

Creationism on Trial

Judge William Overton's Memorandum Opinion in the case of *Rev. Bill McLean et. al. v. The Arkansas Board of Education et. al.* occasioned a small flurry of papers by philosophers of science debating the merits of the judicial decision. Almost twenty years have now elapsed since the conclusion of the trial, and the time seems ripe for a retrospective assessment of the merits of the judge's decision, and of the criticisms of that decision which were made by the philosophers of science in question. Although I think that there wasn't much wrong with the judge's opinion, I propose to argue that the claims made by the various philosophers were also substantially correct. This might sound surprising, given the heat generated by the discussion. However, it seems to me that what happened was a classic case of misunderstanding: people talked straight past each other because they placed different construals on the key terms involved.

1

In §IV(C) of his opinion, Judge Overton wrote:

[T]he essential characteristics of science are:

- (1) It is guided by natural law.
- (2) It has to be explanatory by reference to natural law.

(3) It is testable against the empirical world.

(4) Its conclusions are tentative, i.e. are not necessarily the last word.

(5) It is falsifiable.

Creation science as described in [Act 590] fails to meet these essential characteristics.

One way in which this claim might be interpreted—which is, moreover, the way in which philosophers of science will be naturally disposed to interpret it—is to suppose that we are being offered individually necessary and jointly sufficient conditions for the scientific status of theories, and that the judge contends that creationism fails to meet this list of conditions. If this claim is interpreted in this way, then it is open to various avenues of criticism.

First, this characterisation of scientific theories entails that theories which fail on both counts (3) and (5) have no empirical content whatsoever. However—as Laudan points out in his initial criticism of the judicial opinion—it is clear that creationism (as described in Act 590) has numerous testable—empirically investigable—consequences. (Moreover, as Laudan insists, the main criticism which opponents of creationism make, and ought to make, is that its claims are testable, have been tested, and have failed the relevant tests.) No doubt, any scientific theory will satisfy (3) and (5)—but these conditions are too weak to serve as a foundation for criticism of creationism.

Second, this characterisation of scientific theories involves some kind of conflation of the virtues of theories with the virtues of those who hold the theories in the

formulation of clause (4): while the proponents of creationism might take their views to be necessarily the last word, that is a feature of their attitude towards the theory, and not a feature of the theory itself. (Moreover, as Laudan insists, it is not the case that creationists take their theories to be necessarily the last word: even a cursory look at the history of creationism during the twentieth century shows that creationists have modified their views in various respects in response to criticisms, new evidence, etc. And, if creationists hold *some* points of doctrine to be necessarily the last word, it is not clear that this is substantially different from the behaviour of scientists.)

Third, this characterisation of scientific theories suffers from some fuzziness and unclarity, especially in the formulation of clauses (1) and (2). Laudan surmises that what the judge means is that ‘it is inappropriate and unscientific to postulate the existence of any process or fact which cannot be explained in terms of known scientific laws’. Of course, if this is what the judge meant to say, then it is pretty clearly mistaken: it is one thing to establish the existence of some natural phenomenon, quite another to find a law-like explanation of that phenomenon. Moreover, there are things which the judge says which seem to support this interpretation, e.g.: “A worldwide flood as an explanation of the world’s geology is not the product of natural law, nor can its occurrence be explained by natural law.” (416)

Since Laudan also supposes that the above formulation of the essential characteristics of science constitutes ‘the heart of Judge Overton’s opinion’, it is not surprising that Laudan views the verdict as a disaster, ‘... [a hollow victory] achieved only at the expense of perpetuating and canonising a false stereotype of what science is and how

it works' (355). However, before we concur in Laudan's criticism of the judge's decision there are two questions to ask. First, is it true that the judge's formulation of 'the essential characteristics of science' constitutes 'the heart of his opinion'? And, second, is it true that the judge understands his list of 'essential characteristics of science' in the way in which Laudan—and other philosophers of science—do? If we give an affirmative answer to both of these questions, then the judge's verdict clearly does deserve to be condemned. So let's see.

2

The plaintiffs in the case made three allegations against Act 590, viz.: (i) that it constituted an establishment of religion, in violation of the First Amendment to the Constitution (made applicable to the states by the Fourteenth Amendment); (ii) that it violated a right to academic freedom for students and teachers guaranteed by the Free Speech Clause of the First Amendment; and (iii) that it was impermissibly vague and thus violated the Due Process Clause of the Fourteenth Amendment. The judge suggested that the third allegation was not substantiated, and hinted that there was some substance to the second allegation—but chose not to fully discuss either since, in his view, the first allegation was clearly correct, and provided sufficient reason to strike down Act 590.

In discussing the first allegation, the judge relied on a 'three-pronged test' established by legal precedent. A statute is in violation of the First Amendment if either (i) it fails

to have a secular legislative purpose; or (ii) its principle or primary effect is one that either advances or inhibits religion; or (iii) it fosters an excessive entanglement of government with religion. The judge argued that Act 590 failed on all three counts; hence, there was more than sufficient reason to strike it down. Moreover, the arguments advanced by the judge in connection with (i) and (iii) have nothing at all to do with his claims about ‘the essential characteristics of science’.

In connection with (i), the judge argued that there was lots of legally relevant ‘external’ evidence that the main intention of the proponents of the Act was the advancement of Fundamentalist religion, and moreover that there was also clear ‘internal evidence’—mainly in the form of the clear dependence of Creationist doctrine on a literal interpretation of Genesis—of this same principal intention. In connection with (iii), the judge argued that the pervasive nature of religious concepts in creation science texts indicated that State entanglement with religion would be inevitable under Act 590. As far as I can see, these judgements are correct, both factually and in law. Consequently, it seems to me that it really isn’t true—as Laudan alleges—that the apparently questionable characterisation of science ‘lies at the heart’ of the judge’s verdict. The judge would have reached the same correct decision even if he had not attempted to give a ‘characterisation of the essence of science’.

In connection with (ii), the judge’s line of argument seems to me to go as follows: First, the judge contends that one major effect of the legislation will be the advancement of religion. Second, the judge argues that, since creation science is not science, it cannot be that a major effect of the legislation will be the advancement of science. Since there is no other plausible major effect of the legislation, the judge

concludes that the primary effect of the legislation will be the advancement of religion. If this is right, then it is clear what role the claim, that creation science is not science, is supposed to play in the judge's decision. Moreover, it might be thought that, in view of the criticisms highlighted earlier, there are major flaws in this part of the judge's argument. However, before we go on, it is worth noting that, given the way that the judge's argument is constructed, it would have done just as well for him to argue that, since creation science is not *good* science, it cannot be that a major effect of the legislation will be the advancement of science. In particular, contrary to the claim made by Ruse, it is sufficient for the opinion argued by the judge—though not perhaps for the case which some of the plaintiffs took themselves to be presenting—that it should be established that creation science is weak science.

3

Given the facts just noted, it is clearly worth asking whether the judge's claim, that creation science is not science, can be interpreted as an expression of the view that philosophers would more naturally express by saying that creation science is not good science. I think that not only *can* the judge's claim be interpreted in this way, it is actually *best* interpreted in this way. There are two reasons why I say this.

First, if the judge's interpretation of his statement of 'the essential characteristics of science' were the one which Laudan attributes to him—and which other philosophers would naturally make—then we would expect him to ask the question whether

creation science as defined in ACT 590 has empirical content. Since he doesn't do this—and for various other reasons besides—it is clear that the judge doesn't think of his 'essential characteristics of science' as necessary and sufficient conditions for the scientific status of theories. Moreover, it makes no more sense of the judge's remarks to take him to be supposing that his 'essential characteristics of science' provide necessary and sufficient conditions for the scientific status of individual sentences. After all, it would be highly uncharitable (and unlikely) to suppose that the judge thinks that scientific theories are entirely discredited if it is shown that some of their component claims fail to meet these standards.

Second, the use that the judge actually makes of his 'essential characteristics of science' is highly puzzling, if those characteristics are interpreted in the way in which philosophers would typically interpret them. What he does, after he introduces the characterisation, is to look at the definition of 'creation science' which is given in §4(a) of the act, and to criticise it in the light of his 'essential characteristics of science':

“Creation science as described in Section 4(a) fails to meet these essential characteristics. First, the section revolves around 4(a)(1) which asserts a sudden creation 'from nothing'. Such a concept is not science because it depends upon a supernatural intervention which is not guided by natural law. It is not explanatory by reference to natural law, is not testable and is not falsifiable. ...

Section 4(a)(2) relating to the ‘insufficiency of mutation and natural selection in bringing about development of all living kinds from a single organism’ is an incomplete negative generalisation directed at the theory of evolution.

Section 4(a)(3) which describes ‘changes only within fixed limits of originally created kinds of plants and animals’ fails to conform to the essential characteristics of science for several reasons. First, there is no scientific definition of ‘kinds’ Second, the assertion appears to be an effort to establish outer limits of change within species. There is no scientific explanation for these limits which is guided by natural law and the limitations, whatever they are, cannot be explained by natural law.

The statement in 4(a)(4) of ‘separate ancestry of man and apes’ is a bald assertion. It explains nothing and refers to no scientific fact or theory.

Section 4(a)(5) refers to ‘explanation of the earth’s geology by catastrophism, including the occurrence of a worldwide flood’. This assertion completely fails as science. The Act is referring to the Noachian flood described in the book of Genesis. The creationist writers concede that any kind of Genesis flood depends upon supernatural intervention. A worldwide flood as an explanation of the world’s geology is not the product of natural law, nor can its occurrence be explained by natural law.

Section 4(a)(6) equally fails to meet the standards of science. ‘Relatively recent inception’ has no scientific meaning. It can only be given meaning by reference to

creationist writings ... [whose] reasoning is not the product of natural law, not explainable by natural law, and is not tentative.

Creation science, as defined in Section 4(a), not only fails to follow the canons defining scientific theory, it also fails to fit the more general descriptions of ‘what scientists think’ and ‘what scientists do’.

It seems to me that all of this only makes sense if we suppose that what the judge takes his ‘essential characteristics of science’ to be characterising is something like ‘the best science of our day’, or ‘good, well-established science’, or the like. What he must be thinking is something like this: that good scientific claims are naturalistic (and hence make no reference to supernatural entities); that good scientific claims are supported by the available empirical evidence (and hence that good scientific claims are testable with respect to—and falsifiable by—empirical data); that good scientific claims are clear and precise (since otherwise they won’t admit of definite empirical tests); and that good scientific practice allows that all claims are potentially revisable in the light of the empirical data.

Consider, for example, his criticism of the claim about ‘separate ancestry for man and apes’. In itself, this claim is compatible with naturalistic explanation, it has testable empirical consequences, and it can be held tentatively (and no doubt has been so held by some people in the course of history). If the judge understood ‘the essential characteristics of science’ in the way that Laudan does, it is obvious that he would have to allow that—by his own lights—this claim is scientific. Yet the judge says that this claim ‘refers to no scientific fact or theory’. Surely, then, all that he can mean by

this is that the claim receives no support from good, well-established, *naturalistic* science. Similar points can be made with respect to most of the other criticisms that the judge makes in the above quoted passages.

In ordinary language, to say that a claim is scientific is to say something that is potentially ambiguous. One thing you might mean is that the content of the claim is concerned only with the natural world (and not with supernatural entities). A second thing that you might mean is that the claim is the product of reflection on empirical data (and perhaps that it does not rely essentially for its justification upon any claims about supernatural entities). A third thing you might mean is that the claim is the product of good or worthwhile reflection on empirical data (again, perhaps, it might also be required that that good or worthwhile reflection has no truck with supernatural entities). And a fourth thing you might mean is that the claim is the best current opinion based on the empirical data (once again, perhaps, it might also be required that this best opinion must be framed with respect to the empirical data alone, and not influenced by considerations about supernatural entities). Consider, for example, the claim that the universe is about 10, 000 years old. That claim is scientific according to the first of the distinguished meanings, and might be scientific according to the second and third. But there is no way that it is scientific in the last of the distinguished senses. If ‘scientific’ is taken to have some sort of normative import—and that is the way that the word is often used—then it is simply not the case that the claim that the universe is about 10, 000 years old is a scientific claim (and nor is the claim of ‘separate ancestry for man and apes’).

Apart from the above noted ambiguities in the meaning of ‘scientific’, there is a further ambiguity in the meaning of ‘science’ which is also worth noting at this point. When we talk about the ‘essential characteristics of science’, we may be talking about the characteristics of theories, or doctrines, or the like; or we may be talking about the characteristics of a kind of activity. Understood in the latter way, we might take the judge’s ‘characterisation’ to amount to something like the following: that good scientific practice is (1) naturalistic—i.e. makes no appeal to supernatural entities—and deals in nothing but naturalistic explanations; (2) tentative—i.e. does not treat core principles to be immune from rational scrutiny; and (3) empirical—i.e. particularly values claims which can be subjected to empirical testing, and which have successfully withstood empirical testing. If we suppose that this is closer to what the judge has in mind in offering his characterisation of science, then we can make even better sense of what he does and what he says. If ‘creation science’ crucially makes use of hopelessly and deliberately imprecise concepts—e.g. ‘kind’, ‘relatively recent’—then it fails to put an appropriate value on empirical testing. If ‘creation science’ relies upon assumptions about supernatural entities, then it is not naturalistic. If ‘creation science’ holds the claim that the Bible is the one reliable source of information about the origins of the universe, then it fails to be suitably tentative. If—as it does—‘creation science’ fails on all three counts, then it is perfectly clear that ‘creation science’ is not good scientific practice. Since this way of interpreting the remarks of the judge makes what he says cogent and plausible, there is considerable reason for interpreting those remarks in this way. (A similar interpretation makes more sense of Ruse’s response to Laudan as well, without any suggestion of logical impropriety and the like.)

4

Even if my controversial reading of the judge's opinion were accepted, there are still many questions which remain to be asked. In particular, it is worth asking whether I have simply proposed replacing one bad account of scientific theories and practice with another which is even worse, so that the 'patches' which I have proposed for the judge's argument can't possibly work. I don't think that this contention could be justified; however, I shall approach the matter a little obliquely.

Consider the claim that the Bible is literally authoritative on all matters to do with creation. On plausible assumptions about the literal content of the Bible, this claim entails that the world is about 10,000 years old. (Perhaps this claim could be contested; however, that this claim should turn out to be false would only weaken the position of the proponents of Act 590.) Now, if we allow that the claim, that the Bible is literally authoritative on all matters to do with creation and history, is a religious claim, and we also allow that the claim, that the world is about 10,000 years old, is a scientific claim, then we have a situation in which the falsity of a scientific claim entails the falsity of a religious claim. Moreover, we can quickly and easily see why fundamentalists are likely to be opposed to the teaching of evolution in public schools: for the theory of evolution entails the falsity of the claim that the world is about 10,000 years old, and hence entails the falsity of one of the crucial planks of fundamentalist belief. (Here, I gloss over problems about the varieties of fundamentalist beliefs. Not all creationists are Young Earth Creationists. But, for all

creationists, there are well-established empirical claims that they deny. There is no loss of generality in focussing on one particular case, i.e. the problem I am discussing is typical, even if the details may need to be varied.) But isn't it reasonable to suppose that there should be some kind of legal protection against the teaching of claims that contradict religious beliefs (and, in particular, deeply held and widely maintained religious beliefs)?

I have already noted ambiguities in the use of the word 'scientific'. We should note that there are like ambiguities in the use of the word 'religious'. When you say that a claim is 'religious', there are a number of things that you might mean by this. One thing you might mean is that the content of the claim is concerned with—and perhaps even only with—supernatural entities, and not with the natural world. (The former is more natural, since we should surely want the claim that the Bible tells nothing but the literal truth about the history of the world to count as a religious claim, on any understanding of the word 'religious'.) A second thing that you might mean is that the claim is the product of reflection on matters concerning supernatural entities, and that it relies essentially for its (putative) justification upon claims about supernatural entities. A third thing you might mean is that the claim is the product of good or worthwhile reflection on matters concerning supernatural entities, and that it relies essentially for its (actual) justification upon claims about supernatural entities. And a fourth thing you might mean is that the claim is held devoutly, i.e. that it is held with the appropriate religious attitude.

Now, let's consider the two claims mentioned a couple of paragraphs back. The claim that the world is about 10,000 years old is scientific according to the first of the

meanings which I distinguished, and perhaps also according to the second and third, but it is clearly not scientific according to the fourth. Moreover, this claim is not religious according to the first of the meanings that I distinguished, but it is clearly religious according to the second (and we shall not need to worry about the other two meanings that I mentioned). Clearly, then, it is possible to hold that this claim is both scientific and religious, or that it is neither scientific nor religious, depending upon what we mean by 'scientific' and 'religious'. Likewise, the claim that the Bible is literally authoritative on all matters concerning origins and history, is perhaps scientific in the first of the senses which I distinguished, but it is clearly not scientific in any of the other senses. Moreover, this claim is perhaps religious in the first of the senses which I distinguished, and clearly religious in the second of those senses. So, even here, it seems possible to say that this claim is scientific and not religious, though it might be contended that, on any disambiguation, this claim turns out to be religious and not scientific (and this despite the fact that, in combination with relatively uncontroversial empirical claims, it entails claims which are purely concerned with the natural world).

When we argue about the 'scientific' or 'religious' standing of 'creation science', how should we disambiguate the predicates 'scientific' and 'religious'? In what sense is the First Amendment intended to protect freedom of 'religious' thought, and in what sense does that Amendment place restrictions on the claims that can be taught in public school science classrooms? Do creationists have either a justified legal objection or a justified moral objection to the teaching of the theory of evolution in public school science classrooms?

One way to interpret the First Amendment is to suppose that it only provides protection for religious beliefs in the very strict sense which I mentioned initially: protection for beliefs which are concerned only with the nature of supernatural entities (and which have no implications for the natural world). That is, Congress should make no laws that favour any religious beliefs (in this sense) over any others.

Understood this way, there is no reason why the fundamentalist belief that the Bible is inerrant in matters of creation and history should get any kind of constitutional protection: there is no reason why it should not be taught in public schools that this view is false. (Moreover, it matters not how we choose to disambiguate the claim that such views are 'scientific': the First Amendment is entirely mute on the question of legal protection for scientific beliefs, in any of the senses that might be attached to that term.) However, it may seem implausible that the framers of the First Amendment intended the claim to be understood in this way; apart from anything else, it may seem to be a rather artificial way of understanding talk about 'religious' claims.

A second way to interpret the First Amendment is to suppose that it provides protection for religious beliefs in the less strict sense which I mentioned initially: protection for beliefs which are concerned, at least in part, with the nature of supernatural entities. Understood this way, it might seem that there is some reason to suppose that the fundamentalist belief that the Bible is literally inerrant in matters of creation and history should get some kind of constitutional protection: after all, if it is taught in public schools that this view is mistaken, then what is taught in public schools favours some religions over others. Moreover, the teaching of the theory of evolution in public schools does amount to teaching that this fundamentalist belief is

in error: if the world is much more than 10,000 years old, then the Bible is not literally inerrant in matters of history and creation. However, there seem to be quite pressing reasons for thinking that the framers of the First Amendment did not intend the statute to be interpreted in this way. In particular, it seems clear that, for almost any claim whatsoever, there is a possible religion whose central beliefs entail that that very claim is false. Moreover, even restricting our attention to actual religions, there are all kinds of claims which have been flatly contradicted by the empirical data, but which have been maintained as a crucial part of some religion or other. Since any kind of enquiry of any kind could be crippled by *possible*—and many kinds of enquiry would be crippled by bizarre but *actual*—religious beliefs, if it were maintained that nothing could be taught in public schools which was not neutral between all religions, there seems no room for doubt that the First Amendment is not meant to be interpreted in this way.

Consequently, it seems to me that we are driven back to the first interpretation: the only claims which have constitutional protection are those which are concerned solely with the nature of supernatural entities (and, more generally, those which have no empirical content). Since wars of religion were typically fought over claims which had no empirical content—or, at any rate, over claims which could not be settled by established means of empirical enquiry—it is understandable why the framers of the First Amendment should want to award these claims some kind of constitutional protection: far better that the state not get embroiled in matters of this kind. However, once we advance to questions which do have empirical content—to claims which are not solely concerned with untestable supernatural hypotheses—then there is no saying in advance which of these questions may have some other kind of, say, economic or

political importance for the state, and hence no saying in advance which of these claims might harmlessly be omitted from the public school curriculum. Hence, the only reasonable course is to leave all of these other matters without the same kind of constitutional protection.

Since this argument establishes quite a lot—it would, I think, be no attack on religious beliefs, in the sense at issue, if it were taught that it is a serious question whether the historical record supports the existence of Jesus—it is worth asking whether there is some other sense in which the First Amendment is intended to provide protection for ‘religious’ beliefs. Here, the answer is surely negative. The only other relevant sense is the second of those which I distinguished: but the point about possible and actual religions already mentioned shows that the intent of the framers of the First Amendment could not have been to protect ‘religious’ belief in this sense. So the upshot of my argument seems to be that there could be no reasonable objection to the teaching of the theory of evolution in public schools on the grounds that such teaching violates the First Amendment protection afforded to religious beliefs: the First Amendment is not intended to afford any such protection. (It is also worth noting that this view is pretty firmly established in law: as Judge Overton notes, it is ‘clearly established that teaching evolution does not violate the Establishment clause’, even though it does favour some religions over others.)

Of course, the intent of Act 590 is not to bar the teaching of evolution, but rather to get ‘creation science’ equal time. (Rather disingenuously, one of the grounds is said to be in order to prevent the establishment of religion. But, in none of the senses mentioned can the theory of evolution be considered to be a religion—and likewise

for atheism, agnosticism, materialism and humanism.) However, in order to allow, e.g., the claim that the world is merely 10, 000 years old to be taught in public schools, it would need to be established that this claim is not ‘religious’ in whatever is contended to be the relevant sense. If it is religious in the relevant sense, then, regardless of whether or not it is scientific, it cannot be taught (because of the ban against establishment of religion). Moreover, in view of the above discussion, it would be naïve to suppose that, if it could be established that there is some sense in which this claim is scientific, it therefore follows that it is not, in the relevant sense, religious. As we already noted, there is at least one sense in which this claim is scientific: its literal content concerns nothing but the natural world. However, even if this is taken to be the relevant standard for determining whether this claim is scientific—and that sets aside all questions about whether it relies for its justification on claims about supernatural entities, about whether it is the product of good reflection on the empirical data, and about whether it is a claim which is virtuous in the eyes of the scientific community—we still need to ask whether this claim is not also religious in whatever is taken to be the relevant sense. Since there isn’t any doubt that this claim is only decently supported by what are clearly religious hypotheses—e.g. that the Bible is literally inerrant—it seems reasonable to suggest that, for the purposes of legal assessment, this claim ought to be classified as religious: teaching it in the public schools would constitute an establishment of religion, since it lends support to some religions over others. (Doesn’t this conflict with the point, made a few paragraphs back, that the First Amendment cannot require that nothing that is taught fails to be neutral between all religions? No; the crucial point concerns the reasons for teaching the claim. Those reasons must be neutral between all religions; there can be no intention to favour one religion over another. Recall my earlier claim

about the permissibility of teaching that there are serious questions whether the historical record supports the existence of Jesus. In a course on the history of Western Civilisation looking at the rise of Christianity, the point might be important to discuss for reasons having nothing to do with the promotion or denigration of particular religions. It would be quite another matter if the purpose of raising the question were to promote atheism, or to cast doubt on key tenets of Christian doctrine. In that case, teachers would be proselytising—and that isn't allowed. Of course, science teachers—indeed, any teachers—could proselytise; but the solution to this problem can't be to restrict the *content* of the courses that they teach.)

One crucial point here—and one which proponents of creation science are bound to contest—is that the claim that the world is only 10, 000 years old is not decently supported by empirical data. Setting aside the alleged evidence from scripture, there is no doubt that the available evidence supports the claim that the universe is much more than 10, 000 years old. Moreover—and this is a point which deserves to be emphasised—if we are to take scripture into account, then we have to ask whether the available evidence supports the claim that the Bible is literally inerrant in every respect. Once again, it is clear that this is not the case. (Recall Gibbon's famous argument about Luke 23:42. There are countless similar arguments to be made.) This alone should be sufficient reason for refusing to allow the teaching of this claim in public schools. However, as I have already noted, the claim that the world is only 10, 000 years old is also naturally said to be 'religious' (in all but the strict first sense which I identified) as well as naturally said to be 'not scientific' (in all but the first and strict second senses which I identified). So, the reason for excluding the teaching of this claim from public schools need not be that it is 'not scientific' (even though

there are perfectly good senses in which this is so); rather, the reason for excluding the teaching of this claim from public schools is that it is ‘religious’ (in senses in which the First Amendment prohibits the teaching of such claims in public schools).

In sum, then: there is not much reason to be disquieted by the judge’s opinion.

Commonsense and law seem to agree that he reached the right decision by substantially correct pieces of reasoning. True enough, he should have paid more attention to the ‘essential characteristics of religion’ and to what it is that makes a claim ‘religious’—but this point applies equally to all of the philosophers who commented on his opinion. Furthermore, there is little to contest in what each of the philosophers says (though it is a little surprising that Ruse apparently understands ‘the essential characteristics of science’ in a way that I would suppose is not typical of philosophers in general).

5

Perhaps it might be said that what I have said is not sufficiently sympathetic to creationists. In particular, one might wonder whether there is some truth in the claim that parents have an entitlement to protect their children from exposure to beliefs which those parents deem to be offensive to their own religious beliefs. Although this is a large issue, I can’t resist saying a few words about it in closing. (What follows is pretty sketchy, and requires careful elaboration. I hope to enlarge on it elsewhere.)

It seems to me that there is no reason to suppose that parents have any *legal* entitlement to restrict what is taught in public schools on the grounds that it is offensive to their religious beliefs, except insofar as that teaching is in violation of the First Amendment. (Indeed, it seems to me that, if anything, the world will be made a better place if it is made harder for people who hold beliefs which are flagrantly contradicted by the available evidence to pass those beliefs on to their children. However, I won't try to press this point here.) Given that the teaching of the theory of evolution is not in violation of the First Amendment, parents have no legitimate legal objection to its being taught in public schools.

But do parents have a reasonable moral objection? That is, do parents have a reasonable moral objection to the teaching of the theory of evolution in public schools, given that the theory of evolution conflicts with their religious beliefs? Again, I don't think so. Perhaps it might be said that there is no reason why parents need share the political concerns of the framers of the Constitution. If someone holds that acceptance of the theory of evolution will lead to eternal damnation, then aren't they right to want government intervention, and to want to prevent those views from being taught to children (and, in particular, to their children)? Even if that belief cannot be reasonably maintained, it can certainly be sincerely held—and it might be contended that that is enough to engender a moral right.

Well, what exactly is the objection to the teaching of evolution here? Nobody seriously thinks that beliefs are formed by contagion: expose people to propositions and they will automatically accept them! Of course, in the case of children—and that is the relevant case here—there is a strong tendency for them to accept claims made

by authorities (and peers). But, in the case of children (of fundamentalists), there are authority figures—at home, at church, in Sunday school, on radio, on T.V.—telling them that the theory of evolution is false, and that those who accept it are doing the devil’s work. Those children may be a bit disconcerted to find that their teachers are doing the devil’s work—though, in many cases, I guess this will hardly come as a revelation!—but it is at best an empirical question how likely it is that those children will come to believe what they are taught in school. On current figures, about one in two Americans rejects the theory of evolution, and accepts something like Young Earth creationism. I take it that this is pretty good evidence that teaching the theory of evolution in schools doesn’t do a whole lot in the way of inculcating belief in the theory of evolution in children and, in particular, in the children of fundamentalists.

Perhaps it might be replied that even if the likelihood of belief in evolution amongst children (of fundamentalists) taught that theory in school is remote, the mortal danger involved in activity which gives even some risk of acquiring that belief is sufficient justification for those children not to be exposed to the theory of evolution in biology classes. Of course, by the same kind of argument, these children will also be denied unsupervised access to T.V., radio, newspapers, libraries, books, and any people remotely likely to harbour beliefs in the theory of evolution—but, then again, such vigilance is a small price to pay in the face of eternal damnation.

Clearly, there is a moral objection here—but it is far from clear that it is one that is worthy of respect. To treat children in this way is to cripple their growth into autonomous rational agents, to diminish their capacity to make their own decisions on important questions, and so forth. Of course, the parents need not respect the moral

considerations which are advanced here—what does autonomy matter in the face of eternal damnation?—but it is important to see that questions about the morality of the case need not be answered from the standpoint of the moral values and beliefs of creationists. (I would be prepared to try to mount a case that those values are appalling—irrational, incoherent, and immoral. But such an argument would not be brief, and it would be a wee bit controversial.) Moreover, in any case, it seems clear that, whatever the beliefs of fundamentalists, they have no moral right to damage the scientific education of *other* people's children. The theory of evolution is just an empirically well-confirmed scientific theory: it is the foundation of all modern biological science, and it can't be omitted without loss from high school biology classes.

Even if the above argument is accepted, it might be maintained that there is still *something* to the moral objection made by these kinds of parents, of the kind which was recognised by the Californian State Board of Education in the case of Nell Segraves and Jean Sumrall. Shouldn't children be allowed to cut classes if the content of those classes conflicts with their parents' religious beliefs? Clearly, this is the hardest case. Unless we think that the state has a moral duty to interfere in the upbringing of children who are being inculcated in fundamentalist beliefs, it is unclear what grounds we could have for objecting to the granting of this permission. True enough, we might think that the children are thereby damaged—but the damage is (perhaps) not very great, and it needn't be permanent. Even if we are prepared to argue that the moral values in question are irrational, incoherent and appalling, it is not clear that we should want to use the apparatus of the state to try to oppose those views.

Perhaps we might try arguing about other possible cases. Imagine a religion that teaches that the earth is flat. Should parents in this faith be able to get their children excused from geography and geology classes because those classes teach things that contradict their religion. Imagine a religion which teaches that $2+2=5$. Should parents in this faith be able to get their children excused from mathematics classes (beginning from the very earliest years of elementary school)? If we answer ‘No!’ in these cases, then what grounds could we have for giving a different answer in the case of children of fundamentalists and high school biology classes? Yet surely we should answer ‘No!’ in the possible cases mentioned! Maybe the difference in responses is justified by the thought that much more harm would be done in these cases; or maybe we are tempted to underestimate the harm done to children of fundamentalists in the interest of political expediency. Given the condescending and heavy-handed nature of the second option, I am tempted by the first, though not without misgivings. Clearly, there is room for much further thought here.

References

- Laudan, L. (1982) “Science at the Bar—Causes for Concern” Science, Technology and Human Values **7**, **41**, 16-19
- Laudan, L. (1983) “More on Creationism” Science, Technology and Human Values **8**, **42**, 36-38

Overton, W. (1982) “Memorandum Opinion in Rev. Bill McLean et al. v. The Arkansas Board of Education, et. al. (January 5, 1982)”

Quinn, P. (1984) “The Philosopher of Science as Expert Witness” in J.Cushing, C. Delaney and G. Gutting (eds.) Science and Reality: Recent Work in the Philosophy of Science South Bend: University of Notre Dame Press

Ruse, M. (1982) “Pro Judice” Science, Technology and Human Values **7, 41**, 19-23