well, let's take evolutionary theory, for example. Suppose, I mean, contemporary thought on evolutionary theory believes that evolution is never going to reverse itself in any significant way. In other words, the dodo, the dinosaurs are gone; they are not going to come back.

Suppose, for example, one found, say, I don't know, somewhere in the desolate north up in Canada, suppose one found evidence in very, very old rocks, say, of mammals and lots and lots of mammals and primates, this sort of thing, and then nothing for what scientists believe to be billions of years, and then suddenly, mammals come back again.

Well, that would obviously be falsifying evidence of evolution theory. Again, I want to make the point, you've got to distinguish between something actually being shown false and something being in principle falsifiable. I mean, the fact that you've got no contrary evidence doesn't mean to say that you don't have a theory. I mean, it could be true.

**Q:** The last characteristic you mentioned was that science was tentative. Can you explain that characteristic of science?

**A:** Yes. Again, this is all very much bound up with the points I've been making earlier. What one means when one says that science has got to be tentative is that somewhere at the back of the scientist's mind, he, or increasingly she, has got to be prepared to say at some point, "Well, enough is enough; I've got to give this theory up." It doesn't mean to say you are going to be every Monday morning sort of questioning your basic principles in science, but it does mean that if something is scientific, at least in principle, you've got to be prepared to give it up.<sup>1</sup>

### 1. *Background*

In 1957, the Soviet Union launched an artificial satellite that orbited the planet, Sputnik. It was the height of the Cold War and recognized at once as a huge propaganda success for the Russians. Appalled, America set about responding and, in the post-mortems following Sputnik, it became clear to all that American science education, particularly at the school level, was in dreadful shape. Money and resources were poured into organizations formed to improve such education, and in 1958, the American Institute of Biological Sciences founded the Biological Sciences Curriculum Study (BSCS) to tackle issues of high-school biological education. In the US, education is under state (not federal) control, so the strategy taken was that of producing high-quality textbooks, that could then be marketed at knock-down prices, thus attractive to school boards looking for material for classes. Among the offerings was *Biological Sciences: Molecules to Man* (1963). It is very thorough, covering all aspects of biology, including Darwin's theory of natural selection, which is presented as the correct explanation of organic origins, including human origins.

This was a major innovation. In 1925, in Dayton Tennessee, the school-teacher John Thomas Scopes was prosecuted for breaking state law by teaching evolution (Larson 1997). Although convicted, the verdict was overturned on appeal, and that

was the end of matters. Except not quite. Scopes may have been found not-guilty but the trial had a chilling effect on American science education. As a matter of policy, text-book publishers go for a lack of controversy. They want to sell their books all over America, including the conservative, evangelical South. Evolution was dropped, and no one got it, north or south. Now, thanks to Sputnik, it was back on the agenda, flauntingly so.

As it happens, a number of southern states had anti-evolution laws, but by the mid-sixties, educators in these states wanted to get on-board with the new direction in science, and so the BSCS books were adopted. The State of Arkansas, which had an anti-evolution law on its books, fought back, and, thanks to counter-resistance by evolutionists, backed by the American Civil Liberties Union (ACLU), the case—*Epperson versus Arkansas*—went to the Supreme Court. The anti-evolution law was struck down as a violation of the First Amendment separation of Church and State. The premise: “The overriding fact is that Arkansas’ law selects from the body of knowledge a particular segment which it proscribes for the sole reason that it is deemed to conflict with a particular religious doctrine; that is, with a particular interpretation of the Book of Genesis by a particular religious group.” The conclusion: “[T]he state has no legitimate interest in protecting any or all religions from views distasteful to them.”<sup>2</sup>

That seemed to be that. But not quite. The biblical literalists, formerly known as “Fundamentalists,” now more commonly as “Creationists” (or “Scientific Creationists”) fought back. They had a formidable weapon. In 1961, two literalists, John C. Whitcomb, a Princeton-trained biblical scholar, and Henry M. Morris, a hydraulic engineer, co-authored *Genesis Flood: The Biblical Record and Its Scientific Implications*. It became the bible (if one might use such a metaphor) of the literalist movement. Pushing the doctrine of “Young Earth Creationism,” the authors claimed that every word of the bible, read literally, is supported by modern science. The focus is on Noah’s Flood. Geology shows the Earth is recent, and that at some point it was covered with water; the fossil record shows that evolution is untrue and is more consistent with the pre—and post-Flood biblical accounts of animals; and much, much more along the same lines. Showing that the Cold War was a factor influencing all sides, the reason for the focus on the Flood rather than (say) Adam and Eve and the Garden of Eden, was that, like many evangelicals, the authors were “dispensationalists,” believing that history is divide into periods, showing God’s revelation and plan of salvation. The Flood marks the end of the second (the first is Adam and Eve being kicked out of Eden) and the reason for its great contemporary importance is that it is a harbinger of Armageddon, which is going to come shortly and end our, final dispensation (Numbers 2006).

Paralleling the *Origin of Species* was *Genesis Flood*! However, after *Epperson versus Arkansas*, the literalists—let us now call them “Creationists”—had to change strategy. Before, the aim could be simply to exclude evolution entirely and to force *Genesis Flood*’s young-earth creationism upon science education. Now, evolution could not be kept out, so the new aim became forcing “balanced treatment” upon science education. If you taught evolution, then you had to teach creationism, in a parallel and non-prejudicial manner. Thus, things went into the 1970s, with the

Creationists seemingly having the upper hand. They were barred obviously from the science journals, so they started inviting evolutionists to debate origins—Darwin versus the Bible. Except the claim was that it wasn't the bible that was being debated. It was "Creation Science," supposedly a perfectly legitimate science that offered a different account of origins from the evolutionists. That it copied word for word the stories of the bible was technically irrelevant.

One should say the Creationists—notably Henry Morris and his partner, Duane T. Gish (who had a conventional biological education doing his doctorate at Berkeley)—had considerable success in the debates, held on campuses (needing masses of space, often sports facilities were commandeered), with massive audiences, many students but evangelicals shipped in from all over the state. Morris and Gish (the latter particularly) were skilled debaters, quite equaling President Trump in their cavalier attitude towards facts, and realizing that sometimes (often) a good joke is worth hours of laborious technical explanation. Evolutionists, unused to this kind of format, would still be in their preliminary remarks, when they would be cut off, time expired. It did not help their cause that often they would get very irate when this happened.

Finally, things came to a climax in 1981. A young Creationist, who was also a lawyer, had written up a proposed bill, insisting on balanced treatment between evolution and Creation Science, and in the legislature of the State of Arkansas he found takers. It was proposed and passed at record speed, taking only one Friday afternoon, when most had left or were eager to leave. Bill Clinton had been governor of the state from 1978 to 1980, when, for the first and last time not minding his fences, he was kicked out of office. He returned in 1982, and continued as governor until 1992, when he defeated incumbent G. H. W. Bush and became President of the USA. In the interregnum, from 1980 to 1982, was a man (Frank D. White) who was as surprised to find himself governor as he was unfit for the post. Unreflectively, he signed the bill, and on March 19, 1981, Arkansas Act 590 became effective. (Ruse 1988 gives the Act and the judge's opinion).

## 2. *The trial and its underpinnings*

As with *Epperson versus Arkansas*, the ACLU swung into action, preparing to bring suit against the law on account of its unconstitutionality. It lined up an impressive number of Arkansas religious leaders as plaintiffs, the lead being the Reverend William McLean, a United Methodist minister, whose name therefore became part of the subsequent trial and judgment—*McLean versus Arkansas*. (Actually, technically, *McLean et al., versus The Arkansas Board of Education*). As is its wont, the ACLU looked for help from a prominent law firm, and the New York firm of Skadden, Arps, Slate, Meager and Flom came on board, pro bono, giving the free support of a rather junior female partner and a number of (very sharp) even-younger associates. (No one in the New York world of law is a disinterested altruist. This was very good publicity for the firm.) Everyone headed for trial, which took place in the first week of December 1981.

This is where I came in, in the early fall of 1981. Why me? I was not an American (not then, in 2000 I moved to a job in the States and ten years later became a citizen) and was not particularly distinguished. I was a (full) professor, fairly young (41), in

the philosophy department of a university in Guelph, Ontario, Canada. It was not a major established university, having been founded only fifteen years previously, adding arts and sciences to the already existing Ontario Agricultural College, the Ontario Veterinary College, and McDonald Institute, the domestic science college. (In the early years, in my classes I often had students whose grandparents had met at Guelph).

I had however the background, the talents, and the eagerness that the ACLU was looking for in its search for expert witnesses to testify at the trial. In building its slate of witnesses, the ACLU had turned to one of the partners in Skadden, Arps, who was a trustee at Princeton. He phoned the president who put him onto several pertinent senior faculty. Then one of the young associates was given the job of talking to them. On the one hand, he wanted to get their take on the situation. What are the pertinent factors for instance, what kind of people should testify, what should be the overall strategy, what points needed emphasizing and what points needed avoiding? If you wonder how an untutored young lawyer could handle this job, let me say I was incredibly impressed with their intelligence (and diligence) and (perhaps as part of their training) they could soak up and conceptualize an area of knowledge and expertise. I still think that within a week or so, they could get to know 85% of the pertinent material in a field—and, undoubtedly, within a week of the end of the trial, forget it all!

On the other hand, the associate wanted the names of potential experts and witnesses, so at the end of every conversation he would ask for the names of two or three people and then set about phoning them, and in turn getting names from them too. Within a very short while, the basic, required strategy became apparent. You needed to go on the offensive with science witnesses, obviously, but also it was going to be very important to have theologians and other religiously knowledgeable (historians, sociologists) people to complement the science. And clearly you were going to need educators, those knowledgeable about the field and the issues, but also just plain classroom teachers who would explain how things happen in the classroom and how the balanced treatment law was simply wrong. Not the sort of thing to influence or shape the teaching of young people.

Soon, expectedly, certain names kept coming up again and again, and the eventual witnesses practically chose themselves. There was Langdon Gilkey, professor at the Chicago Divinity School, and the leading Protestant theologian in the country. There was George Marsden, evangelical historian of religion, then at Wheaton College, later at Notre Dame. There was—this was a foregone conclusion—Stephen Jay Gould at Harvard, evolutionist, and one of the best-known scientists in America because of the monthly column he wrote for the science magazine, *Natural History*. There was Francisco J. Ayala, Spanish-born, former priest, now one of America's most distinguished evolutionary geneticists. And there were more, including Arkansas school-teachers. (Missing was Carl Sagan, the most famous scientist of the day. He had been a little hoity toity when first approached. Later, as the approaching trial started to gather publicity, he offered his services. But it was too late).

But why me in this August group? Obviously, my name had come up, so I was not entirely unknown, and there was reason for this. I was one of a number in the 1960s

(prominent member, David Hull from Chicago) who had kick-started the modern sub-field of the philosophy of biology, leading to my writing an introduction to the area, *The Philosophy of Biology* (1973). Also, like many in the 1960s, I had been much intrigued by *The Structure of Scientific Revolutions* (1962) by Thomas Kuhn. It was not so much that I was taken by his thesis of change—more on this in a moment—but that I was excited by his demand that philosophers of science take seriously the history of science. So much so, that I took my first sabbatical (1972–1973) in Cambridge, England, working in the University Library, immersed in the Darwin Archives. This led to my writing *The Darwinian Revolution: Science Red in Tooth and Claw* (1979). I joke that this is the book I wish I could have read ten years previously, when I was just getting into the field. But it is not really a joke. In a way, it is the complement in the history of science—the history of evolutionary biology particularly—to my *The Philosophy of Biology* in the philosophy of science—the philosophy of evolutionary biology particularly. It is a full overview of the revolution, making use of twenty years of archival research by Darwin scholars, including myself. I called it an “overview” in my preface. I expected all of the reviewers to say “No, no, Mike, it is much more than that. It is an original piece of scholarship.” I didn’t then realize that reviewers only read the first couple of pages of the book they are reviewing. Overview I said, overview they said, overview it is.

The point is that this pre-adapted me to take on the Creationists. It was not so much that I had done much work on the Creationist literature—although I had started work on this and by the time of the trial had a manuscript of what came out next year as *Darwinism Defended: A Guide to the Evolution Controversies*. I should say that the manuscript was circulated to both sides and became a major source for the state in my cross-examination. What I had done is much work on the kinds of arguments that the Creationists used. Many of these arguments were not that new and were around (and answered) at the time of Darwin. I knew the ropes. In fact, I had already a year or two earlier debated Morris and Gish in the basketball arena of Northwestern University in Chicago. By then I had over ten years of undergraduate teaching—a lot of it!—under my belt, so I was confident on my feet and I too knew that a good joke is worth ten arguments. I cannot say that I and my biologist partner won the debate. There must have been three thousand in the audience, at least ten of whom were evolutionists. But, within seconds of getting on the podium, I realized that this was my kind of event, I had great fun, and I saw my partner make all the mistakes—not getting to the main verb before he was cut off—and knew how to avoid them.

I had background preparation, I had the kind of personality that made me a natural for this sort of thing, and I was eager to do it. Not just the publicity—although most of my relatives and friends would say it was all about the publicity—but because I really do have moral concerns. As someone raised a Quaker, for all that my beliefs were long gone, I worried a lot about whether what I was doing was worthwhile, serving my fellow humans. You might say that of course being a teacher means you are serving your fellow humans, and increasingly over my life I came to see that. I really enjoy the scholarship, but I do take teaching seriously and have done my share and more. I have been at it for fifty-five years, and go on not just because, having married one of my students who was over twenty years younger than I and had three

more kids, I need the money! But it wasn't like being a doctor, for instance, where so obviously you are serving others. I rush to say I don't want to be a doctor, although the first week or two of being a gynaecologist might be fun. Then the Arkansas trial came along and I saw a real chance of getting up and fighting what I believe are wrong and socially dangerous beliefs. It is not me and my pals who are against abortion, against homosexuals, and don't think women should be ordained. I should say that combined with this was the fact that my fellow philosophers wanted nothing to do with any of this. They thought it vulgar and misplaced to get into the witness box. Philosophers are not like other men. (Some had more legitimate concerns. David Hull was gay at a time when homosexuality was still much in the closet. He didn't want that coming out and being used, publicly, to discredit him, in a court trial).

I got roped in, and, in the fall of 1981, went off down to New York City to be deposed before the trial. It was then that I discovered that the lawyers for Skadden Arps were by no means convinced that I should be a witness. It was not so much me as generally a prejudice against philosophers. We tend to go on and on about arcane topics, that no one can or wants to understand, and on top of that we are so very arrogant. Convinced to a person that we are the brightest people on campus, we don't take instruction very well. You soon learn that lawyers are less concerned about the truth than about winning and this can lead to some very tense times. On top of this, of course, why a philosopher? Obviously, you need scientists, and theologians need hardly more justification. Educators are a must, and if you want to round things out with a historian or like person, why not? But why a philosopher?

As it happens, this had nothing to do with my merits. The Creationists rather forced it on the plaintiffs. It is a big mistake to think that Creationists are necessarily stupid – before he changed track, Gish had published in the *Proceedings of the National Academy of Science* (Gish et al. 1960)—and they certainly do their homework. They knew full well that the biggest thing to hit the philosophy of science in the past half-century had been Thomas Kuhn's *The Structure of Scientific Revolutions*. (Before Popperians who are reading this essay throw it down in uncontrollable rage, as belittling the status of their hero, note what I am saying and more importantly what I am not saying. I am not saying *The Structure of Scientific Revolutions* was the most important book or the most profound book or the longest-lasting book. I am talking about immediate attention and controversy, and Kuhn's book wins hands down).

The Creationists had studied *Structure* with great care and they knew full well the central concept and its supposed implications. Paradigms! Those conceptual frameworks within which scientific thinking is embedded. And what is the biggest mark of a paradigm, that which makes it so different and so controversial? That commitment to paradigms and changing from one to another is not simply a matter of reason and evidence. Paradigms require a kind of commitment to be found in religion or politics. People do change from being, say, a Catholic, to being a Protestant. Luther did! And people go the other way. John Henry Newman for example. But the change from one to the other is not simply a matter of sitting down and saying "I prefer consubstantiation to transubstantiation" or "I'm into justification by faith rather than good works." These may be important factors but in the end they are not decisive. Change needs almost a Kierkegaardian leap of faith. Creationists seized on this and

argued that Darwinian evolution and Creation Science are different paradigms, with the supposed implication that one is as good as the other, and you cannot impose choice from without. At this point, you go beyond rationality and so that is it. There is no justification in education for preferring evolution over Creationism. Balanced treatment is not only the fairest moral way forward, it is sanctioned by strong (and fashionable) philosophical argument.

How were our lawyers—as I will now feel free to call them—to counter this? They too were bright and had done their homework. They knew full well that when Kuhn came onto the scene, and started to pick up steam in the mid-sixties, the person and the group most immediately and strongly in opposition were Karl Popper and his merry men. Above all, as spelt out in his *The Logic of Scientific Discovery* (first published in English in 1959), Popper stood for rationality and, above all, he found it in science. What separates science from all else is the demarcation criterion of falsifiability. Even the best science is constantly putting itself to the test of the empirical evidence and, if it cannot handle this, it falls. No matter how prestigious. The way that Newtonian mechanics—the best and most fruitful science ever—had had to give way before Einstein and the other physicists of the twentieth century. Kuhn is wrong. Call them paradigms or whatever, if they are part of science, they must be falsifiable. Science is not like religion. And if you doubt that, go and look at the book edited by Imré Lakatos and Alan Musgrave, *Criticism and the Growth of Knowledge* (1970), the report on a conference earlier in the decade, where the philosophies of Popper and Kuhn were spelt out and the two sides went at each other, trying to show the flaws in the position of their opponents.

The urgent need of a philosopher became obvious and the argument that the philosopher must make was no less obvious. The Kuhnian strategy must be countered and Karl Popper showed the way! I became part of the team that descended on Little Rock Arkansas, in early December 1981.

### 3. *The trial*

This was what was at stake:

On the side of Creation Science the claim was:

Sudden creation of the universe, energy and life from nothing;

The insufficiency of mutation and natural selection in bringing about development of all living kinds from a single organism;

Changes only with fixed limits of originally created kinds of plants and animals;

Separate ancestry for man and apes;

Explanation of the Earth's geology by catastrophism, including the occurrence of worldwide flood;

A relatively recent inception of the Earth and living beings.

On the side of evolutionary science, the claim was:

Emergence by naturalistic processes of the universe from disordered matter and emergence of life from nonlife;

The sufficiency of mutation and natural selection in bringing about development of present living kinds from simple earlier kinds;



Emergency [sic] by mutation and natural selection of present living kinds from simple earlier kinds;

Emergence of man from a common ancestor with apes;

Explanation of the Earth's geology and the evolutionary sequence by uniformitarianism; and

An inception several billion years ago of the Earth and somewhat later of life.

(Act 590 in Ruse 1988)

Naked mud wrestling! Moses versus Charles Darwin. Less exuberantly, are we faced with two co-equal paradigms, or are we faced with a religious claim and a scientific claim?

The actual trial, in a federal court, before judge William R. Overton, appointed to the post a couple of years earlier by President Jimmy Carter—Overton died in his forties later in the decade, I have often wondered if he might have been appointed to the Supreme Court by President Bill Clinton—took about a week and a half, as is normal, with the plaintiffs going first. The first day was given over to the people with religious qualifications—highly impressive was Langdon Gilkey, who took pleasure in pointing out all the Christian heresies being committed by the Creationists. (Interviewed later by Edward J. Larson, Overton said that it was Gilkey's testimony that started the downward slide of the Creationism case. I can well believe that.) The second day was given to the scientists. One point of note was that the state could not wait to get Stephen Jay Gould off the witness stand. He was somewhat chagrined, but one can understand they did not want to tangle with him. The third and final day was for the educators. The school-teachers were very moving. These people cared about their kids and their welfare.

I was slotted in on the second day in the morning. I was on the stand all morning and called back for a few minutes in the afternoon. I therefore had at least twice as much time as anyone else—my direct testimony was only half an hour, so cross examination was the best part of three hours. It was clear right from the beginning that the state's prosecutors thought, that if there was going to be a weak point, it was going to be the testimony of a philosopher. We are so out of touch with reality so much of the time! As it happened, it all went smoothly and, if I got too carried away with the sound of my own voice, our side would jump up, intervening, and letting me know that enough from me was twice as much as was needed! I am still proud of my one big joke. The assistant district attorney was harping on about my religious beliefs, trying to show that I am an infidel and so what would you expect me to say about evolution? Eventually, frustrated, I blurted out: "Can't you see Mr. Williams, I am not an expert witness about my own religious beliefs." Everyone laughed and, when Williams tried to continue that line, the judge intervened and told him to move on. "Can't you see, he's not going to give you what you want."

Expectedly, both plaintiffs and defense made much of Popper. I opened this essay with what I said to our side early in the morning, and under cross-examination we came back to it again and again. But really, that was easy. We had a party line and stuck to it. Evolutionary theory can be falsified and Creation Science cannot be. This is a good example of the sort of thing that went on under cross-examination:

- Q:** You've talked about how the creation scientists quote evolutionists out of context, using one sentence. Yet, if an evolutionist should quote a creation scientist out of context, would that be any less dishonest, in your opinion?
- A:** I think that I would have to say that it would be no less dishonest if one sort of played fast and loose with that point there.
- Q:** And when you quote from some of the books you mentioned earlier, specifically, Doctor Gish's book, you didn't point out to the Court, did you, that Gish goes on to talk about how neither, under the pure definition as articulated by Karl Popper, neither evolution nor creation science can qualify as a scientific theory?
- A:** I thought it was—
- Q:** Did you point that out? If you did, I didn't hear it.
- A:** Well, if you didn't hear it, then I expect I probably didn't. But I, you know— Let me add very strongly that I want to dispute the implication that I'm being dishonest at this point.

My understanding was it wasn't evolution on trial here; that it was, if you like, creation. That's the first point. And secondly, as you know, I personally don't necessarily accept everything that Popper wants to say. So I've don't think that I've quoted Gish out of context at all. I was asked to give an example of a passage in scientific creationist writings where the scientific creationists quite explicitly appeal to processes outside the natural course of law.

Now, I'd be happy to reread it, but I think that's what I did, and I think I did it fairly.<sup>3</sup>

(I must say that, rereading this stuff forty years later, I am quite impressed with my poise. I am not sure that today I am quite that self-confident about anything! But then, for nearly forty years, I have been married to a wife much younger than I).

I left Arkansas after our side had finished testifying. In a way, I felt a bit sorry for the Creationists. We had such a stellar cast (I am not talking about me). They really had to scrape the barrel. No Langdon Gilkeys or Steve Goulds for them. Judge Overton handed down his ruling in early January in 1982, and it was unambiguous. Evolution is science. Creationism is religion. Teaching the latter violates the First Amendment separation of Church and State. "The Act was passed with the specific purpose by the General Assembly of advancing religion." No balanced treatment for the kids of Arkansas. (See Ruse 1988).

The points that the judge made were all fairly obvious and expected. No one in the real world ever accused him of misreading things or getting into dubious convoluted arguments. Again, at the risk of seeming unduly immodest, my testimony was at the heart of his ruling.

- It is guided by natural law;
- It has to be explanatory by reference to natural law;
- It is testable against the empirical world;
- Its conclusions are tentative, i.e. are not necessarily the final word; and
- It is falsifiable.

In making these points, explicitly the judge referenced me. “Ruse and other science witnesses.”

I should say that, as things went, I don’t think there was any big surprise that my testimony turned out to be so central. I have said that, for a long time, our attorneys were not at all convinced of the wisdom of using a philosopher. Indeed, even on the Sunday, the day before the trial, by which time I had flown to Arkansas, there was discussion about whether to use me. It really wasn’t me personally that was at issue—although after the final rehearsal the night before my testimony, my attorney said “Finally Mike, I think you are doing a better job than I could do.” I didn’t take that as a criticism. The big question was the same all along. Could one risk putting a philosopher on the stand? I was neither fish nor fowl, and, as the state attorneys showed in spades the next morning, if they were going to be able to tear holes in the plaintiff’s case, the wild and wooly thinking of a philosopher was just the place to start. They weren’t going to take on someone like Steve Gould. However, once the decision had been made to use a philosopher, then it immediately became clear to everyone that this was going to be the make or break testimony. Could one show that Creation Science is religion? Could one show that evolution is science? These are philosophical questions and if you get them right, you can win. We did get them right, and we did win.

Before I get to the aftermath of my testimony, let me give a bit more history. The state did not appeal the ruling so, technically, it only applied to a certain part of Arkansas. However, a year or two later, a similar case came up. *Edwards v. Aguillard*, in the State of Louisiana.<sup>4</sup> I was deposed for that case too (so I had obviously not blotted my copy-book in Arkansas!) and so this time was Carl Sagan. However, it never went to trial and was rapidly moved up the greasy pole. It went all the way to the Supreme Court, where once and for all teaching Creationism was ruled a breach of the First Amendment separation of Church and State. Although of course these things never are once and for all. By 1990, Creationism morphed into the more user-friendly Intelligent Design Theory (IDT). In the first decade of this century, a school board in Pennsylvania no less—not one of the expected evangelical states of the South—opened the possibility of teaching IDT. Quickly the ACLU got involved and it came to trial—*Kitzmiller versus Dover Area School District* (2005).<sup>5</sup> Again, the biblical side lost, after a ruling by a conservative judge (a 2002 appointee of George W Bush). For some years, I had given up writing about Creationism as such—it is politically important but intellectually rather boring—and so I neither expected to be nor was I asked to be a witness. I should say that some of my writings by then—of which more in a moment—surely convinced the ACLU lawyers that they should have nothing to do with me!

#### 4. *The place of Popper*

Let me now concentrate on three follow-up matters. First, my testimony and the use of Popper. If you look at the ruling you see that Popper’s criterion of demarcation—falsifiability—was not just a crucial part of my testimony, but a crucial part of the judge’s ruling. So as far as winning was concerned, it was the right strategy. But was

it true? I must say that I did not then and do not now think of myself as a Popperian, in the sense of thinking his work is so central to the philosophy of science that he was the most important philosopher of science of the twentieth century. Indeed, like most people I found intensely irritating the group of sycophants with which he surrounded himself. One of the most annoying experiences of my academic life ever was trying to give a paper with the broadcaster and writer Bryan McGee in the audience. Every time I tried to make a comment, he would spring to his feet and tell the audience that Popper had made a similar point in a rather better manner, or that my understanding of something involved an egregious misreading of Popper's philosophy. I was tempted to give the podium over to McGee and I fully expect he would have taken it.

That said, there is (or was) in US philosophy of science circles intense hostility to Popper and his ideas. I never shared this feeling nor do I now. I met Popper only two or three times, but when we did meet, our encounters were very cordial. In fact, I wrote a paper in the late seventies critical of his claims about evolutionary theory (Ruse 1977). When we met, he remembered it (and brought it up), said he thought I had a point (John Maynard Smith had really put him right on these issues), and we had what I thought was a very fruitful conversation. My long-time colleague, Tom Settle, once told me that Popper had difficult relations with his children (his students and the like) but got on really well with his grandchildren—of which Tom, as a student of Joe Agassi, was one. Most importantly, I had—and still have—huge admiration for Popper as a voice of rationality in the 1930s and 1940s, at a time when the world was in dire need of voices of rationality. That is by far my overwhelming emotion when I think of Karl Popper.

As far as the philosophy was concerned, it wasn't so much that I was in favor of falsifiability or against falsifiability. It was rather that it was never really a topic of mine. In the philosophy of science, I was working on theories and their construction—people like Hempel and Nagel were more central to me. Quite apart from the fact that I am not a physicist, so Popper's work was not really my flavor. Then, when I worked on the history of science, the philosopher I had in my targets was Kuhn, as I tried to show that the Darwinian Revolution could not have been as Kuhn hypothesized. There was no abrupt switch from one position to another—incommensurable paradigms—but a general gradual change, with Darwin's thinking incorporating much that he had learnt from the non—or anti—evolutionists. To this day, I say that Darwin was a rebel not a revolutionary.

The one exception to my lack of real interest was that already-mentioned paper on Popper on evolutionary biology. He had said that Darwinian theory is not real science but a metaphysical research programme that could not be falsified—apart from anything else, he claimed that natural selection is a tautology so obviously is not empirical (Popper 1974). The first paper I ever had accepted—a presentation at the first meeting of the PSA in 1968 in Pittsburgh—was on that topic. I guess I was interested in falsifiability in a minor way, right through practically until the Arkansas trial. I thought then as I think now that falsifiability is important and it is a mark of genuine science, although I was not then (nor am I now) convinced that that is all there is to be said on the topic of demarcation. Overton got me right. Falsifiability is important but there are other factors too. In Arkansas I was not selling my birthright

for a mess of pottage, or, more prosaically, the chance to get involved in an exciting and very public event.

### 5. *A pariah among the respectable*

Second, for my testimony in Arkansas, I got it in the neck from my fellow philosophers. I was a bit surprised. I thought that, even if people didn't quite agree with me, there would be respect for what I had done. No way. The first intimation of how things were going to go was at the Eastern APA, just after Christmas 1981—after the trial but before the ruling. I knew Ernan McMullin—philosopher of science, Galileo expert, Catholic priest, professor at Notre Dame, Irishman—quite well and thought of him as a friend, for all that he was a generation older than I (and I am English-born). It was at the smoker—APA meetings used to have those sorts of things in those days—and I was a bit cocky about what I had just done in Arkansas—me and Steve Gould sort of thing. I was gobsmacked. Ernan went bright red and had trouble talking to me. I had demarcated science from non-science? And I had used Popper as my foundation? It was not a pleasant encounter.

I should say that a year or two later, Ernan McMullin and I were back on good terms and, after he died in 2011, in the science and religion journal *Zygon*, I wrote an appreciation of him and of my great philosophical debt (Ruse 2012). In a PSA Presidential Address, Ernan had taken up the question of epistemic values (prediction, confirmation, falsifiability) versus non-epistemic values (racism, homophobia, sexism) in science, arguing that over time the former expel the latter (McMullin 1983). I don't think he was quite right, but his thinking spurred me to write what is perhaps my most important book, certainly my longest, *Monad to Man: The Concept of Progress in Evolutionary Biology* (1996). I argue that scientists kick out non-epistemic values not because they no longer believe in them but because their presence goes against the standards of good professional science, and above all scientists want to be considered good professionals. They are real scientists, not phrenologists or whatever. I am now fairly sure that what made Ernan so mad at that smoker was not at all the appeal to Popper, but that he thought I was simply attacking religion. Ernan trod a careful path between being a very secular philosopher of science—no Thomist he!—and a Catholic Priest, moreover a rather conservative Catholic Priest. Although he was for many years at Notre Dame, he was not a member of any order, and always under the suzerainty of his bishop back in Ireland (Eire). Some years later, Ernan gained as a colleague the Calvinist evolution-hater Alvin Plantinga and I thought Ernan became much more appreciative of my position. (By then I was quarreling with the New Atheists, so, although a non-believer, I was acknowledged far and wide as no rabid opponent of God and religion).

As happens with philosophers, things soon got into print. Another good friend (!) Larry Laudan went after me with hammer and tongs.

In the wake of the decision in the Arkansas Creationism trial (*McLean v. Arkansas*), the friends of science are apt to be relishing the outcome. The creationists quite clearly made a botch of their case and there can be little doubt that the Arkansas decision may, at least for a time, blunt legislative pressure to enact similar laws in other states. Once the dust has settled, however, the trial in general and Judge William

R. Overton's ruling in particular may come back to haunt us; for, although the verdict itself is probably to be commended, it was reached for all the wrong reasons and by a chain of argument which is hopelessly suspect. Indeed, the ruling rests on a host of misrepresentations of what science is and how it works. (Laudan 1982, 16; reprinted in Ruse 1988).

And that is just a warm-up. Basically, Laudan criticized me for offering criteria of demarcation, including falsifiability. And he thought that I was aiming at the wrong end. The question is not whether Creation Science is science but whether it is good science. It is bad science and so should not be taught in the classroom. Demarcation issues are side stepped.

The core issue is not whether Creationism satisfies some undemanding and highly controversial definitions of what is scientific; the real question is whether the existing evidence provides stronger arguments for evolutionary theory than for Creationism. Once that question is settled, we will know what belongs in the classroom and what does not. (ibid. 18).

Expectedly, falsifiability got roughed up.

Judge Overton was explicitly venturing into philosophical terrain. His obiter dicta are about as remote from well-founded opinion in the philosophy of science as Creationism is from respectable geology. It simply will not do for the defenders of science to invoke philosophy of science when it suits them (e.g., their much-loved principle of falsifiability comes directly from the philosopher Karl Popper) and to dismiss it as "arcane" and "remote" when it does not. However noble the motivation, bad philosophy makes for bad law. (ibid. 19).

My reply—and once again I am rather impressed at the confidence and robustness of what I thought and wrote—was, first, that the US Constitution does not forbid the teaching of bad science. It forbids the teaching of religion. It is no good trying to do an end run around demarcation criteria. Second, it is just silly to say that there can be no such criteria. Take a statement like "The Earth is flat." (I am using examples from now to make the point.) You cannot just work from marks on paper. Interpretation counts. Obviously, if you are prepared to accept empirical evidence, it is falsifiable. Go to the sea-shore, look at the horizon, and ask why ships coming towards land first show their masts and only gradually is all else revealed. But if you are not prepared to accept such evidence—you have religious reasons for holding always that the earth is flat—then your position is unfalsifiable. If you keep invoking things like optical illusions, then you are into religion not science. It is true that in my response to Laudan, I do rather lace into Popper. "Simple criteria that supposedly give a clear answer to every case—for example, Karl Popper's single stipulation of falsifiability will not do." (Ruse 1982, 21; reprinted in Ruse 1988) (To be fair, I am not sure that Popper ever thought this either.) But then I make it clear that I am not throwing Popper overboard. Anything but.

Finally, what about Laudan's claim that some parts of creation-science (e.g., claims about the Flood) are falsifiable and that other parts (e.g., about the originally created "kinds") are revisable? Such parts are not falsifiable or revisable in a way indicative of genuine science. Creation-science is not like physics, which exists as part of humanity's common cultural heritage and domain. It exists solely in the

imaginings and writing of a relatively small group of people. Their publications (and stated intentions) show that, for example, there is no way they will relinquish belief in the Flood, whatever the evidence. In this sense, their doctrines are truly unfalsifiable. (ibid. 22)

Unlike Laudan, I had read the Creationist literature and could quote it.

... it is... quite impossible to determine anything about Creation through a study of present processes, because present processes are not created in character. If man wishes to know anything about Creation (the time of Creation, the duration of Creation, the order of Creation, the methods of Creation, or anything else) his sole source of true information is that of divine revelation. God was there when it happened. We were not there... therefore, we are completely limited to what God has seen fit to tell us, and this information is in His written Word. This is our textbook on the science of Creation! (ibid. 21).

This is not science. And if further proof is needed, look at the testament of faith that one had to sign in order to become a member of the leading organization, the Creation Research Society.

(1) The Bible is the written Word of God, and because we believe it to be inspired throughout, all of its assertions are historically and scientifically true in all of the original autographs. To the student of nature, this means that the account of origins in Genesis is a factual presentation of simple historical truths. (2) All basic types of living things, including man, were made by direct creative acts of God during Creation Week as described in Genesis. Whatever biological changes have occurred since Creation have accomplished only changes within the original created kinds. (3) The great Flood described in Genesis, commonly referred to as the Noachian Deluge, was an historical event, worldwide in its extent and effect. (4) Finally, we are an organization of Christian men of science, who accept Jesus Christ as our Lord and Savior. The account of the special creation of Adam and Eve as one man and one woman, and their subsequent fall into sin, is the basis for our belief in the necessity of a Savior for all mankind. Therefore, salvation can come only thru accepting Jesus Christ as our Savior (ibid. 22).

Enough said. Except a reflection of my thoughts then and my thoughts now. I am a professional philosopher. I love the attacks and counter-attacks that are part of our trade. And, I am certainly not averse to publicity. A few years after the Arkansas trial, I put together a collection—*But is it Science? The Philosophical Question in the Evolution/Creationism Controversy*, that includes material of historical significance (mainly articles by me), material of contemporary relevance (mainly articles by me), and follow up material (articles by me but also of my critics like Larry Laudan). “Therefore if thine enemy hunger, feed him; if he thirst, give him drink: for in so doing thou shalt heap coals of fire on his head” (Proverbs 25, 21–22).

My leading emotion however, then and now, was/is one of contempt. Creation Science is dangerous. It should not be taught in classrooms. We see only too well the pernicious effects of pseudo-science and like phenomena, including extreme evangelical religion. Anti-vaccination, anti-global warming, anti-GMOs—at a time when diseases run rampant, cities are lost under the sea, half of the world’s children go to bed hungry. Laudan and his fellows had no thought for this. And before you protest

that they were after truth not comfort, then why didn't they look more carefully at the philosophical issues at stake? Why didn't they spend even one afternoon looking at the Creationist literature? Even in the pre-internet era it was not hard to find. Whatever issues I had with Popper and his coterie of groupies, again I go back to the stand he took for rationality when it was so needed. That to me is a real Mensch.

#### 6. *Darwinism as religion*

Third, let me conclude this essay—more a memoir!—by taking up the effect, by the Arkansas trial, on my subsequent professional career as a scholar. I could not other than be struck, at a kind of meta-level, at what was going on here. Why the hostility to evolution, especially to Darwinian theory and its mechanism of natural selection? Simplistically, because it goes against the bible. Yes, but no one hates the Copernican theory even though, supposedly, the sun stopped for Joshua. In any case, it is not a generic hatred. Creationists admit these days that the Ark would not have been big enough to carry all the species of animal extant today. Their ploy is that the Ark carried “kinds,” and after the Flood these evolved into the different species we have today. And how did the evolution occur? Natural selection! The Creationist Museum in Northern Kentucky has a better display and discussion of natural selection than the Field Museum, in Chicago, 300 miles to the north.

I got the key insight giving the answer to my question from, of all people, the Creationist Duane T. Gish. I should explain I always had very good relations with the Creationists, Gish in particular. I guess we recognized fellow performers. I have in my possession a copy of *Evolution: The Fossils say No!* (over 150,000 copies sold), inscribed by Gish to Michael Ruse, his good friend, with warm best wishes. Hope springs eternal in the breast of this bibliophile that Gish will be proven right, and Darwin wrong, and I shall be the owner of a rare, much-coveted first edition. I also got on well with the State of Arkansas Attorney General. He was very smooth and later in the decade ended in jail for fraud. I am not surprised. And completing the list of my odd friendships, I was a good pal of the deviser of Intelligent Design Theory, Berkeley law professor Phillip Johnson. He was born on June 18, 1940, and I on June 21, 1940. I always joked that it showed that God had a sense of humor, to invent Phil and then me to give him ulcers. I contributed to his Festschrift. The same year I contributed to the Festschrift of leading New Atheist, Richard Dawkins. I don't really know about God's sense of humor. Mine is pretty active.

After the trial, I got to know Gish well as we appeared often together on TV talk shows, and a constant theme of his complaint about Darwinism was that it was really just as much a religion as Creationism. (We were off-stage, so he was quite happy making those judgments of Creationism.) For a long time, I resisted his suggestion, but then came to realize that he had a point. It is not so much that Darwinian theory is religion. That is perfectly good science in its own right. It is rather that people take Darwinism and use it as the basis for a form of secular humanism. Just think, we have Darwin Day, celebrating Darwin's birth. So, also, we have Jesus Day. We call it Christmas. We don't have Copernicus Day or Newton Day or, for that matter, Dawkins Day. (I suspect he would be embarrassed, but not that much).



This insight set me on a thirty-year journey, trying to show exactly how Darwin's theory is turned into a religion. I wrote a book showing that both Creationism and Darwinism (construed in this sense) are into eschatology, world systems about meaning and end times (Ruse 2005). Creationists are Providentialists, thinking we can do nothing without the saving grace of the blood of the lamb, and so we must prepare for the end trying to obey His commands. Darwinists are progressionists, thinking we must improve things through our own efforts, if we are to bring Jerusalem down here on Earth. Both sides are into heaven—a secular version at least for the Darwinists—but they have different prescriptions on how to achieve it. In the lingo of theology, Creationists are pre-millennialists, thinking Jesus will come before things are put right. Darwinists are post-millennialists, thinking Jesus (in a metaphorical sense) will come later when we have put things right. More recently, I wrote a book on Darwinism and literature, showing how fiction and poetry show that folk worked through such Christian themes as origins, God, the status of humans, sin, sex, salvation from a Darwinian perspective (Ruse 2017). I followed this with a book on war, showing how Christians and Darwinians took different stances on all the moral issues that such conflict entails (Ruse 2018).

What was fascinating was how, topic after topic, I found parallel treatments. Both Creationists and Darwinists obsessed about the special place of humans, for example, determined to find that everything revolves around us—made in the image of our Providential God as opposed to the climax of a progressive process of evolution. Showing that there is a lot more than just science going on here, the scientific theory of Darwinian evolution explicitly eschews such progress. Humans are different, but the science does not say we are better. In fact, the opposite. In the immortal words of the paleontologist Jack Sepkoski: “I see intelligence as just one of a variety of adaptations among tetrapods for survival. Running fast in a herd while being as dumb as shit, I think, is a very good adaptation for survival” (Ruse 1996, 486).

I will not labor the point. If you are interested, I have written extensively—very extensively—on the topic. What I will note is that my claims in this sphere are the strong reason why I am the last person that the ACLU wants up on the witness stand. Imagine when the defense attorneys get going on my claims about Darwinism being a religion. The fact that I have always insisted that there is a genuinely scientific Darwinian theory of evolution will be regarded as an irrelevant joke. I should say I am not being paranoid. There is good evidence for my suspicion. The Creationist Paul Nelson (another good friend!) took note of a AAAS meeting in 1993, where I gave a talk. Nelson remarks:

Michael Ruse, a philosopher and biology historian at the University of Guelph in Ontario, was probably the best-known speaker featured at the session, “The New Anti-evolutionism.” As session organizer Eugenie Scott remarked before Ruse spoke, “He is almost a person who needs no introduction in this context.” Yet a recent article describing the session in the *London Times* Higher Education Supplement omits Ruse entirely. Although the *Times* provides the identities and views of all the other speakers in some detail, they make no mention—even in passing—of Ruse nor his talk.

Why the glaring omission? Was Ruse's talk so commonplace or forgettable that it warranted no mention? Hardly: indeed, the opposite is the case. Ruse is often

controversial, but he is rarely boring, and his talk entitled “Nonliteralist anti-evolution as in the case of Phillip Johnson” was true to form; it was (for this correspondent) easily the most memorable and surprising of the meeting. Thus I speculate that Ruse’s conspicuous absence from the *Times* article may be due to a certain uneasiness about his main point, which, Ruse argued (and I agree) “is an important one.”<sup>6</sup>

Looking at what I said, Nelson had a point. He records my talk covering an earlier encounter I had had with Phillip Johnson, I said.

What Johnson was arguing was that, at a certain level, the kind of position of a person like myself, an evolutionist, is metaphysically based at some level, just as much as the kind of position of...some creationist, someone like Gish or somebody like that. And to a certain extent, I must confess, in the 10 years since I performed or I appeared in the creationism trial in Arkansas, I must say that I’ve been coming to this kind of position myself.

Nelson picks up the thread:

It is now important, Ruse continued, that evolutionists admit—to themselves, if not “in a court of law”—that “the science side has certain metaphysical assumptions” which ground its view of origins, and that future discussions must take account of these assumptions. We cannot ignore them.

One problem is that the picture of science received from the “logical positivists” or “people like Popper and Hempel and Nagel” accords poorly with much historical evidence concerning evolution’s role. “It’s certainly been the case,” Ruse said, “that evolution has functioned, if not as a religion as such, certainly with elements akin to a secular religion.” As examples, he cited “the most famous family in the history of evolution, namely, the Huxleys,” and, more recently, biologist Edward O. Wilson. About Thomas Henry Huxley, Darwin’s “bulldog,” Ruse noted:

Certainly, if you read Thomas Henry Huxley, when he’s in full flight, there’s no question but that for Huxley at some very important level, evolution and science generally, but certainly evolution in particular, is functioning a bit as a kind of secular religion.

Julian Huxley, Thomas’s grandson, also stood in this tradition.

For many evolutionists, Ruse continued, things are much the same today: “Evolution in a way functions as a kind of secular religion.”

In his book *On Human Nature*, well-known Harvard systematist and sociobiologist E.O. Wilson “is quite categorical,” he argued, “about wanting to see evolution as the new myth, and all sorts of language like this. That for him, at some level, it’s functioning as a kind of metaphysical system.”<sup>7</sup>

I guess with friends like me, you don’t need any enemies! More seriously I stand by every word I said. I stand also by my lifelong commitment to Darwinian theory as hugely important science and a testament to the real reason why we are made in the image of God, whether or not He exists. This was true back at the time of the sociobiology debate, when I took a huge amount of flack for my conviction that Edward O. Wilson was right in seeing human nature as a product of Darwinian evolution (despite his yearnings for something more), to my recent arguments about the Darwinian evolution of morality and its consequent ontologically non-real status.

*Envoi*

Although I have not in any sense been working in a Popperian mode, you can see how the whole demarcation (of science from non-science) issue has permeated my intellectual being and drives forward the work I do. Science, religion, and the differences between them. This why I can conclude that, although I am not in any recognizable (or non-recognizable) sense a Popperian, I am very glad and proud to be in the same intellectual field as he.

**Notes**

1. [http://www.antievolution.org/projects/mclean/new\\_site/pf\\_trans/mva\\_tt\\_p\\_ruse.html](http://www.antievolution.org/projects/mclean/new_site/pf_trans/mva_tt_p_ruse.html).
2. <http://cdn.loc.gov/service/ll/usrep/usrep393/usrep393097/usrep393097.pdf>.
3. [http://www.antievolution.org/cs/mclean\\_ruse\\_test](http://www.antievolution.org/cs/mclean_ruse_test).
4. <http://cdn.loc.gov/service/ll/usrep/usrep482/usrep482578/usrep482578.pdf>.
5. <https://law.justia.com/cases/federal/district-courts/FSupp2/400/707/2414073/>. A second edition of *But is it Science?* was co-edited by Robert Pennock who was the philosophy expert witness in Dover. We include material on this trial as well as Arkansas. See Pennock and Ruse (2008).
6. <http://www.arn.org/docs/orpages/or151/151meta.htm>.
7. Ibid.

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**Michael Ruse** Lucyle T. Werkmeister Professor of Philosophy at the Florida State University, USA (retired) and Professor Emeritus, University of Guelph, Ontario, Canada is a historian and philosopher of science, with a strong interest in Charles Darwin and his theory of evolution by natural selection, both in history and today. He is the author of many books, including *Darwinism as Religion: What Literature Tells Us About Evolution* (OUP, 2017); *On Purpose* (Princeton UP, 2018); and *The Problem of War: Darwinism, Christianity, and their Battle to Understand Human Conflict* (OUP, 2018). E-mail: [mruse@fsu.edu](mailto:mruse@fsu.edu)