

Discussion transcript: Do Science and Religion need each other?

Roger Trigg

Overview

A lecture entitled 'Do Science and Religion need each other?' was delivered by Professor Roger Trigg (University of Warwick) on 8th May 2003 at the Queens Lecture Theatre, Emmanuel College. It was part of the Cambridge CiS-St Edmunds Public Lecture series on 'Science, Religion and Society' sponsored by the Templeton Foundation. A written version of the lecture can be found at the CiS-St Edmunds website (along with an archive of other series lectures):

<http://www.st-edmunds.cam.ac.uk/cis>

Subsequent to the lecture, a dinner/discussion with the speaker was held at St Edmunds College, Cambridge. An edited transcript of this discussion follows. It was chaired by Sir Brian Heap, Master of St Edmunds College, Cambridge. The other contributors are described at the end of the discussion.

The Discussion

Brian Heap: Could I just say that last night we had another very interesting dinner here in this room with Amartya Sen, the Master of Trinity. There has been considerable interest in this college in Professor Sen's capability approach to poverty which I'm sure many of you know about. Enrico is here tonight, along with many others who came along last night from all over the world just for the dinner and discussion with Amartya Sen. It is notable that the area we were considering is Sen's idea about empowering people rather than simply finding ways to produce more food. This, of course, is one of his great teachings and one of the areas for which Professor Sen was awarded the Nobel Prize in economics recently. There are interesting overlaps between the areas we addressed last night and what we examine tonight in terms of how one deals with human needs and human values.

Denis Alexander: I note that a scientist has been asked to lead a discussion on a lecture delivered by a philosopher which is probably risky, but just as philosophers might feel somewhat

uneasy as they face the impenetrable language of quantum physics or immunology, so scientists certainly feel as if they're treading on eggshells when they have to comment on philosophical matters.

Nevertheless, I think it is one of the great advantages of the science and religion debate that it brings people from so many different disciplines into the discussion. This is one reason I must say I'm very enthusiastic about not only these lectures in general but also the whole debate itself, because I think one ends up discussing and engaging with people from many different backgrounds and that's always a very useful exercise.

I have to say at the beginning that I find myself very much in agreement with much of what Professor Trigg has been telling us this evening. Furthermore, my own thinking has been quite strongly influenced by reading his books, so I would like to start by acknowledging my indebtedness to Roger.

It might be useful to highlight a few points that could trigger further discussion. First, I think it would be helpful to have some further clarification on what we understand by the term 'metaphysics' and *why* scientific knowledge requires a metaphysical underpinning. My understanding is that metaphysics, putting it crudely, comprises all those forms of constructed knowledge that lie beyond science and which aren't, in principle, included within the pages of scientific journals. But as Professor Trigg hinted, many scientists are content with the fact that science *works* - it's a highly successful enterprise - so they don't really feel any need to find metaphysical justification for their science. It worked for people yesterday and it's working very well today and probably will work equally well tomorrow, so why do we *need* the extra layer of philosophical metaphysical complication?

Second, there is the practical problem in the dialogue between scientists and philosophers that the vast majority of people within the scientific community, and I speak as one of those, are woefully ignorant about philosophy. This can be quite a problem when you get rather well known scientists who come out in the public domain with philosophically very naïve statements, and this can be somewhat embarrassing. How do we overcome this educational problem? How can the transfer of philosophical ideas into the scientific community be best accomplished?

In a third and not unrelated point I was very interested in Professor Trigg's thesis that it specifically appears to be the Christian world-view that provides justification for the reliability of scientific knowledge. Of course that raises a further question of interest - is any kind of religious world-view sufficient to underpin or to justify scientific knowledge, or is it specifically the monotheistic religions that do that task, or can we find some justification in other religious beliefs? I thought it would be interesting to hear a bit more about that. Here we are living in this very secular society where most people are not Christians, most people in the scientific community are not Christians, and so do we predict that the value of scientific knowledge will decline in parallel with the decline of Christian belief? That seemed to me the sort of correlation that Professor Trigg was hinting at without being fully spelt out. Certainly when we compare the early part of the 21st century with, for example the 1950s and 1960s, at least in the UK, public attitudes towards the reliability of scientific knowledge appear now to be considerably

more sceptical. No doubt there are many reasons for that, but it would be interesting to know whether the decline of Christian belief might be one of those contributing reasons. And if that is the case, then how do we help scientists to see practically that they need this kind of justification for their science and for their scientific knowledge? Does it imply that they have to become Christians before they will appreciate that, or is the Christian argument strong enough that one can present it as a sort of logical argument and carry the day, even though people actually don't adopt that faith themselves? So I think there's a whole collection of issues here that might be interesting to discuss further.

Lastly, I did want to comment on the Intelligent Design (ID) movement since Professor Trigg touched on this as well. He mentioned that there is a very vigorous reaction from the scientific community against the ID movement and I suspect a lot of that is due, as Professor Trigg mentioned, to the deeply held naturalistic philosophy of at least some scientists. Having said that, I think there are some quite solid scientific criticisms of the ideas coming out of the Intelligent Design movement which I won't expand on here at the moment. Instead I would like to make a brief theological critique. In the Christian world-view there is a radical dualism between on the one hand the creator God, who brought everything into being and who continues to sustain everything that exists and, on the other hand the universe that He has created and sustains. So we believe that everything that we describe as scientists is in some sense dependent upon the word of God. I think it was Augustine who said that "Nature is what God does" and I rather like that little phrase from the fourth century. In other words, what I am doing as a scientist is simply to describe the properties of matter that God has brought into being. So in a very profound sense Christianity is a very materialistic religion in which the materials are of great value because they are declared to be good by God and their properties are ultimately sustained by the will of God.

It's within that framework that I am deeply suspicious of the ID movement because when I read people like Michael Behe (as in 'Darwin's Black Box'), it seems to me that he is drawing a distinction even within a single cell, believe it or not, between assemblies of molecules that have been 'designed' because they supposedly were unable to reach that state by the mechanisms of Darwinian evolution, and then other parts of the cell, such as the plasma membrane (an example that Behe gives in his book), which are not 'designed' because we can understand how they evolved. So the idea introduces a dichotomy into the created order between the 'designed' and the 'undesigned', even within the same biological entity - a cell in this case - and this seems to me very different from the robust kind of theism propounded in Biblical theology in which God is continually involved in creating and upholding *every* aspect of the universe. Also the parts of the cell (or other properties of matter) that science cannot yet explain adequately are labeled by ID proponents as having 'design' properties, whereas the parts that science already explains well are designated 'undesigned'. But this smacks of a God-of-the-gaps argument, and one can imagine the 'designed' parts as shrinking with time as scientific explanations improve, as they certainly will. So I have to say as a Christian that I'm deeply suspicious of the ID movement from many perspectives, but especially from a theological perspective.

I think that by now I have taken up enough time and raised sufficient issues for plenty of further discussion!

Peter Smith: I would like to hear more from Roger about how he is using the notion of metaphysics in his talk. For example, at the outset, he talks of metaphysics as “the idea of any reality beyond the scope of science in general and physics in particular” and he notes that empiricist philosophers typically scorn metaphysics in this sense. But later, Roger says (for example) that those philosophers who give a special status to science are not “repudiating metaphysics, but ... espousing a very definite metaphysical position”. So metaphysics in his *first* sense involves a belief in some science-transcending reality; metaphysics in his *second* sense doesn't - it is just the general study of 'what there is' (and this study might deliver the verdict that all there is is what science tells us that there is). Now, many philosophers – particularly British ones - in the mid-twentieth century were pretty scornful about metaphysics in the second sense too. They thought, for various reasons, that general questions about what there is (like that old favourite: are there universals or only particulars?) are pseudo-questions. More recently, however, metaphysics - in Roger's second sense of the general study of ontology, of what there is - has made a big come-back. However, most modern proponents of metaphysics in the second sense remain antagonistic to metaphysics in the first sense (they tend to have a lot of arguments against postulating spirits or other spooky things). So we can agree with Roger that metaphysics in his second sense can be a perfectly respectable enquiry, without for a moment agreeing to reinstate metaphysics in the first sense (the idea of a reality of a transcendent or supernatural kind). Arguments for metaphysics in the second sense are not arguments for metaphysics in the first sense. Hence I think Roger's running with both senses in the same talk might well cause confusion in his listeners.

Roger Trigg: I think metaphysics is concerned with the nature of reality, which is why I say materialism is a metaphysical view because it's saying the only reality is material, that it is therefore a view about what reality is. So it's just a view, a theory about the nature of reality.

Peter Smith: Talk of reality, or talk of the facts, can function in two different ways. Roughly speaking, some talk of reality or the facts is just talk about what's *true*. Other talk about reality or the facts is about what bits of the world *make* propositions true.

For example, to talk about the reality of the mind can be just another way of saying - more mundanely - that it is true that people are minded, whatever that comes to. In this same metaphysically non-committal way, I would be quite happy to say, for example, that it is a fact that *Twelfth Night* is a great play. For that's just to say that it *is* a great play (which it is! - or if you dispute that, then our disagreement isn't a philosophical one, but a literary one).

But often when people talk about facts or reality they're thinking about *truth-makers*, things out there in some sense, which make certain true propositions true. And sometimes it seemed to me that in Roger's talk he was quietly assuming that all facts in the first sense

(truths) required facts in the second sense - in other words, all true propositions require the existence of suitable things, entities, in some sense, to make them true. If you take that line, then you'll want to say that such religious claims as you accept, i.e. what you take to be true religious propositions, commit you to suitable things to make them true. And because - plausibly - natural things (the things recognized by the natural sciences, say) won't suffice for the job, it looks as if the believer is committed to *supernatural* things. I wonder why at this late stage in the long philosophical debate about these matters, we should go down that path of assuming that all the truths that there are require things out there (in some sense) to make them true, and if not natural things, then supernatural things. What are the grounds for this assumption? After all, it is one that many (most?) are inclined to resist in other areas. Someone who rejects a metaphysical picture which has value properties 'out there' as metaphysical constituents of the world isn't thereby committed to denying that murder is wrong (*really* wrong). Similarly, can't we accept religious propositions (construing them as true, i.e. as facts, and so as reflecting realities in the first sense) without thinking of these as requiring special entities to make them true.

Roger Trigg: Except that's been the traditional view of religion.

Peter Smith: That might be one traditional *philosophical* view but that could be just philosophers getting it wrong about religion (rather as many traditional philosophical views, for entirely understandable reasons, got it wrong about the mind). It's not clear that to faithfully say your prayers requires a metaphysical speculation about the way things are, ontologically speaking (any more than loving someone requires a metaphysical speculation about what it is to be a human being). The loving partner just gets on with the business; maybe it is more like that with the faithful member of the religious community. Someone who comes to the philosophical view that humans don't have immaterial components in the way that Descartes thought shouldn't (for that reason) stop loving her partner; likewise it isn't obvious that someone becomes sceptical of the transcendentalist glosses that some philosophers give of religious belief shouldn't (for that reason) stop saying her prayers – unless her beliefs were pretty superstitious to begin with.

Roger Trigg: But there is someone you're praying to. I'm sure that's a very elementary idea in prayer.

Mary Hesse: I want to ask Peter to unpack his 'knowledge' that Twelfth Night is a great play. I can see that this could mean that there is something out there, in the sense of a fact within our culture. For example, in European culture very many people have been greatly moved and their feelings deepened by watching a good, skilful production of Twelfth Night. This is presumably not only what Peter means by 'a great play'. If not, then it seems that using the word 'fact' or 'truth' about knowledge that Twelfth Night is a great play is something I would say is a claim about 'out there', i.e. a metaphysical or ontological claim about values. Otherwise how can it be objective 'knowledge', and not just a reflection of what the elite of our culture has

determined is the 'good'?

Brian Heap: Tim, you're a Dean who works in this world.

Tim Jenkins: I'm not sure I have anything to add at the moment. I would agree with Peter's basic point that really, as a social scientist, what you can say about people who say their prayers is that they say their prayers. I think to posit as it were metaphysical entities, you would have to ask them about them. It always seems to me, just speaking existentially, problems of belief are not problems when you're reading the bible in morning prayer - it's far too interesting to sit there and wonder whether you believe in it or not, if you see what I mean; you're simply caught up in the narratives and so on.

Now it does seem to me to pose these metaphysical questions is possibly a disease of philosophers I would say. It might not be, but I think that would be one way of posing what I think Peter would think.

Terry McLaughlin: I'd like to draw attention to complexities inherent in the practice of a person praying in a context in which they seem to be invoking a realistic semantics (eg that God is a kind of person) whilst denying a realistic ontology (eg that such a God actually exists independently of imaginative conceptualisation). Is there a kind of 'double think' going on here? What kind of psychological account can be given of this state of mind? Is it coherent and even honest?

Denis Alexander: Is it correct, or am I naïve in thinking, that metaphysics means in popular current usage all of those beliefs that don't lie within empirical science? All of those things that lie 'beyond physics'?

Roger Trigg: The original use of the term, I think, is what Aristotle wrote after he wrote the book 'The Physics', and after 'The Physics' is the metaphysics. So perhaps it was a kind of slight ragbag idea in a sense. I don't think I would be the only one who would link metaphysics with a notion of the nature of reality and not necessarily a reality that's apart from science. I think that metaphysics can be a metaphysics of science as well as about anything else too. I'm saying that science itself needs its metaphysics. It needs its understanding of the kind of reality which is there. I am convinced that most people in working science have a philosophy, it's just that it's an implicit one initially and they don't stop to think what it is that they are working with.

Brian Heap: What about the point you raised about other world views to broaden it beyond Christianity? We have a few people here tonight who have come from a different position. Amir, you come from a Muslim position, how did the view expressed by our lecturer tonight strike you?

Amir Karbasizadeh: I think we've got fewer problems in respect of the relation between

science and religion in Islam because we don't have the notion of Trinity and three gods or reincarnation. We haven't had this debate in Islam. Actually it's a new debate arising from the arrival of western culture in my country. Now the scholars are thinking about it, we've got new impressions from science and how can we deal with our new science and religion.

But I was about to ask – about social science. You didn't talk about social science and the relation of this social science to religion. For example, when we are doing sociology of knowledge, or when we are doing sociology of religion and saying something we can discover, we project our notions to a something, some entity that we call God. How can we deal with these problems?

Roger Trigg: You're talking about the sociology of knowledge, really, and I think sociology of knowledge can over-reach itself. Obviously there are social influences on religion, and indeed on science, and they take place in a social setting; but there is a very strong version of the sociology of knowledge both in science that tries to explain everything about religion and everything about science in terms of its social background.

Indeed that links up with postmodernist views which suggest that everything depends on its social context. But that becomes relativism where there is no truth, everything is relative to the people who believe in it. Then I would say well, where does the sociologist's knowledge stand? That's just a body of fact in a social context, so truth is relative to them; so they've got no right to be telling us about other people any more than anybody else, they can't tell us the truth about religion or religious beliefs, or the truth about science and why scientists hold the beliefs the way they do. It's an interesting point that people in a certain context express certain beliefs about the sociology of knowledge, because if their view is that extreme it has to apply to themselves. But if it isn't that extreme it becomes, I think, the rather unexceptional view that we're all rooted in a society and society gives us our beliefs. Ultimately that says nothing about the nature of religion, or about the nature of science. It certainly doesn't entitle us to talk about projection which suggests that the reality is in our minds. If you take that view of science it destroys science.

Amir Karbasizadeh: But there is nothing wrong with this view, I think. We can say that there are some apparents and then we can classify these as some kind of experience that we have. We don't have access to some mind-independent reality so we classify everything by its appearance to us, and that's it.

Roger Trigg: Ah well, that comes back to a very deep philosophical argument about whether you can access a mind-independent reality or not, or whether everything isn't just appearing to us in a particular way.

What I'm saying is that if you really take the view that you can't access a mind-independent reality, then that does not really bode very well for the physical sciences. On that view, what they are doing is just projecting something which reflects the society they're living in and they're

not discovering anything about the world, because there is no such thing as “the world”: if it’s a mind-independent reality to which you can’t have access, I think again that would destroy science.

I think, though, it also destroys the very sociology of knowledge you want to take part in because sociologists of knowledge have to be looking at a mind-independent reality, namely the practices of religious believers or of scientists, which are not projections by them if what they’re doing has any sense.

Mary Hesse: There are few sociologists of knowledge, even those who call their thesis a ‘strong’ one, who would actually deny what Roger calls the pragmatic truth of science. It is very difficult and counter-intuitive to deny the pragmatic success of science, and I wonder whether Roger has rather dismissed too quickly the view that pragmatism is a sufficient basis for science to proceed?

In the 17th century there is no doubt that there was – as historians have shown – a certain Christian input into the idea that God was an empiricist who had formed the world so that we have to *look* at things, do experiments, in order to find truths about the world. God was not, like a Green rationalist, subordinate to any *a priori* truths independent of himself. In that sense Christianity did seem actually to be one of the causal origins of modern science.

I wonder now, however, whether it is quite clear that science does always work in this way. The question, which I think Roger also mentioned, is that there is no pragmatic evolutionary need for us to press into deep cosmology, or the deep history of animal species, and so on. We don’t need this kind of science now for survival but does it follow that we need instead a backing from some sort of God-given order to persuade scientists to do theoretical science? Isn’t this pursuit rather something that is at present embedded in our culture but which may not survive indefinitely in future centuries? Cosmologists are never going to find the theory of everything they are looking for, and their deep theories may come to be seen as not much more than playing games. Research would become almost an aesthetic activity, excellent as long as someone pays for it, but not necessarily a first call on our resources (some would say we have nearly reached this point in this country already). The place of science in popular culture might even be taken over by philosophy and theology!

Just a final point about the ID movement, which I wish I knew more about. The question I want to ask is Popper’s question – have the ID movement theorists brought forward theories about ‘design’ which are falsifiable empirically? I doubt that they have.

Roger Trigg: Yes, and in fact the proponents of intelligent design may be wrong, and scientists may be able to meet their points. The advocates of such design certainly claim that they are making a contribution to science, and that is how they should be judged.

Mary Hesse: In so far as they do, they would be operating as scientists but then ‘design’ (unlike ‘God’) would become a scientific concept and not very metaphysically or theologically

significant. I thoroughly agree with what Denis Alexander said earlier, that if one assembly of molecules can be explained in evolutionary terms, while another cannot but is claimed to be the result of special design outside the purview of science, then this is both scientifically and theologically objectionable.

Roger Trigg: Yes, and in fact they may be wrong and perhaps scientists have answers to this. They certainly explicitly claim that that's the area in which they're making their claims and so I think that they should be mentioned now on that line, certainly.

Phil Gardner: I wanted to pick up on the postmodern point, if I could. Speaking as neither a scientist nor a philosopher (I'm a historian), I'm perhaps in a strong position! Paul Ricoeur, if I understand him aright, enjoins us to understand that each one of us has a part of the truth in one way or another. In an important sense, the debate which casts science on the one hand and religion on the other is always going to find itself pushed into a set of oppositional caricatures which nobody really wants to find themselves boxed in by.

But there was something very interesting about the invocation of postmodernism in your excellent presentation - which I thought had a tinge of schadenfreude about it - which is to say that the scientists have for many years been pressurising theology epistemologically, if you will, and now the postmodernists are in some sense doing much the same to the scientists - and how does that feel now! In some kind of way I share that schadenfreude but it's a very dangerous ground to go on to and I wonder if in some way the religious and the scientific response to what is a common challenge, which is the challenge of postmodernism, might actually be a ground upon which the kind of common territory between these two putatively imperial truthful positions might be rethought.

Roger Trigg: Yes, certainly postmodernism threatens them both equally. I have come across some religious people who think, oh good it's on our side because it's knocking down science. But it also knocks down religion.

Colin Humphreys: I think most working scientists just ignore postmodernism and almost treat it with contempt, which is probably the wrong thing to do. However, I think that is what happens in practice. People do astronomy basically because they are very curious about the Universe and astronomers find they can advance our basic knowledge of the Universe. People do applied science because industry will fund them and it makes money, it's clearly very successful economically. Both basic science and applied science work and postmodernism is irrelevant. If your economy doesn't have science, as for example in Africa, then it falters and if your economy has got the science then it's likely to prosper. So I think for these reasons scientists just ignore postmodernism. Do you think this is the right thing to do so?

Roger Trigg: Well, I don't pretend to support postmodernism but it gets back to this idea which

was mentioned earlier, the idea that 'science works'. Of course, that is quite a gut reaction and I'm never quite sure what it means when one says science 'works' because what does it mean for science to work? To my mind that's raising again these philosophical issues.

When science is 'working' properly what is happening? Is it just that we are back with the non-stick frying pan - is that about as good as we get - or is there something more to it? Does it mean that we understand something aright because there are a lot of things going on in science that aren't just producing these goodies, that in pure science there seems to be more than that: what is it then, what's the 'more' and what is 'working' in that direction? Unless you're back with questions about understanding the nature of reality and what is reality and what is the world like, I'm not quite sure is meant by 'working'. And once you say no, we're understanding and making discoveries about the world, then you're back raising issues about the nature of the world that we're discovering and why it is that we can discover these things.

Brian Heap: But it's all those things, isn't it? We have tedious debates as to whether science is neutral and value-free and some of our scientific colleagues press the point that it is. We know that there are elements of science that clearly do fall into that category, but on the other hand there are other elements that very quickly become value-laden, much more so than used to be the case. You suddenly find yourself plunged into this whole area of doing science because it's actually going to create wealth, improve the quality of life and all those good things that people talk about.

But I feel that we've also given our American colleagues a slightly hard time tonight, so I think we need to come back to the issue of creationism and intelligent design and involve some of our American colleagues in the debate.

Charles Hampton: Professor Trigg pointed out how strongly the issue of creationism is debated in the American arena and also paradoxically within the American arena, unlike here in the UK, talk of religion is being largely pushed out of the public forum. In the US the proponents of ID are trying, as noted by Professor Trigg, to make an argument within the scientific framework that perhaps we can discover evidence of God's work from within the science itself. What happens is that they are usually pushed out of the arena immediately: tarred and feathered with the label 'creationist', putting them in the same camp with the young Earth, short-time creation people.

I have experienced that same kind of thing myself when I described in a faculty science seminar the scientific issues that ID advocates Michael Behe and William Dembski raise. The audience immediately pushed the discussion away from the scientific issues to questions about my own religious beliefs and what I thought about the age of the Earth. None of my colleagues wanted to consider the ID arguments and the substance of the issue itself.

The situation in the US is in many ways quite strange. The US population is so much more overtly religious than here in the UK, as measured by answers to opinion polls and by the number of people who attend religious services. However, there is this effort by the media and academics to drive religion out of the public arena. For example, in some of the parts of the

press when a public figure like the president makes some religious allusion, their reaction is “Oh no, he’s done it again.”

Roger Trigg: Of course if you want to be very cynical, and I’ve heard Americans say this, they would say that it’s a powerful intellectual elite who are in the minority in the country, who can’t persuade public opinion. So they get their way through the courts, which they think they can control. I know that Americans make that allegation in a very angry way and its made by people who are quite intellectually elite themselves, and who know what they’re talking about. They are saying that’s what is happening, but in a sense it’s antidemocratic because it’s not going with the will of the people.

Charles Hampton: There’s probably some truth to that. I think more often, rather than the courts, it’s in the media-dominated public arena where you find that attitude. There have been surveys which indicate that the people you see on the television or read in the newspaper are rarely, if ever, practising any religion whatsoever and those attitudes are the kinds of things that get subtly and sometimes not so subtly advocated, pushing everything else out.

Bob White: You’ve mentioned, Chuck (Hampton), the gut reaction of the scientist against the Intelligent Design (ID) movement. May I put the gut reaction of this Christian, of myself, against the ID movement? My reaction is that, in a similar way to what Denis Alexander said earlier, the ideas behind ID seem, in some sense, to do God down by pushing him into little corners that we don’t understand well at the moment.

From what I read in the Bible I understand that God created the whole shebang, absolutely everything in the universe, and that He sustains it moment by moment. If it weren’t for His graciousness the world would fall apart: so in a way everything we do as scientists is looking at God’s creation. Again, picking up on a thought that Denis mentioned earlier, when we work as scientists it’s as if we are “thinking His thoughts after Him” as Kepler is held to have originally said. So the concern I have with the ID movement, although it’s laudable in trying to draw attention to God’s activities in the world, is that it is actually doing God down by drawing our attention to scientific corners that we don’t at present understand. And maybe, indeed probably, one day we shall understand those at-present difficult corners scientifically.

Surely it is much better to go the whole way and to say, “Look, God created the whole world and everything we see around us is created, sustained and maintained by Him for our good”, which seems to be the biblical view. The scientific things we do not at present understand then become a challenge to us as scientists to understand better, rather than a prop to our faith as evidence of God’s design work. The whole universe around us, from the biggest galaxy to the smallest sub-atomic particle, is the proper domain for seeing God’s handicraft, not just the bits we do not yet understand.

Chuck Carrigan: I appreciate what you’re saying, Bob. However, it is also important to

recognize that there are some extraordinary and even singular problems in nature that do not readily fit into the 'small corners' of science where we currently lack understanding. On this issue, I'm quite willing to temporarily put aside my views as a Christian and just speak as a scientist on searching out the truth about man's origins.

As a scientist, I am simply concerned about the notion, apparently accepted by many scientists, that a series of supposedly random processes or events occurring in nature can somehow result in the mechanism of molecular programming called a gene. This concern becomes amazement when I think of the vast information content chemically programmed into a gene. However, it is not enough for nature to simply cram incredible amounts of information having to do with the development and maintenance of life functions into a gene. Like a computer program, the instructions also have to be executed in well-timed parallel sequences that are critical to the successful completion of the program. Our genetic makeup thus seems analogous to a highly compressed and 'parallelized' program at the molecular level that, when fully executed, results in an entity capable of sitting under the stars and contemplating its own existence.

For someone who has learned painfully that the details are important, I am astounded at the occasional glib appeal to some vague notions of Darwinian theory to explain how nature gets from rather simple organic compounds to some unimaginable level of functional complexity in the organization of biological systems. It leaves me wondering what special information those who make such appeals must have that I do not have. Unfortunately, my discussions with colleagues who advocate a purely Darwinian model are usually not specific about how natural processes might actually do the trick. It would be more convincing to the doubters to be shown natural analogs, which are subject to random disturbances, that observably demonstrate at least some of the details for going from a simple state to a rather complex final state consisting of integrated and functioning subsystems supporting the existence of the final state. Frankly, I do not know of any examples of this except those that involve life itself.

Derek Burke: But there is a difference between saying that this is a very difficult problem, which you've just said, and on the other hand, saying that I don't understand how it works. I think that it is quite possible that our present scientific approaches may not be adequate, and that we may have to change the paradigm, or indeed, we may need some major new insight as to how organised multicellular organisms work; that's no more than saying that the science is very difficult. I think you're not saying that, I think you're saying that there is something about the behaviour of cells, for example, that is inaccessible to science and I think that's what the ID movement is saying. I would like to push Roger on this, that there is something out there which is inaccessible, something about us if you like, inaccessible to science as it normally works. I'm very chary for historical reasons for saying that this is so - think of vitalism for example - the ID movement smacks to me of vitalism. We know historically that urea was thought to be different in kind from other chemical compounds because it was made by the body, and the synthesis of urea by Wohler in 1828 was the deathblow of vitalism as such. So is it a difference in degree,

is it just more difficult and ultimately the pursuit of science will get there, or is it a difference in kind? I think you said that intelligent design is a scientific issue; personally I think it's a way of smuggling back in a religious view which has been excluded.

Roger Trigg: Well, that's what the critics are saying in America and that's why they're proscribing it. Looking at it as a scientific issue, the scientists can answer it as a scientific issue and say "yes, look, there is this explanation that we can give or that we think we'll be able to give, sometime."

Derek Burke: So we're back to Mary's question, how is it falsifiable, what scientific evidence would persuade you that intelligent design was a correct explanation?

Roger Trigg: Well, I suppose it's perfectly possible that science will always fail to give a completely convincing explanation. Now I'm not going to say that's true but that's, I suppose, not impossible. I don't believe as a matter of principle that science can explain everything and it may be that science can explain a lot more than even scientists imagine nowadays, but not necessarily. You actually do come up against time when you actually say, no, we haven't explained it.

Derek Burke: And how do you know when you've got there, Roger?

Roger Trigg: Well you don't, and I'm not saying that science should ever give up, but of course all I'm arguing about is the reverse, the metaphysical assumption that science is *bound* to succeed. And that's all I'm arguing, I'm not saying that it's bound to fail. But there is another philosophical view that's saying it is, as a matter of principle, bound to succeed one day.

Brian Heap: That's a good American view, Richard. Richard Gamble is from Palm Beach, a lovely part of the world. He's working at Tyndale House, he came in to fill a gap right at the end and we're very pleased to see him.

Richard Gamble: All I'm thinking right now is that if you don't say anything then you don't regret anything you've said!

I must say some of my best friends are in the Intelligent Design movement and my college hosted an intelligent design conference about two years ago. This caused quite an uproar, a furore on the campus. The Biology Department is still reeling from this, still very angry. Of course some of this is just protecting their turf, they're afraid that if the college gets the reputation of dealing with this voodoo that their students won't get into medical school. It's the embarrassment factor of all of it. It strikes me that ID is doing a couple of things: trying to make the gaps as big as possible, make sure the gaps always get bigger than can possibly ever be filled by the scientists, keep throwing out the challenge; but I also think there are two criticisms

that come up against it that I struggle with. One is that - it seems to me from a scientific view, and I'm a historian - even if the ID movement is right it would ruin the scientific method that works so well, whatever working well means. It's gotten us this far; even acknowledging the claim of intelligent design would undermine the method by saying "this is where we stop." Beyond that, well that's Intelligent Design, we've mis-labelled something, that's Intelligent Design.

Another very different concern, and a personal concern for me, is that I only give two cheers to Intelligent Design because I think it only takes us back to the eighteenth century, it only maybe takes us back as far as Voltaire, maybe only as far as saying that there was a shipbuilder. But do I worship the shipbuilder, is the shipbuilder good? It doesn't get me very excited about how far it gets us back.

Roger Trigg: Of course they mean it not to get you excited. They don't want to be doing theology, they're just making space for whatever, that's what their strategy is.

Richard Gamble: If people would actually listen to what a lot of ID advocates are saying they would hear that.

Russell Manning: I want to try to explore the distinction that is being made between the metaphysics and science. It seems to me that, even this evening, they do tend to blur. Is it possible to assess something like ID purely as a scientific theory? Or will it always be assessed at the level of metaphysics? We've heard before that all scientists have some kind of metaphysical presuppositions, is it those metaphysical presuppositions that are being assessed and if so, are the dice already loaded? In other words, is it possible for a genuinely purely scientific assessment to be done? I'm not a scientist, I wouldn't know what that would look like if it were done, but it seems that those metaphysical presuppositions are going to be there all the way down, as it were.

Roger Trigg: Yes, I think that's quite right. I suppose what the ID people are doing is explicitly repudiating both metaphysical naturalism and what is a methodological naturalism, in other words using it as a methodology. So they're quite content to say that perhaps even you can do science without assuming you're always going to fill in every gap. They're not necessarily putting in other metaphysics there, they're just challenging the naturalism and assumptions of other scientists. And when they do that, of course, they get a very big reaction.

Russell Manning: But surely, their science needs to be assessed at the level of its metaphysics, without pretending that there can be some kind of presupposition-less assessment as 'pure science,' which you don't need to be postmodern to acknowledge as a myth.

Roger Trigg: They're saying "let's do science", but these are the people actually operating *with* these assumptions and they're trying to lay bare the fact that people are operating these

assumptions, which I think is fair enough because very often they are.

Denis Alexander: From the perspective of science we see a lot of gaps in our scientific knowledge but it is precisely those gaps that drive the scientific movement. This is why I go to the lab every day, that's what keeps us going, curiosity about how things work, which I see also as part of Christian worship – the great goal of understanding God's creation better. This is what keeps us motivated, keeps us writing grants – this is what keeps the scientific community on the road. If there weren't gaps we wouldn't have anything to do. Darwinian evolution is a good example of an extraordinarily successful theory which now is supported by so much more evidence than poor old Darwin had available. Darwin had plenty of gaps in his scientific knowledge as he wrote the *Origin of Species*, and in succeeding editions of the Origin he actually became more Lamarckian in his stance as Lord Kelvin was reducing the age of the earth during the latter half of the 19th century because the age of the earth just didn't seem long enough to accommodate the evolution of biological diversity by a process of natural selection. We now know that Kelvin's estimates were quite wrong, but the point is that so many of the gaps in Darwinian theory have now been filled and continue to be filled. For example, the data arising out of the Human Genome project makes perfect sense within the model of Darwinian evolution, but it doesn't make much sense within any other model that I know of. So if a PhD student comes to me in the lab and says "Oh I've found a gap" – I tell him or her to go back and work harder. That's their job. I don't want them to tell me about theology just because they have a gap in their scientific knowledge!

Peter Smith: I was wondering why the Intelligent Design hypothesis would need to be thought of as antinaturalistic. Even if you believed that there was some evidence for intelligent design well, we all remember the fantasy in '*The Hitchhiker's Guide to the Galaxy*'. Maybe this end of the universe is indeed being run up by some intelligent designers from a planet-building corporation! But there's no immediate move from *that* thought to the thought that these intelligent designers must therefore be of a kind that is comparable to the Judeo-Christian God. They would just need to be vastly cleverer and more powerful than us (though they could be a pretty malicious bunch).

Roger Trigg: Well, because the explanation may not itself be natural, perhaps, but the intelligent design people would agree with you. That's why they say they're not doing theology, they're not saying anything about the nature of the design at all.

Peter Smith: Then I'm lost as to what the relation is between this and issues about religion.

Roger Trigg: Because their opponents say it's religion, that's the thing, they're not necessarily saying that themselves. Their opponents, particularly the American Association for the Advancement of Science, say this has got no place in the scientific laboratory because of the

very fact that it's raising these issues, and perhaps talking about the limits of science, therefore it must be religion.

Brian Heap: And I think on that note may I ask Roger if he would like to draw some threads together – perhaps not all of them – but to give us a final reflection before we break up and continue the discussion outside this room.

Roger Trigg: First, could I pick up the point about gaps and methodological naturalism because I have always found that quite difficult. The ID people have challenged not just methodological naturalism but the idea that it should be part of scientific methodology. I do take the point, and I always have, that if you're a scientist you've got to look to fill the gaps because very often you will fill them. So as part of your methodology you've got to go on thinking that it's a good thing to do that. But at the same time I do feel that it may not be harmful to think, at the back of your mind, that actually human science may not be sufficient and may not always fill every gap in our knowledge. Quite possibly there could be gaps that it won't.

Now that doesn't mean that you give up. I think the point is that, suppose people never talked about gravity but about spirits, but just said "Oh, it's supernatural". Yet if we reject that approach, and don't assume that all gaps have to be filled by the supernatural, that doesn't mean they *will* always be filled by the natural and I think that's the tightrope scientists have to walk. They should look for things, but that doesn't necessarily mean that science will always inevitably in the end find them.

And there's another point: the issue about the nature of religion and how far it's all religion or particular religions, and whether it's monotheistic religions that particularly provide a backing for science. I think it is interesting to think why science has developed more rapidly in some areas than in others. I think monotheism as such certainly helps, because it gives you an idea of one truth; and I think science itself has some kind of notion of unity and one world, but it is an interesting thought. I'm not going to pursue this because it's rather controversial as to just how far Christianity itself has made science possible.

There was a suggestion that even as Christianity declined in influence, therefore science itself might, because the two are linked – people didn't realize that they are. But I know that there are some people, Stanley Jaki and others, and Peter Hodgson in Oxford nowadays, who firmly do believe that Christianity made science possible and that actually when Christianity is repudiated, science withers. In support of this, they would point to Russia under Communism.

I find that a challenging view – I don't necessarily accept it – but it does raise the issue very sharply, not just of religion in general, but of whether it's a particular kind of religion that forms the backing for science, and certainly historically there's something in that.

Brian Heap: On behalf of us all, may I thank Roger for a very stimulating lecture this evening. I think the size of the audience reflected the great interest in this area. Thank you very much, Roger, it's been a splendid evening.

Discussion participants

Professor Roger Trigg, Professor of Philosophy, University of Warwick, Chairman, British Philosophical Association, author of numerous books including *Philosophy Matters*, Blackwell 2001, *Rationality and Religion*, Blackwell, 1998 and *Rationality and Science*, Blackwell, 1993.

Dr. Denis Alexander, Chairman of Molecular Immunology, The Babraham Institute, Cambridge, and Fellow of St. Edmund's College. Editor of the journal *Science & Christian Belief*.

Professor Derek Burke, Honorary Fellow, St. Edmund's College, former Vice-Chancellor University of East Anglia, President of Christians in Science, molecular biologist, broadcaster and government adviser.

Dr. Charles Carrigan, Lawrence Livermore Laboratories, California, Visiting Fellow, St. Edmund's College, geophysicist.

Li Ding, MPhil student at St. Edmund's College in Management Studies (visiting from China).

Dr. Richard Gamble, Assistant Professor of History and Honors, Palm Beach Atlantic University, USA; research on the philosophy of education and on the First World War; former Visiting Scholar, St. Edmund's College.

Dr. Phil Gardner, Fellow, St. Edmund's College, University Lecturer in the Philosophy of Education.

Professor Charles Hampton, Visiting Scholar - Wolfson College and Department of History and Philosophy of Science, Cambridge; Johnson Professor of Mathematical Sciences, The College of Wooster, Ohio.

Sir Brian Heap, FRS, Master, St. Edmund's College, biologist, member NATO Science Committee.

Professor Mary Hesse, FBA; former Professor in Department of History & Philosophy of Science.

Professor Colin Humphreys, Professor of Materials Science, Cambridge; author of papers on science and Christianity.

Tim Jenkins, Fellow, Jesus College, Dean of Chapel; originally a zoologist at Oxford before ordination.

Russell Manning, PhD student at St. Edmund's College writing a thesis on Paul Tillich, previously at Oxford.

Enrica Chiappero Martinetti, Associate Professor of Economics, Faculty of Political Sciences, University of Italy; visiting Senior Research Associate at the Von Hügel Institute, St. Edmund's College.

Dr. Terry McLaughlin, Fellow of St. Edmund's College, University Senior Lecturer in Philosophy of Education; Professor of Philosophy of Education elect, Institute of Education, University of London.

Francesca Re, former St. Edmund's College student reading MPhil in Law (visiting from Italy).

Professor Pamela Ryan, visiting Fellow at St. Edmund's College and at CRASSH; Professor and Head of the Department of English, University of South Africa; research interests: gender theory and psychoanalysis; colonial women and postcolonialism.

Dr. Peter Smith, Faculty of Philosophy, writes in philosophy of science and logic.

Professor Bob White, FRS, Fellow St. Edmund's College, Department of Earth Sciences; geophysicist, prime mover of Templeton grant; writer on science and Christianity.

Amir Karbasi Zadeh, MPhil student at St. Edmund's College in History and Philosophy of Science (visiting from Iran).



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