

**THE PEW FORUM ON RELIGION & PUBLIC LIFE  
FIRST AMENDMENT CENTER**

**TEACHING ABOUT RELIGION IN PUBLIC SCHOOLS:  
WHERE DO WE GO FROM HERE?**

**THURSDAY, MAY 22, 2003**

**LUNCHEON PROGRAM:  
RELIGION AND SCIENCE: SHOULD SCHOOLS  
TEACH THE CONTROVERSY?**

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**MODERATOR: CHARLES HAYNES,  
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**PANELISTS:  
WARREN NORD, UNIVERSITY OF NORTH CAROLINA – CHAPEL HILL  
JAY WEXLER, BOSTON UNIVERSITY  
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**CHARLES HAYNES:** In the interest of giving as much time to this important discussion as possible, I'm going to get us underway, and you all can keep munching quietly at your tables. I think it's very important for us to start to tackle what may be the longest-running, or one of the longest-running, battles in public education. "Science and Religion: Should Schools Teach the Controversy," is the topic, and as with just about every topic so far in this conference, we could build the entire conference on this question. So it's a little frustrating and overwhelming to do it in the time we have, but I think it's important to get into these various parts of the discussion even though we can't do them justice.

The focus of this session is the question: Does teaching about religion have any place in the science classroom? This is, of course, the longest-running battle, but the new phase of this fight over "intelligent design", in Ohio, recently, and in Cobb County, Georgia, and other places, has brought this back up to the surface in some new and challenging ways for public schools. This is a live topic, and we are not going to try to sort out all of the issues concerning what counts as science, because that's beyond what this panel is brought together to do, although we can't avoid that question entirely. If we were focusing on that, we would have a different set of folks talking about it. We're going to focus on the religious worldview issue and where it ought to be. When religious worldviews address these kinds of issues that come up in science, and all of them do, where should that take place, or should it take place?

We are very fortunate to have Kent Greenawalt, who is a professor at Columbia Law School [<http://www.law.columbia.edu/>], as our keynote speaker on this. This is a great privilege and honor for us because in the field of constitutional law and dealing with any of these kinds of issues, he is one of America's leading scholars and has written many very fine books that have helped many of us on a great many important issues. So it's a great honor to welcome him to this podium to open up the conversation. I will introduce the panel after Kent has had a chance to speak with you. (Applause.)

**KENT GREENAWALT:** Thank you very much, Charles. It's really a great privilege to be here. I've learned a lot in the last couple of days, and I really am delighted to be able to participate in this.

Eric was talking this morning about 9/11 and where he was, and it reminded me that I have two sons who were living in New York, and still live in New York, and I worry about them from time to time. A third son of mine was working for Congressman Waxman down here when that happened, and also through the anthrax scare, and then this Fall he went off the Yale Law School, and I thought he was safe, but he was in the building where the bomb went off yesterday. Fortunately I heard about it from him

before I heard about it on the news, so I didn't go through the process of all the anxiety that I would otherwise have experienced.

Our issue this luncheon panel is what the public schools should teach about relations between science and religion and conflicts between science and religion, and how far any teaching of that sort belongs in science courses or elsewhere in the curriculum. My interest in this comes from a background in the law of church and state and some study of the political theory of religion, using religious arguments in political life. I'm not a scientist, I'm not a philosopher of science and I'm not an educational specialist, so there are a lot of disciplines that are relevant to what one would finally conclude about these matters that I don't know a great deal about, although I have scratched the surface now in the philosophy of science and read a little bit about science when I've been working on this.

We can contrast the present dominant approach – which is not to cover this broad topic in the science curriculum or really anywhere else – with an ambitious effort to provide students with a rich understanding, in all its complexities, of relations between science and religion. There are many waypoints between these two ends of the spectrum. We're very fortunate to have on the panel two authors who adopted opposing positions about where such education belongs – I refer to Warren and Jay – and I think their difference is driven in part by whether this education is mainly to present religion as a serious option for students' lives, or to educate them about the diversity and richness of cultures and prepare them for life in a pluralistic democracy.

I first read Warren's and Charles's book, *Taking Religious Conviction Seriously Across the Curriculum* about three years ago, and I was, as anybody would be, impressed by its clarity of vision and its breadth. Only when I reread the science chapter for this conference did I realize how much is packed into that relatively short chapter about relations between science and religion, and in the few minutes I have, I'm going to barely scratch the surface of what they've said. Since that is the reading that we most share in common, I think it makes sense to begin with its main thesis. I take the thesis to be to urge that science texts and teachers should pay much more attention to relations between science and religion, that not to do so is to be less than neutral toward religion and may itself violate the religion clauses.

I'm going to begin with what I think is the least of our concerns here, and that is, what the constitutional obligations are. Whatever might be the best realization of the values of the religion clauses, I think that in terms of constitutional obligation, or at least what courts will decide about constitutional obligation, schools have a wide range of choice about how far they teach relations between science and religion. I think we're not mainly interested in the boundaries of what's constitutionally permissible, but rather, what, within those boundaries, would be a desirable approach.

I want to draw a distinction between what I call intrinsic limits of science and contingent limits of science. By intrinsic limits, I mean the sorts of questions that science, by its very nature, is incapable of answering. Among such questions are – and

this is, of course, not completely uncontroversial: Why is there anything? What's the meaning of our lives? Why should we act ethically? How should we understand our responsibilities to the animal kingdom and to nature? These are questions that religions have endeavored to answer down through the ages.

It would be too simple to say that science has nothing to say about these questions, and some scientists believe that the findings of their disciplines point in one direction or another on questions like these. To take two examples: Some evolutionists believe that a powerful, munificent God would not have permitted life to develop by such a random, cruel, painful process. Thus, the truth of evolution points strongly against the existence of such a God. Other scientists are attracted to an anthropic principle that the conditions necessary to sustain life in the universe are so extraordinary we should assume that a pattern of design is operating. Nevertheless, I believe we can say roughly where science as science stops and where other conjecture begins, even if scientific conclusions may contribute to that other conjecture.

By the contingent limits of science, I mean limits to what science can discover within the domains that are standardly regarded as susceptible to scientific understanding. A simple example is a claimed miracle. It is supposed that physical events occur in a manner that can be explained by physics, chemistry and biology, and yet a physical event is believed to have happened that is at odds with ordinary scientific principles: water is turned into wine, someone who has died is resurrected physically, a paralyzed woman without medical hope of recovery walks. A more complex example is the theory of intelligent design. According to a modest version of this theory – and there are various versions – standard scientific explanations may explain much about the development of life, but certain aspects appear not to be subject to such an explanation. It's fair to assume that most research scientists do not assume that science has such contingent limits. The premise of methodological naturalism means that as practicing modern scientists, they're committed to looking for natural scientific explanations. They could, of course, practice their research on that assumption while still believing that their branch of science has serious contingent limits, but most apparently assume that, at least in principle, natural sciences could explain all the phenomenon that fall within their domains.

I think the educational issues regarding possible contingent limits are much more troublesome than those regarding intrinsic limits, and that's why I've drawn this distinction. Starting with the intrinsic limits, without a doubt, texts and teachers should explain to some degree what the methodology of science aims to do and what questions reach beyond science. In any discussion of the environment, for example, students should be made aware that there are crucial questions about human responsibility and intergenerational justice that science is not equipped to answer. They should further be made aware that various religious traditions address these questions. People can reasonably disagree about how much texts and teachers should say about the intrinsic limits of science, how far they should explore the contributions of religious traditions to the questions science doesn't answer and how far they should express their own views on these subjects. Should a text or teacher say, for example, the Jewish and Christian

perspectives on creation have made a destructive contribution to environmental attitudes, a position that is sometimes asserted but it's very controversial?

In his book *Religion and American Education*, Warren has posited, as one conceivable alternative, the idea of teachers expressing their own critical judgments, so long as they make clear that theirs is not the official position of the school. I'm skeptical about how far one should expect a teacher, whose basic competence lies in science, to explore the contributions of religion, or secular ethical traditions for that matter, in respect to the issues that science itself doesn't resolve. I think there's a substantial danger in teachers presenting their own critical judgments about highly controversial matters. In part, the problem may be that students can't easily differentiate what the teachers say from what an official position is, but I think the greater concern is the limited capacity of students below college level to exercise their critical judgment about what a teacher says. A fuller explanation of nonscientific aspects of environmental issues would be appropriate in a course that's explicitly about the environment from a range of perspectives, but I don't see such a course as part of the science curriculum, although that may be a question of arbitrary designation. What I have in mind is something like the course that Kathy described to us this morning, with many different components.

What should be done about the possible contingent limits of science is more intractable. Texts and teachers should acknowledge that science itself cannot establish that there are no contingent limits. No matter how much science can explain, it can't assure us that factors are not operating that science is unable to explain. Other factors might be working, in the sense that God may sustain the operation of scientific principles, or sustain the operation of natural forces to which the principles apply, but I'm counting that possibility as among the intrinsic limits of science, beyond what science can discover, because that's consistent with scientific laws always applying. Here I mean that even on the mundane level at which science is providing an explanation, it may not provide a full explanation, and further, it may be incapable of providing a full explanation. That is how I understand the theory of intelligent design, what it asserts about the development of life, and however much more science may establish about how life developed, given the uncertainties of what has happened in the past, it's never going to be able to prove that its explanation is the full explanation.

I don't think – and this is something that we might get into in questions, but it's pretty peripheral – explanation that intelligent design provides is itself a scientific explanation. I think it's an explanation about the limits of science, but that's not crucial for our topic.

Much more troublesome than this problem of incompleteness, are instances in which the explanations that science provides, with a high degree of confidence, are at odds with religious explanations. This is the conflict between a literal reading of the first creation account in Genesis and scientific accounts of the origin of the universe and of the development of life. Now, neo-darwinian evolutionary theory assumes 1. an ancient earth 2. single-cell organisms preceding multi-cell organisms. Complex life by a large

number of years. 3. the development of complex life from simple life and 4. natural selection as the dominant explanation, although not the only explanation, for how that development occurred. The Genesis account, literally understood, is at odds with all four of these premises.

Whatever uncertainties may exist in scientific understanding about these subjects, exactly how natural selection works and what its role is in relation to some other things that might fit into that category, the degree of certainty that the earth is more than 6,000 or 10,000 years old and that single-celled organisms came first is exceptionally high. What are science texts and teachers to say about such conflicts? They should certainly inform students that some people in this society credit religious sources over scientific ones, and that they disbelieve the standard evolutionary account. I don't think most science teachers are equipped to present a moderately sympathetic version of the fundamentalist view of the Bible that underpins creationist belief. I use fundamentalist here not as a condemnatory term, but because I think many evangelical Christians don't believe this literal version of Genesis, and so it would be misleading to use that term here, I think.

One of the recommendations in the Nord and Haynes book is this – and I'm quoting from page 158: “If we take religious neutrality seriously, we have to bracket truth claims regarding matters of religious controversy. Just as teachers and texts cannot teach that religious creationism is true or false, so they cannot teach that theories that conflict with it are true or false.” This comment presents some serious problems, and I think the examination of those problems can lead us to see just how difficult it is to arrive at a proper approach.

What are we to take as the operating principle here? If teachers can't teach as true, all things considered, any proposition that conflicts with any religious views, they cannot teach that the earth is rounder than it is flat or that members of different races and genders should be treated equally, because there are religious groups that don't believe these things. My assistant found something about the Flat Earth Society on the web [<http://www.flat-earth.org/>]. They had explanations for things, but they didn't sound too cogent. Some religions reject these factual and ethical claims, and suppose some small sect holds it as a matter of religious truth that no Christian nation would kill millions of defenseless Jews. Would a teacher have to say that secular history tells us that the Holocaust occurred, but it may be wrong? Every source of apparent truth could be misleading.

I think we can quickly see, or at least see, that we do expect teachers to teach as true some ideas that are rejected by some people as a matter of religious faith. Indeed, if teachers consistently inserted the caution that an idea is true or sound only from a particular perspective, such language would be disingenuous many times when it was uttered, and I think it would soon be disregarded by students. If it weren't disregarded, it would erode their belief that anything is true, all things considered, and might tend toward a post-modern skepticism about sources of truth, a position that I'm not particularly sympathetic with, as you may gather.

If we're to accept the Haynes and Nord position, I think we need to qualify their recommendation in terms of the degree of uncertainty, cultural division or some combination of those two factors. I notice, Warren, you put a lot of emphasis yesterday on issues by which our society was divided. That could be a ground here, and we could say, "We're really not divided about the flat earth or round earth, although there are few Flat Earthers out there." Uncertainty concerns degree of confidence; our certainty that the earth is not flat and that the Holocaust occurred are very high. The certainty test does not do very well for the age of the earth. Scientists, in a broad range of disciplines, are sure that the earth is billions of years old, and there's a big difference between 10,000 and billions.

The only plausible basis for supposing it is 6,000 or so years old is that our senses are systematically deceived about reality in major branches of scientific investigation, including astronomy, geology, paleontology, biology and others. If that idea – that our senses could be systematically deceived – is to be entertained, then we are back to the round earth and the Holocaust, because our senses could be systematically deceived about that as well. How can we be sure that photographs of the earth that show a circular earth is true? When we have photographs or personal testimony about the death camps, how can we be sure that those are more reliable than the techniques of natural science?

One might say that the crucial determinate must be how many people in our society believe a proposition, so if you have a lot of people who don't believe it, then it's something that teachers have to be much more careful about. But what are we to do if many people believe something that's evidently false? If someone teaches the controversy, believing that one position is really ridiculous and evidently false – I'm thinking here particularly about the young earth example – I think the result is likely going to be to make the religious position look ridiculous, whatever the stated objective is of having the controversy taught.

In short, I think it's a very complicated question: When should teachers be making statements about the truth of something, all things considered? All this inclines me to think that science teachers, having explained something about the nature of science early on, should say relatively little about ideas that appear absurd from the perspective of science. Students will grasp what the teachers think is true overall, even if the teachers say, "I'm disclaiming any claim about certainty or truth overall."

Jay Wexler proposes teaching a variety of creation stories as an approach to comparative religion. I think this is definitely worth doing, but I think the likely result is going to be to suggest that creation stories are important cultural artifacts that implicitly explore deep questions about the place of human beings in the universe, not to offer a credible alternative to scientific claims about what really happened. Such a course would help illuminate intrinsic limits of science by showing what creation stories tell that the scientific accounts leave out, but I don't think this would do much to bracket the question of whether the scientific claims are true overall, in their own domains.

In sum, I think the relations between science and religion should be explored more fully, and our aspirations for science courses examined, but I believe these aspirations should be relatively modest in this respect. In particular, I think there is no neat way to deal with the problem of scientific truth versus overall truth, although science teachers should make clear the premises of the scientific enterprise and the uncertainty of many scientific conclusions. Thank you.

(Applause.)

**MR. HAYNES:** I'll invite our panel up. While they're getting mic'd I will tell you that we have an excellent panel to respond and talk about this issue further. Professor Greenawalt referred to Warren Nord's work and his comments. He is director of the Program in the Humanities and Human Values at the University of North Carolina, Chapel Hill [<http://adventuresinideas.unc.edu/>]. Jay Wexler is associate professor at Boston University School of Law [<http://www.bc.edu/schools/law/>]. I've read a couple of articles that he's written in this area, and they are excellent, and he has a lot to contribute to this conversation. Sitting between Jay and Warren is Larry Witham, who is a journalist and an author. He has written, recently, two books on these issues. I've read one of them. It's really an outstanding book. He's gone and listened and talked to people on all sides of this debate. It's called *Where Darwin Meets the Bible* and I really recommend that to all of you.

Warren, I'm going to start with you, since you were invoked a couple of times in Kent's remarks. I'm going to ask you this, and then you can do with it what you want; you can answer any question you want. If students are to be liberally educated, as you argued yesterday, and you argue that they must be initiated into a discussion in which they hear a variety of voices, not just of scientists, in the science classroom, I take it, and given what you've just heard Kent say, how is this to be done in a science classroom? How are you able to include religious perspectives concerning origins or other issues and so forth in a science classroom? I assume you argue that it ought to be done. Tell us a little bit about that, and then how?

**MR. NORD:** I think since we've not discussed music yet – (laughter) – at this meeting, perhaps a musical interlude might be appropriate to make a point.

**MR. HAYNES:** I think so.

**MR. NORD:** Many of you remember the old camp song – (singing) – “Tell me why the stars do shine.” Do you all know that? (Singing) – “Tell me why the ivy twines. Tell me why the sky is so blue.” I don't think I got that right. “Tell me why I love you.” And the answer, of course, is, “Because God made the stars to shine, because God made the ivy twine, because God made the sky so blue, because God made you, that's why I love you.” And a few years ago, students at MIT rewrote it: “Nuclear fusion makes stars to shine, tropisms make the ivy twine, Rayleigh scattering makes the sky so blue, testicular hormones is why I love you.” (Laughter.)

There's a problem here; it's hard to know where to start. I worry, just as Kent does, about teachers, particularly teachers who aren't very well educated, expressing their own points of view about deeply controversial matters in science classes, especially if the students aren't extremely sophisticated. If you have sophisticated kids in a senior advanced placement physics course with a teacher who is very qualified to understand theological as well as scientific points of view, maybe in that situation it is justifiable for a teacher to express his or her own point of view, but there's a danger in that. I think there's another question about whether teachers can introduce ideas that aren't in the official curriculum, and indeed whether there is even some kind of academic freedom that might protect them in doing that, simply putting other ideas on the table. You can make an argument that some courts would protect that kind of a right, although it's very controversial, and lower courts, at least, disagree.

Can scientists teach that science is true? Even Kent argued – you argue in one of your papers – you cannot, in a science course, I believe, say it is false that the earth is more than 10,000 years old. That's a violation of neutrality, isn't it?

**MR. GREENAWALT:** Um –

**MR. NORD:** No, don't answer. (Laughter.) There are very tricky –

**MR. GREENAWALT:** I don't think I address quite that. That's a really borderline thing.

**MR. NORD:** Well, could a teacher say, "I know some of you students believe that the world is less than 10,000 years old. You're wrong. The world is over 10,000." Can a public school teacher say that? Is that a violation of the neutrality required by the Establishment Clause? That's a tricky question. I think the Establishment Clause obviously does require neutrality of schools, and part of what I'm going to argue is that the neutrality should apply across the curriculum, not to every textbook, not to everything a teacher says, not to every particular course. The schools need to be neutral. I'll come back to that.

Kent says that he knows what the intrinsic limits of science are, but there are a lot of folks who disagree with you about what the intrinsic limits of science are, just as a lot of people disagree about what the contingent limits of science are. Those are things we disagree about, and it's not just fundamentalists who disagree. There are an awful lot of liberal religious folk, and there are a lot of secular folk, who disagree about what both the intrinsic and extrinsic limits of science are. In our culture and our intellectual life, these are hotly debated matters. There is a huge, interesting and increasingly important conversation going on in our society about these matters. It's not just evolution.

Kent referred to a more interesting question, a kind of anthropic question in cosmology, where there are a good number of cosmologists, physicists, philosophers and theologians who believe that you can make an argument that the universe was fine tuned to create life, and the lengths to which establishment science has gone to construct a

theory to explain how this fine tuning is merely appearance, are really extraordinary. This is a fascinating question. There are questions of spirituality and healing, of ecology, of spirituality, of nature. They don't get into it much in high school texts, but the brain-mind controversy is interesting. How do you explain morality – evolutionary questions about the development of morality? There's a huge debate about this. It goes on not just in religious journals; it goes on in research centers, at research universities across the United States.

Now the question is, Should students be initiated into this conversation? Of course, if you believe in liberal education, they need to be initiated into this discussion. It's about matters of cosmic importance, we might say, and it's a position on which intellectuals disagree. There is a huge literature on these questions right now, and yet we keep students completely ignorant of these kinds of questions – well, 99.9 percent ignorant of these questions, by virtue of the way, not just the science curriculum, the whole curriculum is worked out.

The question isn't, Where do we introduce them to the discussion? I think, as I argued before, there should be courses in religion that are required of students in which they learn about how different religious traditions make sense of the world, particularly of how different religious traditions understand contemporary issues about which we disagree, such as how to make sense of nature. There aren't such courses, or there are very, very, very few such courses. Can you give it to the social studies teacher and say, You make sense of all of this? Of course you can't; social studies teachers aren't prepared to do it. Can you give it to the science teacher? Right now you can't, because science teachers aren't prepared to do it.

Should science teachers be prepared to do it? My argument is that we've got to distinguish, thinking constitutionally, in terms of neutrality, but more important, in terms of liberal education, fairness and introducing students to the major different points of view that enable a person to be liberally educated. We think in terms of a kind of minimal fairness and a robust fairness.

What science texts should do is devote an opening chapter of 15 or 20 pages to putting science within the context of contemporary and historical controversies about the nature of science and its relationship to both philosophical and religious claims about the world. Right now, all science textbooks have an introductory chapter on scientific method. These chapters are virtually always pitiful. They are not philosophically sophisticated. They're shallow; they're superficial; they don't raise any of the interesting questions about the nature of science that are part of our ongoing discussion. Those chapters need to be beefed up. We need to have chapters written in collaboration with scholars in philosophy and in religious studies, to present a context for understanding the controversies: Here's what the controversies are about science in our culture. There are not just two views about evolution and creationism, there are 10 views, or maybe there are 17 views.

You can't explain them all. One of the tricks is where to draw the line. Do you have to include the Flat Earthers? Do you have to include astrologers? Do you have to include creation science? Well, no, of course not, and we make these distinctions the way we do everywhere else in the curriculum: You include the major views; you include the ones that are held by a lot of people, that are influential. That's how we decide how many countries get discussed when we talk about geography, or how many historical periods get into the history text. That's how you do it in the science text, too. There are a number of influential positions, you try and include as many as you can, but the more you include, the more superficial the discussion gets, and so you have to balance superficiality with inclusiveness, but certainly students need to be introduced to the major points of view. This is a tremendously important issue. A 15- or 20-page chapter at least, that's the minimum that we can do, but it is a minimum kind of fairness.

Religious ways of thinking about nature need to be included in much greater depth elsewhere, and there's nowhere else to do it short of a religious studies class. That's one reason that public education can never provide a liberal education short of making religious studies an established discipline, at least in high schools, just as it is in universities, and requiring students to actually study, in some depth, religious traditions. Short of that, education will always be illiberal. The purpose of science education in high schools is not to train scientists, nor is that the purpose of introductory courses for undergraduates. The purpose of science education is to initiate students into a certain aspect of liberal education. It's to educate them liberally. It's to make connections, point out conflicts, tensions and controversies. That's the purpose of science education, not to somehow or another narrowly train scientists.

The greatest philosopher and historian of science over the last half century, everybody would agree, is Thomas Kuhn. Thomas Kuhn, in his most important book, said, "The education of scientists is more dogmatic than of any field in our intellectual life except theology." Of course, he was wrong; it's much more dogmatic and narrow than theology. (Laughter.) Every theologian studies science, very, very few scientists study theology. Scientists aren't liberally educated. We certainly don't educate kids liberally with regard to science in our culture, and that's unfortunate.

**MR. HAYNES:** Thank you, Warren.

Jay, I'm going to turn to you because in some of your writings, you have raised questions about constitutional reasons why religious perspectives might not be treated in the science classroom, why that might cause some problems, and you've offered also some alternative suggestions. Kent mentioned this in his remarks. How do you come at this, having heard these two differing views of how we deal with it?

**JAY WEXLER:** I think it's an important question. We need to keep in mind the constitutional background here, because there's obviously been a lot of talk at the conference about how important it is to teach about religion. I agree completely with that, and I'll talk a little bit about that, I hope, but there has also been a lot of talk about the pitfalls of teaching about religion. If teachers aren't trained properly or if materials

aren't good enough, we might have problems in the classroom, and I think it's important to realize that it's not just that we might have small problems in the classroom where the educational message might not get across exactly right, but in this sensitive area with the Establishment Clause and prohibitions against mixing church and state. Every tiny little problem is not just an educational problem but possibly a constitutional violation, a violation of the rights of students who are not religious, for example, a violation of the interaction between church and state, which can be enjoined by a court, which can even be the source of money damages.

We talked a little bit about this. Melissa started off the conference by pointing out that when she hears a question about what the problems are, she hears lawsuits. I should say that when I talk to lawyers about this topic, like a roomful of lawyers here, I get stares back from people who are just shocked. They are seeing lawsuits, lawsuits all the time, and they're very, very skeptical of this whole project. So it's worth emphasizing that the constitutional background here is very important, particularly if we're going to convince people who are skeptical about the project in the first place to think about it.

That said, I actually think that the constitutional problems are certainly surmountable, and I don't disagree with what Warren said about having religious views on science taught in a broad way. I should say, I don't disagree with the position that we ought to have stand-alone religion classes in which we talk about religious views on scientific issues in an in-depth way. I think that's very important. I tend to think of it, not in terms of liberal education, but in terms of civic education, if we take our public schools' purpose to be to prepare citizens to participate in our American democratic processes, I don't think we can really train them to do that unless they know something about religion. Given that so many people in America are religious and participate in public life and public controversies from a religious point of view, I think part of that education has to be about how religious people understand science and the conflicts between religion and science.

So I think that's a very important thing to do, and I don't think there are any general constitutional problems with doing it. There are potential pitfalls, and we've talked about them before; the Bible controversy panel discussed some of them. Without good materials and training, teachers can easily fall into inculcating a particular religious view, either intentionally or unintentionally. We could have problems where a teacher might say something that would in fact send a message of disapproval of a religious viewpoint, either purposefully or accidentally, something that may in fact be unconstitutional, although we don't know very much about the scope of that doctrine. But as a general matter, I think there are not that many constitutional problems.

When you talk about teaching about religious views on science in science classes: if it's done in a broad and general way, in which we talk about a variety of religious traditions and we talk about a variety of scientific concepts or claims that those religious traditions might conflict with, I also don't see all that many problems. I'd have a different answer - this might be what Kent was referring to in his talk - if you were to ask me, Would there be constitutional problems simply with teaching intelligent design and

no other alternative to evolution in the science classroom? There, I think, there are potential constitutional problems, not only with whether intelligent design itself is a religious theory, the teaching of which would violate the Establishment Clause of the First Amendment as well as possible conflicts with an existing Supreme Court case – *Edwards v. Aguillard*, from 1987, which is a case involving Louisiana’s equal time for creationism and evolution statute, some of the language of which would seem to, I think, counsel very strongly in favor of being cautious in that area. But I take it that we’re not focusing on that specifically, so I won’t talk too much more about that.

On the constitutional level, the last thing I’d say on the question of whether we might have additional problems if we’re teaching about religious views in the science classroom itself, as opposed to in a stand-alone religion class, is, to the extent that we might have these various pitfalls that teachers might fall into, it might be worth thinking about which teachers and which settings are the most likely to minimize those potential problems. If you have people who are specifically trained to teach religion in separate religion classes, who go into the field in order to teach about religion in separate religion classes, you might have a set of people who are very attuned to those concerns, to the constitutional limits, and who might have thought about those deeply. If you require science teachers, who have generally gone into the field to teach what they learned in their science education, and they did it because they wanted to teach science, and now you’re all of sudden telling them they have to teach something about religion too, that might not work. I would be a little more cautious about it. It’s an empirical question, I think, as to whether there might be resistance, and if there is resistance among science teachers to teaching about religion in their classes, you might be more concerned from a constitutional perspective as well as an educational one.

**MR. HAYNES:** Thank you very much, Jay. Larry, I’ll turn to you now. You have heard a lot of voices in this debate. And not to complicate this too much further, but clearly some of the voices you hear from the creationist perspective – different creationist perspectives, the intelligent design claims – claim they actually have science to get into the science curriculum, which is another set of questions.

If we did open up the science classroom, how do you think those folks who feel left out and marginalized would respond? That is one of the questions I have, but the overarching question I have is, From listening to all of these voices, what should schools do to respond to what you’ve heard and what you know is a very big issue for lots of Americans?

**LARRY WHITHAM:** I have no solution, but I have a story to tell. I got into this as a journalist. In fact, in 1995, right in our backyard here – you can probably see the scene of the battle – Fairfax County had a school board race. It was the last state in the nation to have non-appointed school board people, and so they had an election. What rose to the top was the issue of the creation/evolution debate. It got totally polarized. The, quote, “Republicans” and the, quote, “Democrats” were pointing fingers at each other saying, “The Republicans will teach Flat Earth in Fairfax schools,” and Democrats

were saying, “We’ll teach evolution.” And so the Democrats won. It’s a quote “Democratic,” county.

I started reporting on this and I came across Warren Nord’s work. I heard him at the Civil Rights Commission presenting his case, and a position like Jay’s was presented there. As a reporter, I took this north to Harvard. I got an interview with Stephen J. Gould, and I said, “Well, Warren Nord says that you should open your science class the first day talking about the different cosmologies.” And he looked at me, and I said, “You’ve heard of Warren Nord, haven’t you?” And he said, “No.” (Laughter.)

Steve Gould fought his second battle with cancer and died last fall, so he may be here now knowing who Warren Nord is. So I pressed that with him, and he said, “You know, college level, look, we talk about these issues in science. Kids are going to raise their hands and ask anyway. You don’t need to bring it into the classroom, but if you did, here are the things that I hear people saying you should do,” and Professor Greenawalt hit right on the main one: the limits of science. There’s a popular literature out there now amongst scientists. They call them the new mysterians: the universe can’t be understood through rationalism. The rationalists point at them and call them mysterians, but it’s bona fide science.

The other idea is drawing on epistemology, some call it depth. You know, Paul Tillich used this idea, the depth psychologists use it, and I think William James proposed this: levels of knowledge. You know music one way, you know science another way and you can explain that to students, perhaps in a science class, so they know that science isn’t the end-all.

Some scientists are saying, Introduce metaphysics back in the science class, explain what a natural philosopher was, which was a scientist a hundred years ago. These guys were philosophers of nature, not technicians. Go at it that way; work with biography, explain what a Spinoza thought, explain what a Newton thought and explain what an E.O. Wilson thinks, vis-à-vis the cosmos.

Finally – and this can be controversial – raise the social controversy, which I think you had mentioned, Professor. This is risky. We have the one supreme academic freedom case in teaching creation in the science classroom, the Dean Kenyon case, San Francisco State University [<http://www.sfsu.edu/>]. The whole science department mounted against him. He went into a dispute. The American University professors [<http://www.aaup.org/>] sided with him, his academic freedom. And what was his violation? At the beginning of his course, Evolutionary Biology 101 – he taught it for 20 years – he put a projection up of the latest Gallup poll. Forty percent of Americans believed in a young earth, another 40 or 50 believe that God guided evolution, but only 10 percent took naturalistic evolution literally. Students complained, and he got in trouble at a university. You can discuss the social controversy legitimately, but you see there’s no winning on this sometimes.

So I said to Steve Gould, “Well, then you don’t teach religion?” He said, “No, you’ve got to teach religion; you’ve got to know religion to know the world. Teach it in the philosophy class, don’t teach it in my biology class.” So I did some more research and found that the average high school student has three units of social studies. That is three years of social studies. Can you fit it in there? Students have anywhere from 2 to 10 electives, depending on the state. There is no time, in other words. Steve Gould says, “Teach it in philosophy.” There’s no time to teach it; there’s no slot there for the religion course that you mention, and everyone agrees teachers are not trained for that.

Let me wrap up with my own son’s experience. He went to a high school out here, Montgomery County in Maryland. He was on a science track. He learned evolutionary biology in middle school. He learned scientific method, Bacon and all that sort of thing, in middle school. Then in high school he did more standard science, so biology, genetics, et cetera, but finally in his senior year, he had a class called the origins of science. Lo and behold, they discussed the Greeks and some of the conventional things, but they read a book called *Sophie’s World*, which my son said has a religious tone to it, but it’s a philosophical book. It goes from the Greeks through Augustine to Aquinas, but it ends up with Marx, Freud, Camu and Darwin. It introduced the students to religious cosmologies, but it did take one view of history that religion withers away and science rules. There is no last chapter or discussion. I interviewed my son on this: Do you remember what they really said? But today there’s a lot of breakup in the scientific worldview. They just ended with these great names in science or social science.

So can it be done? Not everywhere. Not every school is ready for it. Not every region can do it. I think you could do it at a school in Massachusetts, but I don’t think you can do it in some counties in Alabama. You need teachers who are skilled at it, and to end I’ll quote Ronald Numbers, who wrote on this extensively, one of the people I learned from. Science teachers have to be more humble and then maybe this can happen in their science class. He said that, “In other words, it doesn’t really matter, because the judge will decide,” which is amazing. The courts will decide. As a reporter, when there’s a middle federal ruling and we have to write a story saying, The sky is falling; the judge ruled, but we don’t know. We know that it will be another 10 years before we really know what happened, because it will go up through the courts, and then it will be overturned and legislated around, so the judges decide.

Finally, there are always activists. It only takes one parent or one obnoxious teacher to offend, and then you call the ACLU or Pat Robertson’s legal action group. They’re just waiting, poised every day. You call them and you shut down the debate, and that’s why it’s difficult to advance this educational ideal today.

**MR. HAYNES:** Thanks, Larry. That’s very helpful. And like Diane said earlier, I’m bristling with questions, but I’m going to restrain myself and move to you because I know that there are lots of questions out here, and we’ll start with Diane Moore over here and then we’ll move across the room. Okay, I see Jim’s hand up.

**DIANE MOORE:** Hi, I'm Diane Moore. First of all, thank you all. Those were very articulate and thoughtful comments. I think it's important to keep in mind that religion and science are not always controversial and they're not always antagonistic. In a lot of religious traditions, the antagonism we speak about, in particular when we speak about the fundamentalist creation debate, is not present. I think it's crucial to keep that larger sphere in mind. Muslims, for example often don't have any issues regarding the nature of the conflict that we hold so centrally here in our context, in the United States context. I think the nature of how they would, and do, address these questions often has to do with what Kent said, the limits of science and recognizing what science does and what it doesn't do, and that's not a controversy in itself. So I think that larger debate needs to be kept in mind.

The other comment I wanted to make is that this controversy, as we define it and experience it, speaks to me as one dimension of the fundamental religious illiteracy of our country. We so quickly assume that science, in the larger public sphere, has trumped religion, without a deeper understanding of the sophistication of religious worldviews, and understanding that religion isn't just some primitive notion of what we did before we had science. Aside from my work at Harvard University [<http://www.harvard.edu/>], I also teach at Phillips Academy [<http://www.andover.edu/>], the other Phillips Academy than my friend, Kathy Brownback. I think that a lot of very sophisticated students come with that fundamental assumption that religion is this outmoded, outdated, primitive worldview that naïve, nice, optimistic people sometimes hold onto in terms of their own private lives. That is another example of the fact that we assume that religion and science are antagonistic. I want to caution us not to continue to promote the notion that that's universal, because I think it ends up sending a different message than we necessarily want to send.

**MR. HAYNES:** Thank you, Diane. Did anybody want to comment on Diane's points?

**MR. WHITHAM:** Diane, were you responding to what I said? I certainly didn't want to give that message. My message is, there are many ways of understanding the relationship of science and religion in different religious traditions, and part of a liberal education is making students aware of the differences. There isn't a right way, certainly schools shouldn't teach a right way, of understanding the relationship of science and religion. The National Academy of Sciences [<http://www4.nationalacademies.org/nas/nashome.nsf>], in 1983, passed a resolution saying what the right way of understanding the relationship of religion and science is. That was Stephen J. Gould's way: "They don't have anything to do with each other; they're apples and oranges. That's the right way."

Now, what gives the National Academy of Sciences the competence to pass judgment on what true religion is? I don't know. That's one of many ways of understanding the relationship with science. So my point is we shouldn't institutionalize what anybody thinks is the right way when we disagree so deeply in our culture about it.

We introduce them to the controversy; we initiate them into a conversation about different ways of understanding it as much as possible.

**MR. HAYNES:** Kent, did you want to comment on this as well?

**MR. GREENAWALT:** I didn't mean to give the impression that I thought conflict was the main thing that was going on. I emphasize that because I think it raises the most troublesome questions, and these other things can be, I think, handled more easily. Maybe I implicitly presented a false picture of the landscape, but it was just because I thought that's where the most troublesome issues lie.

**MR. HAYNES:** Let's move over. Jim, you had your hand up. And then I'll move this way and then back this way as quickly as I can.

**JIM MILLER:** I'm with the program Dialogue on Science, Ethics and Religion of the American Association for the Advancement of Science [<http://www.aaas.org/spp/dser/>]. This is such a rich conversation, it's hard to know where to start. Part of it is I find myself in the curious position of deeply agreeing and deeply disagreeing with Warren Nord at the same time, which may be an experience that's not unusual for you, Warren, I don't know.

**MR. NORD:** My wife sometimes says things like that. (Laughter.)

**MR MILLER:** That's interesting. Part of it is because there is a controversy about the controversy. We use the term "teach the controversy" as though we were talking about a singular thing. I can parse it at least in four parts, one of which is actually not controversial at all, and that is the science. That is not to say that there are not, in any robust science, matters of deep theoretical debate, but it is not the case that there is any significant debate within the scientific community about the age of the universe, the relative age of the earth, the age of life on earth, the sense of biological continuity from early life and relatively simple life to conflicts like we have right now. How that has occurred, the mechanisms, the processes, the structures that appeared along that history, are still areas of active investigation and inquiry, but those particular elements are not matters of controversy within the scientific community. So teaching the controversy would not include alternatives to those views because there aren't any within the scientific community.

Is the controversy historical? It's historical in a couple of different respects. It's historical at least in the sense that our own sense of the controversy is shaped as much by our own cultural mythos as it is by the facts of the matter. In other words, if you want to take the evolution controversy, we probably have a tendency to see Clarence Darrow in the shape of Spencer Tracey rather than the actual accounts of the Scopes trial and the issues that really surrounded that. If you want to go back earlier than that, the confrontation at the British Association for the Advancement of Science [<http://www.britassoc.org.uk/the-ba/page.asp?selectPage=16>] between Huxley and

Wilberforce, the account of which we have almost exclusively in Huxley's words, not by anybody else who was there, which gives it a certain shape.

The history of it is something that we need to know more about as a part of better understanding the history of science. Is it a philosophical controversy? Absolutely it's a philosophical controversy, over what the nature of science is, what constitutes science and scientific inquiry, and that's worthy of consideration and discussion, all of which could appropriately go in a science class in the context of teaching history and philosophy of science as a part of science education, which is, as a matter of fact, part of most of the national science education standards, and honored mostly in the breach. There is very little in textbooks, and it's certainly not sophisticated.

Is it a religious controversy? Absolutely it is a religious controversy. This is where the nub of the problem, in some sense, comes, and it does have something to do with how one understands the nature of the relationship between science and religion. It's interesting to listen to the conversation, because it's interesting to see the varieties of ways in which people think about that relationship. For lack of time, I'm going to assert that the nature of the science-religion relationship is such that there is an inevitable impact of developments of science on religion, and it doesn't go the other way around because the relationship – though it's mutual, and I would argue constructive – is at different places.

The reason theologians read science and scientists don't read theology – not on the issue of liberal education but in terms of the function of their work – is because theologians of necessity depend upon science because, ostensibly, they're offering a religious understanding of this world. Where do you get an adequate understanding of what this world is like? For us today, it's by means of the sciences. On the other hand, how is it that scientists justify their work? Why would a person want to be a scientist? Why engage in that activity at all? That's going to be grounded in some convictions about the meaning of human life and the human place in the universe and so on and so on. Those are not scientific judgments; those are religious judgments.

So there is, it seems to me, this mutual relationship, but that's one of the reasons why there is this one more factor: Most religious traditions are borne by their narratives, it seems to me, and their narratives have implicit in them some understanding of what the world is like. That relationship between the religious sensibility or understanding and the narrative is a deeply intimate one. If you have another system of human inquiry that generates very different narratives about what the world is like, it cannot help but have an impact upon religion. It seems to me that's a dilemma we haven't yet found an adequate way to address in a social and political context like our own that seeks to be deeply respectful of varieties of points of view in a very pluralistic society.

**MR. HAYNES:** That's very helpful. Any panel member want to comment on Jim's remarks? I'll just start with Jay, and then we'll go to Warren.

**MR. WEXLER:** I just wanted to make a brief point: I think what you said about the various aspects of the controversy being historical, cultural, religious and philosophical is very important, particularly in light of the current move to focus all of the reform on teaching intelligent design within the science classroom as an alternative to evolution. I think to do that not only misses all the richness of the controversy that you've mentioned, but might in fact send the message that those aspects are either non-existent or not important, and that's why I think that kind of controversy needs to be treated outside of the science class more, or perhaps in the science classroom in that way.

**MR. HAYNES:** Warren, did you want to comment?

**MR. NORD:** Yes. I think there is a real controversy about what science is. This is true not just with regard to intelligent design, but when you deal with theoretical physics and when you deal with the nature of the brain you get into questions that have a kind of theological dimension to them – I think theoretical scientists in particular would be well served by understanding a little bit of theology, not reading the first chapter of Genesis literally, but a notch or two above that in terms of sophistication. But even if there weren't those controversies, a liberal education should be a conversation, not a series of monologues. This is my point over and over again in discussing morality and discussing economics. You can't just teach students what economists think, then you teach them what scientists think, then you teach them what historians think and then you teach them what character education folks think. That's not a conversation. That isn't educational. That's a monologue. That's serial socialization. You've got to have the conversation. You've got to talk about the relationship between science and politics, between science and religion, between science and philosophy. That's part of what science education should be too.

Finally, you and I were at a meeting last week, Jim. It was your meeting, the American Academy for the Advancement of Science, and one of the panelists was a biology teacher from Georgia who said that his best guess is that one-third of the biology teachers in Georgia never mentioned evolution in teaching biology because it's just too controversial. You know, that's appalling. Of course students should learn what good science is, as scientists understand it, even if it's controversial. What we've got to do is find common ground. We've got to find a way of acknowledging that scientific claims are controversial in some cases, in some cases not controversial with various religious traditions, but we've got to acknowledge that larger context. One of the reasons for doing it is to make it safe to teach evolution and to teach neodarwinism, because every educated person should understand what establishment science, the scientific mainstream, most scientists, believe. Right now, that's not happening because this is so controversial.

So we've got to figure out a way to make it less controversial, and I think one way to do that is to acknowledge the kinds of concerns and objections that people in a variety of religious traditions have, and ways in which people in a variety of religious traditions don't see a conflict.

**MR. HAYNES:** Just to underscore, when I go around the country and deal with schools on the ground – and some of you have more experience than I – this controversy has hurt science education. This historic controversy, this standoff, this polarization and the effort to shut down the conversation in science has not worked, just to put it glibly. It just has not worked. People are not accepting, and states are saying, “Teach the stuff but don’t call it evolution.” States are saying, “Minimize it in the text.” And the message there is, “We will win in science education only by keeping all these voices out and winning the evolution-creation debate, putting it all on that debate,” but that effort has really hurt the richness of science education. It’s very difficult to have a rich discussion and even to say the “E” word in some places because of this polarized debate.

So there needs to be, in the interest of science and a good science education, a different strategy. We need fresh thinking about what a good science education is, and get beyond what has really shut down the conversation in our science classrooms. People are not buying it.

Rich?

**RICHARD FOLTIN:** Hi. Richard Foltin, American Jewish Committee [<http://ajc.org/>]. I have two comments I’d like to make.

One, in this discussion of religion and science and their relationship, I want to invoke Emil Fackenheim, a Jewish philosopher. In one of his books, he makes the point that for a person who’s not in a position where they’re ready to receive and perceive the existence of God in the universe, they could have been standing at Mt. Sinai and all they would have done is heard thunder and seen lightening, because that’s where they were situated. For somebody who is prepared to accept the presence of God in the world, you see His, or Her, work everywhere, and the issue is not by what mechanism those things came to be, so much as seeing that role in the world. To me, what Professor Fackenheim is saying is that religion and science are doing different things. The mistake, if it’s a mistake, or the approach that some take, is to push together what really are different ways of understanding the universe around us, which leads to the conflict that we see in the schools. This leads me to a comment on that conflict.

I’ve heard some very reasonable and well thought out ways of trying to deal with this conflict, either by dealing with it in a separate course: religious perspectives on creation, or starting a science course with a frank acknowledgement or differing approaches to cosmologies, some of which have different bases than the scientific method, all of which sound reasonable. But the problem has been that polarization comes from two ends. In the *Aguillard* case, which Jay referred to, when you look at the record of that case, you see that those who are arguing for the teaching of intelligent design have all sorts of affidavits and other things, trying to make the case that intelligent design and origins of species by abrupt creation have as much scientific credibility as evolution. Those making that argument are not going to be satisfied with the approaches that are being suggested by this very distinguished panel, because they want to insist that what is a matter of faith as to origins becomes identified as science, and I don’t see how you

reconcile that. I don't see how you can do good science and bring into the discussion of science something that is a faith-based perspective on how the world came to be.

**MR. HAYNES:** Comments on that? Larry, you looked at the whole range of these positions.

**MR. WITHAM:** Probably the most recent test case is Ohio, where it had a mixed history. Activists there wanted to put intelligent design in the school as a mandated study. Many of them were "young earthers" who saw what happened in Kansas and the failures in other states to do biblical creationism, and they thought, "Let's get half a loaf and mandate intelligent design." Why? Because even Darwin said there was design in nature, fake design, produced by randomness, and because some Ph.D. scientists believe in design. So you can tell a student, for these reasons alone, there is a design idea out there in the science class. It had a political majority and it had a firestorm of public protest, but finally the I.D. intellectuals said, "No, we don't want to mandate intelligent design because it does essentially look like we're trying to teach religion in the classroom." They came up with a compromise at the big Ohio school board hearing. They said, "We'll just allow teachers to criticize Darwinism."

Again, the professor made the point that intelligent design is an argument for the limits of science in many ways. Within that opening there are all kinds of creative things that a schoolteacher can do, behind a closed door, or in a certain part of the state, or with a student walking to lunch, once you create that opening. That is where it is now, and apparently it's constitutional because no one has sued yet.

**MR. HAYNES:** Oh, I think that will probably happen. (Laughter.) Mynga.

**MYNGA FUTRELL:** Mynga Futrell, Objectivity, Accuracy, and Balance in Teaching About Religion [<http://www.teachingaboutreligion.org/AboutThisSite/oabitar.htm>]. I'm a former science educator from way back, and I shock my colleagues now and then by saying I don't believe in evolution. And they go, "Whoa, what?" I think it's been unfortunate that this has been cast into a kind of a belief system where you have people going around with bumper stickers that are little fish and then things eating fish, and all this has become a belief system.

I think it would be much more helpful, especially related to teaching about religion, if science education could establish that we all own science. It is a tool. It is something that helps us all. In India, we own science; in South America, we own science; in Hinduism, in Buddhism and so forth. We all own it as a way of helping us to understand and explain the natural world; it's not something that we have to see as a belief. It has some components, of course, and there are some conflicts, but I would go with the gentleman who was explaining that there are various controversies and it's a little more complex. I think we need to help establish some ownership among people who may have problems with this piece of science, because it seems to speak to a particular area of religious concern.

Secondly, I would invite you all to experience my experience with the Flat Earth Society, because I was living in England in 1969 when we put a person on the moon. The Flat Earth Society was headquartered in London at that particular time, and they had a lot to say, and I got a real dose of how that conflict played out with the Flat Earthers. I want you all to know that the headquarters of the Flat Earth Society are now in California.

**MR. HAYNES:** Well, where else? I know there are more questions, but the last session is a very important conversation about teacher education and I don't want to cut it short. I want our panel to have a last comment, if they would, before we close. You've opened up a great many important issues. Is there anything that you want to say here toward the end that you feel has not been said, or that you'd like to wrap it up with?

**MR. GREENAWALT:** I want to make a very narrow point in response to a question that Warren put to me. My general position is that teachers cannot say that any religious view is false, but they can assert some views that are at odds with the beliefs of some religions, including some factual views and some ethical views, say about gender and racial equality.

So Warren asked, "Is the earth more than 10,000 years old?" That's a very tough question given, my approach to that, and my answer would depend. If the teacher says the earth is 4 billion years old, without qualifying it, I think that is okay, but if the number 10,000 comes up as a response to a particular religious view, then I think the teacher should say, "I shouldn't get into that religious view." That's a very uncomfortable position, to try to draw the line this way, but I think a lot of the ways one tries to draw the line here are extremely uncomfortable, so I'm reasonably satisfied with mine. (Laughter.)

**MR. HAYNES:** As you should be.

**MR. NORD:** I can probably agree with that, although I think most always you can get by saying, scientists believe that, or the vast majority of scientists believe that the world is –

**MR. GREENAWALT:** And they use that word in textbooks sometimes.

**MR. NORD:** Yes. But they believe it's true. I don't want to buy into some kind of post-modern relativism here. These are basic –

**MR. GREENAWALT:** I thought that was your subversive position there, Warren.

**MR. NORD:** No, no, these are arguments about what the truth is for the most part. Now, there are some people who believe there isn't a truth about these things, and when students get old enough – certainly when they go to university – they should

understand those points of view too, but by and large, these are religious folk and scientists disagree about what the truth is. These just aren't different items on a cafeteria line that you pick and choose according to your taste. We need to talk about what's true, but oftentimes we can deal with these conflicts by saying, "Most scientists, the vast majority of scientists, believe this is true."

The only other comment I would make is that a number of you in your questions have said what you think the real, proper, true relationship between science and religion is. We've all probably got a view about what the true relationship between science and religion is. I do not want to institutionalize my view of what the true relationship of science and religion is, because I believe in a liberal education. How science and religion relate to each other is controversial. We disagree about it. Hence, a liberal education should not institutionalize a particular view, but again, initiate students into a conversation about the alternatives.

**MR. HAYNES:** Thank you, Warren. Larry?

**MR. WITHHAM:** I like the comment by the professor from the true Phillips – (laughter) – the one and only. In the news business, we sell newspapers by creating clashes and headlines. One study I did was the science-religion debates since the Scopes trial. Essentially, the media hasn't given the public any alternative. It's always a clash between science and the Bible. Look at my book: *Where Darwin Meets the Bible*. Some people hated the title, but it sells books. (Laughter.)

Literacy is important. You don't always have to have a clash. A lot of kids would go, "Wow, that's neat," and parents would like it, and it doesn't have to be a Manichean struggle every time. One thing I hear from both creationists with Ph.D.s and atheists with Ph.D.s is, the problem of science is that it's boring, and it's good to have a little dustup in a science class occasionally to get the kids thinking and to do their assignments. So they don't always distance themselves from it; they say science is a verb, not just counting things on a desk and naming them in Latin. So that balances it.

**MR. HAYNES:** Jay?

**MR. WEXLER:** I'll just make one quick point about prioritization, which I think is important. There are so many things that we've talked about in this conference that people would like to see done. One of them is this controversy, teaching about scientific views on religion, and there are so many things to do and such limited resources. Some of the things that we want to do are so difficult that I think we need to think pretty hard about what are the most important things to do and what we can do. That might be one way of thinking about whether it would be better to teach about religious views on science in a religion class or whether we ought to do it in a particular class. I don't know what the answers to that are, but I think we do have to think about why we want to institute each of these reforms, so that we can figure out which ones are the most important, as well as figuring out which ones are actually possible to do.

**MR. HAYNES:** I hope you will join me in thanking Professor Greenawalt and this excellent panel. (Applause.) It was an outstanding discussion.