Creation's Voice Proclaims

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Cosmology

Aims and admissions

The main topic advertised for our studies today is creation. I want to say immediately what my particular aim is in these studies. I aim that we should have a clearer and a firmer grasp of the great realities that underlie our Christian gospel. I speak today as a Christian, not a very good one I hasten to add, but a Christian. Therefore I am in that sense biased, and that I would like you to know freely.

Bias is common to all

Many people who speak on these topics are also biased, because it is quite common to find scientists who come at their studies on the basis of an atheistic methodology. That is to say, in studying science, they begin by disregarding God completely and would say that science (in order to be true science) must adopt methodological atheism, which is to say that there is no room for God; God just doesn't come into the study at all. Therefore, in my book, they too are biased, but I freely admit my bias, and I would like you to understand that.

Moreover, the demands of time today will mean that I shall have to be very selective in the evidence that I quote, and I am aware that that opens me to a charge of serious selectivity: choosing those bits of evidence that support my point of view and disregarding those that would go against me. I trust that my having shown myself aware of this will somewhat mitigate your wrath and help you to see that what I am expounding today is a Christian view of things and how a Christian might well respond to science in general and, in particular, to the discoveries of more recent times.

God of the gaps

On that point, I would like to add this and underline it. It is a common objection to the Christian explanation of things that Christians are forever bringing in a 'God of the gaps', as he is called, meaning that where we have not yet any scientific explanation of some process or phenomenon in the universe, Christians rush off to God and say, 'Well God does that.' For instance in centuries past when it thundered, people said that was God actually speaking; that it was God's voice, a deep bass voice, in the thunder. But to explain thunder at that level as simply the voice of God speaking would stop all scientific investigation, wouldn't it? So the scientists said, 'Well let's not run to God as an explanation of this phenomenon; let's examine it to see what the mechanisms of thunder are.' And as every schoolboy and

schoolgirl knows (and some of their parents), the thunder, as we understand it, can be accounted for by the workings of electricity, and demonstrably so.

I remember some thirty or forty years ago I had some Christian friends in the electrical department of Queen's University Belfast. They took me down into the basement where they got at their experiments and they were going to teach this innocent classicist a lesson that he would never forget. So they faced me with two poles that looked like Belisha beacons (such as those you see in Britain at pedestrian crossings) with round things on the top and bade me look at them and, all unawares, they pulled a switch and there came a vast, thunderous roar of thunder and lightning that was calculated to scare this classicist!

You can see I'm still here, but the point was that this was a scientific explanation of thunder. And of course true Christians are not against that kind of thing, are they? They welcome every scientific endeavour to understand how this universe works. They don't regard it as a form of iniquity or atheism or rebellion against the Almighty to seek out his works and to try and understand how they occur.

Of course understanding how a thing occurs is not to understand why it occurs, and if God likes to use thunder and all the physical mechanisms involved in it in order to rouse the conscience of certain people, or to convey the reality of his creatorial power to them, God is not inhibited. And it could be that thunder, to some people on some occasions, becomes the voice of God in that higher sense.

That said I want to point out that, as far as I'm concerned, the evidence that I shall quote today is not a question of trying to bring in a God of the gaps. I shall rather be trying to take advantage of the more modern scientific understanding of things. For, as I read the literature, the more science advances, the more it seems to me that it confirms, affirms and supports the Christian view.

The gospel

Now I repeat that the aim of my seminars today will be to get a firmer grasp and a clearer understanding of those great basic facts that underlie our Christian gospel. You will remember that in his letter to the Romans, Paul expounds the Christian gospel and, through that exposition, has caused a revolution in Europe three times over. It is the glorious message that we can be right with God through simple faith in Jesus Christ our Lord: justified, redeemed, saved—whichever term you like to use. Simply through faith, Abraham, the case law that Paul cites, was made right with God: 'Abraham believed God, and it was counted to him for righteousness' (Rom 4:3).

In the decades past, the Christian church in general has frequently preached the gospel in those terms; and rightly so, and should continue to do so. This is the gospel: that Christ died for our sins, according to the Scriptures, that he was buried, that he rose from the dead the third day, that he appeared to a vast host of witnesses, and that he is coming again (see 1 Cor 15:3–8; 1 Thess 1:9–10). That is the gospel. But now if we should enquire of Paul, 'Why do we need this gospel, why do we need to be saved?' Paul's answer to that, as given us in Romans 1, is that our first urgent need of salvation is based on this: that without Christ and without salvation, we stand exposed to the wrath of God because of our sins. And it is not only the

fact that we are sinners, but that we are guilty sinners and have no excuse for our sinning. That, I beg you to notice, is an important distinction.

Guilty sinners without excuse

Of course we're all sinners but, according to Scripture, we're not just sinners. We are guilty sinners because, knowing the facts and knowing the truth, we have rebelled against that truth. So Paul says in chapter 1 of Romans,

> The wrath of God is revealed from heaven against all ungodliness and unrighteousness of men, who hold down the truth in unrighteousness; because that which may be known of God is manifest in them; for God manifested it to them. (vv. 18–19)

God has made it abundantly clear. How? Well, through 'the invisible things', the things you can't see yet are made manifest since the creation of the world. They are clearly seen; they are 'perceived', says Paul (vv. 19–20). For example, when looking at a tulip you can perceive the thing is beautiful. You don't need any extended argument, philosophic or scientific, to prove to you that a tulip or a rose is beautiful. You jolly well can see it, unless you have some sort of visual limitation. So it is the claim of the Christian gospel that certain things are evident from creation, and people can see them if they are willing to see them and will be held responsible for rejecting that evidence: 'For the invisible things of him since the creation of the world are clearly seen, being perceived through the things that are made, even his everlasting power and divinity; that they may be without excuse' (v. 20).

This is number one of the basic facts to which I refer as underpinning our Christian gospel. In our present age, and in our particular country and in many Western countries, the fact that many people no longer see any need for the gospel that Christians preach, stems in part from this: that they no longer think that there is a God there anyway. Therefore it pertains to our basic Christian gospel that we preach Creation!

Excuse the warmth of my exhortation, but this is a Christian seminar. It is irresponsible of us as believers in Christ to say that matters of creation are irrelevant. It is no good saying we just want to get on with preaching the gospel. Our own gospel text, the Epistle to the Romans, will tell us otherwise, because the evidence is so important and upon it will depend people's eternal destiny. That is to say, their destiny will depend on how they have reacted to the evidence and are without excuse in this regard. We Christians have a duty to understand as best we can and to preach the evidence of creation. God give us the grace, the mental energy, to study the matter therefore and not to dismiss it out of hand as irrelevant to the preaching of the gospel.

The wider implications to be explored

You may have noticed from the programme that I am not proposing to limit myself simply to a discussion of the seven days of Genesis 1 and the question: 'How did things start?' How things started will indeed concern us, but creation has a wider implication.

The creation of nature's processes

Paul, in denouncing the unnatural sins that abounded in his day and now abound in ours, points not only to the fact that God created but points to Nature's own processes that God created. So that Nature herself, in her processes, becomes part of the evidence for which people will be accountable. And in particular, as should be evident without argumentation, that the practice of homosexuality, which Paul here denounces, is self-evidently contrary to the mechanisms that God has placed in men and women. The evidence is therefore of God as Creator, but also of the processes that he has created.

The creation of conscience and the law written on the heart

Then in Romans 2 Paul expounds our need of salvation from another point of view; namely, that we have a conscience. That is to be seen, he says, in the fact that men and women accuse each other of having done wrong. And at other times, having done wrong, they try to excuse themselves. If you ask, 'Where does this moral sense come from and what is the ultimate authority behind it, and the ultimate criteria of justice?' the Christian answer is that it is based on God who, by his creatorial wisdom, has put into the human heart certain laws—the law of God, written on the heart (v. 15). That is part of creation too and therefore, in the third of our sessions, I shall be wanting to discuss with you this question of the basis of morality.

The authority behind morality

In the West, civilisation has lost its way, has it not? It inherited a morality that was based on the Judeo-Christian tradition and men have vainly thought that they could reject the Judeo-Christian tradition, the Old Testament and the New, and the God it represents, and still keep the morality. But now in our United Kingdom and in Europe, the evidence stares us starkly in the face as to what happens to civilisations when they get rid of God as the authority behind morality. So we need to be thinking about that in our *laissez-faire*, 'If it feels good do it' society. This question of the basis and authority behind morality is a part of our gospel preparation that we also should teach and explain.

The question of what a human being is

And from that we shall deal with what is becoming perhaps the centre point of much scientific discussion as far as Christianity is concerned. That is the tremendous rate and width of interest given to the topic of what man is and what the human brain is. There's no mistaking what the Bible says about us. The Bible maintains we are not just matter; we're not just physics or chemistry with a touch of electricity put in. Man has a non-material element in his being. That of course, in the past century or two, has always been challenged and sometimes mocked. Now the whole question is coming to the fore, partly because of the tremendous and exciting developments in computers and the question whether they will be able at last to be the equivalent of a human being. Secondly, it arises with all the marvellous, advanced techniques with their exciting results in the investigation of the brain. So the question is whether we have minds as well as brains (we'll all agree for the moment we all have brains; we'll not argue about that!). The question is a matter to which Christians who are concerned with the public stand for Christianity ought to concern themselves and we

need to guide, in particular, the up and coming generation before they swallow the completely materialistic view of what a person—a human being—is.

I run the risk today of being shallow because of the width of the programme. I hope I shall not trivialise the topics. Each of the topics deserves detailed treatment, but in this one short day of seminars, I choose to use the time to point to, or to remind us all of, those directions that we could profitably follow if we will be effective Christian witnesses to our day and generation.

Cosmology

So we start with cosmology, and if you say, 'What right have you to talk about science?' well, you have a point. Let me make my second confession: I'm not a scientist. So what right have I to speak about science? Well there is this observation to be made that scientists have a habit these days of writing books for the general public. They're nice, glossy, quite expensive books, and many of them repeat what the others have said. But there's no harm I suppose; it's honest money, well made. But they write about these things and expect the likes of me to buy them and read them, and when the scientists themselves disagree, I claim the right of an Englishman, or an Irishman if you like; in any case a jury man. Because in any court of law, it's not the expert witnesses who decide the case, it's the jury. And when the experts disagree and write books for the layman, well they mustn't complain if the laymen take them seriously, try to understand their work and therefore comment on its relevance to the Christian position.

What we know by revelation

Before we start to think about cosmology we're going to look just at a brief summary of what we know about the created universe by revelation, through reading Scripture. Just let me remind you of some of the leading parts of the Christian position.

1	The universe had a beginning	Gen 1:1; John 1:1-4
2	The universe was created by God's Word	Heb 11:3
3	God is other than the universe: not part of it The Word "was"; the universe "became" Cf. "Before the world was"	 John 1:1,3 John 17:5
4	The Agent in creation was God, no less	John 1:1-3
5	The universe was made in stages, not all at once	Gen 1:1–2:3
6	Each stage was initiated by a Word of God	Gen 1:3, 6, 9, 11, 14, 20, 24, 26
7	The universe is upheld by God's 'powerful word'	Heb 1:3
8	History was intended to make progress towards a goal Cf. the phrase "the fulness of the time" Creation to be eventually "released"	 Gal 4:4 Rom 8:20–21

9	The beginning, agent and goal of the universe is Christ	Col 1:16-17; Heb 1:3
10	Stages in the "progress" of humanity:	
	(*a*) The Word became flesh:	
	The resurrection, ascension, glorification of the Man Christ Jesus	
	(*b*) Creatures of God by receiving Christ become children of God:	
	The formation of the Body of Christ	Col 1:18
	Their eventual glorification	Rom 8:29
11	The New Heavens and the New Earth	Rev 21

Figure 1. Creation: What we know by revelation

The universe had a beginning and was created by God's Word (Gen 1:1; John 1:1–4; Heb 11:3)
That is told us in Genesis: 'In the beginning, God created the heaven and earth' (1:1). It is inferred in John 1:1–4 where we're told: 'In the beginning was the Word, and the Word was with God, and the Word was God. All things were made by him.' And the Greek very sophisticatedly uses two different verbs. 'All things *were made*', literally 'all things *became through*' him. The universe became. The universe was not always there. 'All things became through him'. Or, as Hebrews would put it, 'We understand by faith that the worlds were made by the word of God' (11:3).

God is other than the universe, not part of it (John 1:1–3, 17:5)
When the text talks about God himself and his glorious Son, it says as follows: 'In the beginning . . .' not the Word 'became'; very, very deliberately it says, 'In the beginning the Word was'. He didn't *become*. He later *became*: 'The Word *became* flesh', but at the beginning he pre-existed the universe, and we hear him in prayer to his Father saying, 'the glory which I had with thee before the world was.' (17:5). So the universe had a beginning; God didn't. God is other than the universe, not part of it. The Word was; the universe became.

Why is that important? Well it always has been important because, in the Eastern religions in particular, the idea of pantheism—that God is in everything and everything is God—has been very strong. The mud in the street is God; the stone is God; you are God; the moon is God: God is in everything. That's a hoary old understanding, of course. It is an idolatry that the Old Testament denounces root and branch. To equate God with any of the processes of nature or the matter of nature is sheer idolatry, according to the Old Testament.

It is important in our modern world because there are many scientists who discuss this matter. The one I shall be quoting mostly is Paul Davies, and he has abandoned the old, rickety and now collapsed (or at least collapsible) notion that there is no intelligence behind the universe; that the universe is just a freak of chance, coming out of nothing but mindless forces. Paul Davies now says that there must be an intelligence behind the universe; there is a mind somewhere behind it. That's very interesting because he is not a believer in the Lord Jesus. He's not a Christian; he doesn't believe in God as Christians believe in him (or Jews either), but here is a world-famous scientist saying that there must be an intelligence behind the universe.

So where is this intelligence located and what is it? As far as one can deduce from Paul Davies's writings, he is suggesting that the intelligence is part of the stuff of the universe.

That again is a historic view. The ancient Stoics with whom Paul argued on Mars Hill (Acts 17) held the view that God is right at the heart of the universe but is part of the stuff of the universe. In our modern days the same view is held in New Age mysticism and Celtic mysticism. As an Englishman I have to use that word and make sure I don't infect it, but Celtic mysticism, like all other mysticisms, comes down to a worship of creation and the life force or mother Gaia or something of the sort that is inherent in the universe. It is another form of pantheism and we must beware of it and take a firmer grip of our Christian belief that will stand against pantheism. And, though I'm no prophet nor the son of a prophet, I fancy in the coming decades that form of supposed religion that is virtual pantheism will become stronger and more widespread as Christendom joins up with Hinduism and Buddhism and they make one unholy farrago of joint religions.

The agent in creation was God, no less (John 1:1–3)

It was no sort of semi- demi- quaver of a deity; somewhat less than God, as the Jehovah Witnesses and many Greek philosophers of the ancient world would want to tell us. No, the Creator, the agent in creation, the one through whom all things were made, was God, and no less than God: 'In the beginning was the Word, and the Word was with God, and the Word was God' (John 1:1). What God was, the Word was.

The universe was made in stages, not all at once (Gen 1:1–2:3)

The universe, however, was made in stages. That is an integral part of our Christian belief. Genesis 1 tells us that. That could be surprising because, if you believe in an omnipotent God, well, he could do anything, couldn't he? And we might have expected that if you opened the first page of the Bible, the Bible would say, 'And God spoke and the whole universe from ants to animals, from monkeys to men, from stars to galaxies, all happened at once.' That isn't what the Bible says, is it? It says it was done in stages, and those stages were not automatic developments. Each one of those stages had to be introduced by another input of information from God: 'And God said . . .'; 'And God said . . .'; 'And God said . . .' God had, so to speak, to intervene with new information and new commands in each stage of the developing creation (Gen 1:3, 6, 9, 11, 14, 20, 24, 26).

The universe is upheld by God's powerful word (Heb 1:3)

I think it's a thing we should remember. We should ask ourselves, 'When Scripture says that creation was made by the word of God, and is now upheld by his "powerful word", what does that mean?' Does it mean that some words are spoken in a whisper and they're enough but, like a father trying to control an obstreperous child who has to shout at it now and again, God has to use a very powerful voice to talk to the universe to get it to behave? Well hardly that. It means 'by his word of power', that is, his powerful word not only of command but of information—the tremendous input into creation. He doesn't just hold it up; he upholds it by the input of energy. The most spectacular example of God's intervention in our world in that connection is of course the resurrection of Christ. According to Ephesians 1 this was done 'according to the strength of the power of his might that he wrought in Christ', when by that colossal input of divine energy, 'he raised him from the dead' (vv. 19–20).

History was intended to make progress towards a goal (Gal 4:4; Rom 8:20–21)
Now when we look at not creation only but also creation plus history, we can observe what the Bible indicates: that creation is not just going round in circles; it is making progress.

One of the objections that some scientists have to the Christian position is they imagine that Christians hold that God made the universe and that was that, and the universe just goes round and round and round, getting nowhere in particular until God stops it. That is not the biblical view, is it? World history is going places.

Take human history. Look at the tremendous progress in the history of mankind, starting from the garden of Eden, making all kinds of moral and spiritual progress through God's revelation to the patriarchs, then the revelation of his full law to Moses and through the Prophets.

Stages in the progress of humanity: (Col 1:18; Rom 8:29)
So it has been a matter of making moral and spiritual progress, what has been called the progress of doctrine, and man learning his lessons in morality as God kept revealing himself in the course of history through the Prophets, and then this immeasurable bit of progress that we Christians hold. Let us get hold of it again today in all the splendour and inexpressible wonder of it—the progress of humanity that the Word, who was none less than God, became human! The human race will never be the same again. He was not coming to our world appearing to be human, but became genuinely human!

That's some progress that is, and if you ask what the Creator is doing in this kind of scheme and purpose, the answer that the New Testament will give is that God has had this in mind all the way along the line. Not only should his Son become human without ceasing to be God but we, in receiving him, become children of God. Ceasing to be mere creatures, we are upstaged in the universe and become children of God, not now simply creatures of God, created by his power, but begotten of his very life!

That is an astonishing thing in human history. An atheist will tell you about his bankrupt theory of evolution, trying to interpret the progress of humanity in terms originally of blind processes, a universe that didn't really have any purpose to its beginning or existence, and is going along by the twin processes of accidental mutation and natural selection. And now that man has understood some of the laws of nature, he is trying thereafter to mould the future of mankind, and that has all sorts of sinister implications actually. Leaving that aside, don't let's just be negative and say, 'No that interpretation of evolution is wrong'; let us preach what the right thing is! You wouldn't call it evolution; you would call it the unfolding purposes of God. And they are magnificent, aren't they?

There is the phenomenon in the universe that has been already created, called in the New Testament *the Body of Christ*. It has come about through the resurrection of Christ—firstborn of the dead, now head of the Body, the church—which is linked with him as a body is to a head. This is an utterly new phenomenon in the whole of the universe since Pentecost. There's no need to be ashamed of the right kind of progress for humanity that the New Testament talks of.

The new heavens and the new earth (Rev 21)

And of course, we do believe that one day the present universe will come to its end but, even so, God will not have given up on matter. There will be not only a new heaven, but a new earth as well. We believe, therefore, in the rightness of matter.

The wonder of the created universe

So let's come now to the question of what cosmology can tell us, as the modern scientists understand it. Let's look at some of the pictures.[1] I was just going to give you a picture of your home address, so to speak, where you live in the universe. If you want on your Internet to contact somebody out there in the Andromeda Galaxy and ask them to tea or something, you'll have to give your address, won't you? That's where we are here. This is part of the Milky Way, with its hundreds of thousands and millions of stars, and here are some of the interstellar gas clouds and the marvellous mystery of what lies at the centre of our own galaxy.

There are those who say that at the centre of our own galaxy is the 'Great Attractor', some mighty force or other generated that eventually is pulling the whole thing towards itself. Be that as it may, here is our galaxy in which we live. There are a few stars, do you know, sort of God's pepper pot when he peppers his cheese and toast, and the pepper coming out is a few stars! Marvellous, aren't they?

'Count the stars!' says God. You know some Christians I have met are afraid of astronomy. They don't like looking at it. It, sort of, gives them chills down the spine. It's all too big and they get afraid of it. You shouldn't be, should you, as a Christian? Let's leave the science for a moment. You remember what God did for Job? When Job was going through his terrible troubles of ill health and mental confusion, God spoke to him very kindly, very graciously, and one of the things God called his attention to was astronomy: 'Can you bind the Pleiades? Can you loose the bands of Orion?' (Job 38:31). You say, 'What relevance is that?' Oh, my good Christian friend, if one of these days you come very low in health and doubt the wisdom of God and become self-absorbed internally in your own self, what a therapy that would be, to listen to God and look outside of yourself.

'Come now,' says God to Abraham, 'and look at the stars' (Gen 15:5). Yes, it's exceedingly good psychology to look out of our tiny little selves and our tiny dimensions of our tiny lives and look at God's dimensions. It was what God did for Israel who had, after centuries of endless mistakes, foundered on the rock of idolatry, been put out to Babylon and were called to listen to God as he promised to restore them. And almost at once, when the comforting message came to Israel, God appeals to himself as Creator.

The great saving power from idolatry is an ever-increased view of the glory and the majesty and the size and the dominion of the Creator. Lose sight of the Creator and the ideal of having a Jaguar sports car before you go home to heaven might slip into being a little bit of idolatry. Jaguars are too small, you know. They've only got four wheels, one at each corner, and a wheel inside to guide the thing with. And here in the heavens is some of our Father's

[1] From this point in the seminars, Dr Gooding references several images which he showed to the audience which have not been reproduced in this transcript. Similar images are easily accessible online using the descriptions. For images from the cosmos, see https://www.nasa.gov/mission_pages/hubble/multimedia/index.html.

handiwork that was made for the glory of Christ. It had its origin in the mind of him whom we call the Word of God; that is Christ. It was made through him and made for him! My dear fellow believers, do rejoice in it. Count the stars if you can. Have a go, because they're yours! All things are yours, and you are Christ's, and Christ is God!

It's difficult to be persuaded that that doesn't come from the excitement of the preacher or to think that he has taken leave of reality, but it's true. Yes, to rejoice in the greatness of God, the objective greatness of God in creation is to provoke our worship; and we can't turn round to the Lord Jesus when he made it all and say, 'Well I'm not interested in that, Lord.' What, when he made it for us?

What has it all got to do with me?

Now consider this image, not of stars; these are galaxies. One of the more recent discoveries in this last fifteen years perhaps, through the Hubble Telescope, is the vast number of galaxies that exist. Each one of these is a differently shaped galaxy of billions of stars! You say, 'What are they for?' I don't know; God made them. I hope one day when there's time enough off in heaven to leave singing for a while, to ask the Lord why he made them. You can rest assured that they're not there for nothing.

You say, 'But what has that got to do with me?' Well, have you thought, in order for you to live and breathe and have the chance of being saved and going to heaven at last, you had to have a planet to live on? I'm tempted to say you can't get to heaven without eating Kellogg's cornflakes, but what I mean is that we have to be humans first. We have to be creatures that have to be fed and have our daily life, and all the rest of the things that are necessary, and a stage to live on, if we're going to take the next step of progress: which is to receive Christ and become children of God and then to be trained in the school of Christ, ready for our part in the new world that shall be!

How would you run a world? That's what God said to Job when Job got a bit querulous. 'Alright, Job, you have a go at running a universe, my boy. Could you do it?' We mustn't dismiss it as being irrelevant and not interesting, for if we're not interested in this, we're not interested in what Christ has done. This pertains to his majesty as the agent in creation and the goal of creation.

Take for instance these Supernova rings, which will be relevant later on in our studies. Some stars explode and here, seventeen years on, are the results of a big star that exploded, spewing out its material for thousands of light years with this result, as the camera picks it up.

Now some people get worried about looking too much through telescopes and at pictures of the universe that make them feel so small and insignificant. Even some philosophers have said, 'How could you think, if you're right, that the God of the universe could possibly be interested in you? Is that credible?' Well I could ask another question: is it even credible that the God of that universe would die for you? Do let's remember, when we talk repeatedly of Jesus, just exactly who Jesus is. What an astounding thing, verging on the incredible, that the Creator and sustainer of that vast universe should be interested in us.

Relative size and time

But then when it comes to size and time, the great mathematician, Sir Roger Penrose of Oxford, has called our attention to the relative scale of human bodies and the length of human lives, relative to the size of other objects and their duration.[2] Our notion of the size and age of the universe is conditioned, of course, by which kind of measurement we use and, not merely whether you use inches or centimetres, but whether you use different kinds of enumeration. I am not mathematician enough to explain it to you, but there are mathematicians here and you can question them (if you want information on who they are, I'll tell you if you come to me in the break). But on his method of measuring space in metres and time in seconds, according to this calculation, you'll notice that human size comes in the middle. We are not insignificant nothings in the universe, for all its vast size and vast times. It makes sense of the fact that when God made the universe, he made it and made man in the image of God. We needn't be afraid of the dimensions of the universe.

Human significance

Let's come to what is a very significant question about our relationship to the universe. What are we? We human beings are born and live seventy or perhaps eighty years, or so. What are we in relation to this vast universe?

One student I heard of said we were an eczema on the face of the earth, that's all; an insignificant disease. (There's a certain amount of evidence to support it!) But consider this quote from Douglas Futuyma:

> Anyone who believes in Genesis as a literal description of history must hold a world view that is entirely incompatible with the idea of evolution, not to speak of science itself . . . Where science insists on material, mechanistic causes that can be understood by physics and chemistry, the literal believer in Genesis invokes unknowable supernatural forces. Perhaps more importantly, if the world and its creatures developed purely by material, physical forces, it could not have been designed and has no purpose or goal. The fundamentalist, in contrast, believes that everything in the world, every species and every characteristic of every species, was designed by an intelligent, purposeful artificer, and that it was made for a purpose. Nowhere does this contrast apply with more force than to the human species. Some shrink from the conclusion that the human species was not designed, has no purpose, and is the product of mere mechanical mechanisms—but this seems to be the message of evolution.[3]

Here is a thorough going, atheistic evolutionist. For him, what significance has man? 'Some shrink from the conclusion that the human species was not designed, has no purpose and is the product of mere mechanical mechanisms.' People understandably shrink from that idea. 'That seems to me the message of evolution.' It is utterly without hope. Believe evolution if you must, in the atheistic sense of evolution, like Futuyma, but face the fact: hope and purpose are not in keeping with this view but must be added to it.

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[2] For the chart shown at this point ranging the objects in the universe, see Roger Penrose, *The Large, the Small and the Human Mind*, Cambridge: Cambridge University Press, 1997, 5.

[3] The full quote as shown by overhead. From Douglas J. Futuyma, *Science on Trial: The Case for Evolution*, New York: Pantheon Books, 1983, 12–13.

Human discovery

On the other hand, there are scientists who are pointing out that the evidence is leading us to consider the possibility that thought lies behind the universe, not least because of the intelligibility of the universe. 'The more we study the universe,' said Sir James Jeans, 'the less and less it seems like a great achievement and more and more like a great thought'. There's thinking behind the universe, according to Jeans. That's very significant, isn't it? And Sir Fred Hoyle, an astronomer not known for his belief in God, says, 'Intellectual input is the obvious thing we deduce from looking at the world'.

Or consider what Paul Davies says in his book *The Mind of God*. He quotes first of all, Freeman Dyson: 'I do not feel like an alien in this universe', then he talks about other possible views:

> Does the frank admission of hopelessness discussed in the previous section mean that all metaphysical reasoning is valueless? Should we adopt the approach of the pragmatic atheist, who is content to take the universe as given and get on simply with cataloguing its properties? There is no doubt that many scientists are opposed, temperamentally, to any form of metaphysical, let alone mystical arguments. They are scornful of the notion that there might exist a God, or even an impersonal creative principle or ground of being that would underpin reality and render its contingent aspects less starkly arbitrary. Personally, I do not share their scorn.[4]

There might be a God, Davies says. And certainly there's intelligence behind the universe. He continues:

> The central theme I've explored in this book is that, through science, we human beings are able to grasp at least some of nature's secrets. We have cracked part of the cosmic code. Why this should be, just why *Homo sapiens* should carry the spark of rationality that provides the key to the universe, is a deep enigma.[5]

It's extraordinary, isn't it? I hope you admire modern science and its discovery (through the use of the old brain box and all the instrumentation) of many of the fundamental laws of the universe, and how it helps us to understand, to the remotest galaxy sometimes, what is happening and the laws according to which things work. How has it come about that we bits of clay walking on two legs have an intelligence that can turn round on the universe and understand how it works? How has that come about? Davies says it's a mystery. It isn't a mystery to any Christian of course. No, we're sons of the living God, made in the image of God, made to grow up and enjoy the universe along with our Father. Davies continues:

> What does it mean? What is Man that we might be party to such privilege [of having an intellect that can understand the way the universe works]? I cannot believe that our existence in this universe is a mere quirk of fate, an accident of history, an incidental blip in the great cosmic drama. Our involvement is too intimate. The physical species *Homo* may count for

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[4] Davies, *The Mind of God: Science and the Search for Ultimate Meaning*, London: Penguin Books, 1992, 231–2.

[5] *The Mind of God*, 232.

> nothing, but the existence of mind in some organism on some planet in the universe is surely a fact of fundamental significance.[6]

It is indeed, when you start to ponder it. And Davies concludes:

> Through conscious beings the universe has generated self-awareness. This can be no trivial detail, no minor by product of mindless, purposeless forces. We are truly meant to be here.[7]

He doesn't believe in God. He's an evolutionist. But science, as you notice, has forced him to some belief (he openly admits it), and he cannot any longer be an old, unconstructed atheist in that sense. He will tell you in his writings and in the most recent interview with him, that while of course he doesn't believe in a God from the outside, the universe is like a mental event. There's intelligence in it; there's mind in it, and the wonder of it is that we have minds that can understand the universe.

All that notion that this universe has no purpose nor meaning, propounded by so many atheists and taught to kids at school, and that science has destroyed belief in God, surely it's on its way out on the basis of science itself.

The significance of human discovery

And you say, 'What does that mean to me when I'm stirring the coffee, getting breakfast ready for my husband—even having to get his cornflakes in the dish for him—and getting ready for work? What does all this mean?'

Yes, well, it means of course that you have significance. What are you? The universe is a colossal size, but size isn't the criterion of importance, is it? You can get a load of hay going on the back of a farmyard lorry, an enormous great load of hay, and then you can get one little ingot of gold. Which would you choose? You wouldn't choose according to size, would you?

You might feel your little brain is rather small. Or perhaps, sorry, you doubtless think my little brain is rather small. Well so it is, occupying a very small skull. But it's more significant than the sun up in the sky which is a colossal size! But it's just a lot of old gas. The sun doesn't understand how it works itself. I understand how it works, thanks to the scientists. The sun doesn't know I'm here and couldn't care less. I know the sun is there (and I wish it would be there a bit more in Northern Ireland). The fact that we can understand it is evidence of this glorious thing—that we're not made to cringe at the size of the universe. You're going to be its master one day. Your blessed Saviour is Lord of it all. He not only made it but is Lord of it. It's an expression of his mind, and he loves the likes of you and me and has died for us that we might be forgiven and regenerate and part of his body and shall reign with him! Glorious, isn't it? We're truly meant to be here.

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[6] *The Mind of God*, 232.
[7] *The Mind of God*, 232.

The fine-tuning of the universe

Let's look at other ideas that might suggest we're truly meant to be here. Now we come to not only the intelligibility of the universe, but the fine-tuning of the universe. This last twenty years we've heard a lot from the scientists on the so-called anthropic principle and the fine-tuning of the universe. And what exactly does that all mean? It refers to the always increasing evidence that the universe seems to have been tuned to make human life on this planet possible. It is no accident we're here. In Paul Davies's words, 'We're truly meant to be here.'

Here's another bit of evidence that the universe seems to have been fine-tuned to make life on earth possible. Consider the planets in our solar system. We have the sun and the planets: Mercury, Venus, then Earth, then Mars and the asteroid belt and then Jupiter and Saturn and Uranus and Neptune and Pluto. Now consider this. Dr Hugh Ross in his book *The Creator and the Cosmos*[8] has listed no end of such *parameters*, as they call them. As far as our planet is concerned, he lists thirty-three examples of how things have been precisely tuned to make life on our planet possible. Let me take just a few of them.

1	Nature and age of its sun:	
	must be a middle-aged, bachelor star	
	(*a*) not too "violent", not too "quiescent"	
	(*b*) not a binary	
2	Distance from sun	
	(*a*) too near:	water would evaporate
	(*b*) too far:	too cold for life
3	Surface gravity and temperature	
	(*a*) too weak gravity:	loss of necessary mix of gases in atmosphere
	(*b*) too large:	atmosphere would retain too much ammonia and methane
4	Rotation speed	
	(*a*) if slower:	one side too hot, the other too cold
	(*b*) if faster:	vast, destructive winds as on Jupiter
5	Size of moon relative to the earth	
6	Size, position and protective role, of Jupiter	

Figure 2. The fine-tuning of our planet earth

The sun: not too hot, not too cold

Consider the sun up in the sky. We couldn't exist on this planet without a sun. Life would be impossible. We are dependent on it therefore for light, heat, warmth and for life itself. Life could not survive unless we were near a sun. The big question is, how near?

Let's look at a picture of the sun just to remind us of the importance of the matter. Look at this ginormous flare coming out here! It would swallow up earth millions of times. It's a good

[8] *The Creator and the Cosmos: How the Greatest Scientific Discoveries of the Century Reveal God*, Colorado Springs: NavPress, 1993.

job we're not too near it. We are, as far as we know, the only planet in the whole system that is capable of advanced life. They're looking for microbes on Mars. (We'll not talk about that yet, because most of us here are not microbes.) Earth is the only planet that can maintain *advanced* forms of life. So we must have a sun for the warmth and the input of energy that makes life and growth possible, but we can't be too near it.

What is more, the sun must be a particular kind of star. This isn't party politics when I say that for a sun to make life possible on earth, it has to be not just any old sun, but a middle-aged bachelor sun. What do I mean by that? Well a bachelor, because some stars come in pairs, don't they? Binaries they're called, and they twizzle round each other, very much like a married couple, I suppose. They twizzle round each other, and if an irrelevant planet got in the way, it could get swiped very easily and pulled off course if there were two things going around. So it can't be a binary; it has to be a single sun.

Then it's got to be what they call a middle-aged sun. We saw a photograph earlier on of a star that had exploded—supernovas they're called. It's no good saying that stars don't explode, they do, and we can photograph years later what has happened to them. If our sun, with all the great processes going on in it—the atomic furnaces and so forth—was of the kind and at the stage where it's liable to explode, that would be pretty rough on us on the planet, wouldn't it?

It must not be too cold either. It must be nice and fiery, but not too much so. That's putting it in layman's terminology. Our distance from the sun, therefore, is going to affect temperature. We mustn't be too far away, because if we're too far it will be too cold for life. If we're too near water would evaporate, and that would be the end of us.

Rotation, atmosphere and temperature in the solar system

Then, of course, there is the question of our rotation speed. Not all the planets twizzle round at the same speed, do they? Jupiter goes round at a colossal great speed. If that were to happen to us, and our planet went at the speed of Jupiter, life would be impossible.

Then there's Venus. Notice that this picture of Venus is a Magellan radar image of the planet. Normally you can't see the surface of Venus, because it has such a thick atmosphere of poisonous gases that life on it is absolutely impossible. All sorts of things determine what kind of atmosphere a planet's going to have; that we have an atmosphere suited to life is an exceedingly important thing. Secondly, the speed of the rotation of our earth is a thing that helps to control the climate. The recent thing coming out of Denmark is that it's not merely how near we are to the sun, or how far, that determines climate but the speed at which we rotate. That is because it is the angular momentum (that's the way it twizzles round and round relative to the centre point of our sun) that controls part of the cloud system. And the speed at the equator begins to distribute the clouds around in a certain pattern, and they control the temperature. It's a temperature device keeping the earth from becoming too hot or too cold. That is one of the most recent discoveries. I heard the lecture thereof in the [Royal Irish] Academy just last year on that very topic and the new thinking that not only the distance from the sun but the speed at which we rotate is important for maintaining our temperature.

Now here comes dear old Jupiter with its mighty great red spot (so called). If you've got a decent pair of binoculars, you could see that red spot on a clear night. It is a vast hurricane that's been going for I don't know how many hundred years. The reason is because Jupiter twizzles round at such an enormous rate that it produces violent winds all the way round the surface of it, and if our planet twizzled round at that rate, of course life would be impossible.

But now another interesting fact is that Jupiter serves the whole lot of us because, being the colossal size Jupiter is and at its particular distance from us, it serves as one of our protections against comets. The other year we saw a comet come in to the planetary system, and they tracked it as it plunged down into the gases on Jupiter. So Jupiter, with its location and its ginormous gravitational pull, is one of the protective mechanisms of life on earth.

The precise numbers of the parameters

So we could go on, but you have the point of it, and I needn't emphasise it again and again. The earth does seem to have been fine-tuned to make human life possible. But here comes Sir Roger Penrose once more, the mathematician and physicist, and he's talking about one of the basic laws that control physics and biology and everything else on our planet. We call it the second law of thermodynamics, without which life would be impossible. He says that if you take the point of view of the Creator beginning the whole universe from scratch, what would he have to aim at to get a world as it is now, consonant with the second law of thermodynamics, in order to make life possible? What would have to be the accuracy of the Creator's engineering? And he says that it must have been accurate to one part in 10 to the power of 10^{123}. That is '1' followed by 10^{123} successive zeros. Can you imagine that? Well don't try, because he says that number (one of so many that must be precisely accurate) is an extraordinary figure. One could not possibly even write the number down. Why couldn't you? Well you couldn't write it down in full, he says,

> This is an extraordinary figure. One could not possibly even *write the number down* in full, in the ordinary denary notation [that is, decimal notation] . . . Even if we were to write a '0' on each separate proton and on each separate neutron in the entire universe—and we could throw in all the other particles as well for good measure—we should fall far short of writing down the figure needed. The precision needed to set the universe on its course . . .[9]

How is that? I don't know if you do the lottery or are hoping for something from it, but the likelihood of your getting a ha'penny out of the lottery is so remote I shouldn't try if I were you. Give your money to the missionaries. But you think of this kind of one in such a vast, vast number! You couldn't possibly write it down, not if you wrote one zero on every neutron and proton in the whole universe and took in all the other particles as well. The chances against its being an accident? Oh, no, ladies and gentlemen, you needn't be afraid to stand in your circle for the fact that the universe was created by the Word of God. The idea that it should have happened by an accident is a gigantic, enormous anti-intellectual fancy. It's important, isn't it?

Then just an additional comment by Arno Allan Penzias, a Nobel Prize winner in 1978:

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[9] *The Emperor's New Mind,* London: Vintage Press, 1990, 444–6.

> Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide exactly the conditions required to permit life, and one which has an underlying (one might say 'supernatural') plan.[10]

Let's move on then. It's a universe that is intelligible. We're at home in it; our minds can understand it. It is a universe created by an intelligence who has given us of his intelligence that we might understand it. It's a universe that has been fine-tuned to make life possible on our planet.

Answering objections to fine-tuning

Of course, when we talk about the fine-tuning of the universe there are a lot of folks who object and say, 'That's not so. It is just an accident or a whole lot of accidents, thousands and millions of accidents, that have brought us about, and you shouldn't try to argue that the universe has been designed.' It's a funny argument when you first see it. What they argue is that if the conditions hadn't been what they are on earth, you wouldn't be here to see it. So they say, 'There's no wonder, there's no surprise in it that the universe appears to be tuned to your existence. That's just one of those appearances that's not really true. If it had been any other way, you wouldn't have been here to see it.'

Well if you're puzzled by that, so am I, because it's absolute nonsense. Professor John Leslie, who doesn't believe in God yet, says,

> It's high time we philosophers took the Design Argument seriously . . . My argument has been that the fine tuning is evidence, genuine evidence, of the following fact: that God is real, and/or there are many and varied universes. And it could be tempting to call the fact an observed one. Observed indirectly, but observed none the less.[11]

What does that mean? Well to get round the notion that the universe is fine-tuned, the scientists will say, 'No, that's a false impression you have. You see, the fact is there could be millions and millions and millions of universes for all you know. And if there are millions and millions and millions of universes, it's statistically inevitable that one of them should have the conditions suitable for human life. There are millions of people who do the lottery, but because there are millions of people who do it, it's statistically inevitable most weeks that somebody will win the jackpot. It's an extraordinary event, but it's statistically likely. And if there are millions of universes, then it is statistically likely that one of them would, by accident, turn out to be a universe with all the conditions necessary for human life.'

And Leslie argues against that in this way. Well, alright, imagine that some dictator in some dictatorial country has condemned you to death by firing squad, and they put a blindfold on you and put your back up against the wall. And here are fifty marksmen, absolutely trained, accurate, sharpshooter marksmen, and they're told to level their rifles at your heart and shoot you. So there you are, standing up against the wall blindfolded. You

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[10] Margenau and Verghese eds., *Cosmos, Bios and Theos*, Open Court, La Salle III, 1992, 78.

[11] *Universes*, London: Routledge, 1989, 198.

know there are fifty chaps out there, each with a rifle, aiming, and you hear the fifty shots go off; and to your astonishment you're still alive! What would you conclude?[12]

'Oh, well that's just an accident, you know. It's just an accident that all fifty of them missed, because if they hadn't missed, I shouldn't be here to notice it.'

Of course you wouldn't! To say it was an accident that all fifty missed would be nonsense.

Let us hear what some scientists say about it. John Polkinghorne, Fellow of the Royal Society and Anglican parson, says: 'Let us recognise these speculations for what they are. They are not physics, but in the strictest sense, metaphysics. There is no purely scientific reason to believe in an ensemble of universes.'[13] And Richard Swinburne, the Oxford philosopher, in his book *The Existence of God* says, 'To postulate a trillion-trillion other universes rather than one God in order to explain the orderliness of our universe seems the height of irrationality'.[14]

A universe that had a beginning

One thing for us to notice is that the universe had a beginning. That, of course, the New Testament tells us. So too does the Old Testament: 'In the beginning, God created the heaven and earth' (Gen 1:1). It had a beginning; it wasn't always there.

The second law of thermodynamics points to a beginning

One of the reasons that show us the universe must have had a beginning is this famous so-called law, the second law of thermodynamics. It's a law that basically says that energy in our universe is becoming less and less and less available for use.

You say, 'What do you mean?' Well in the days when you were allowed to have a coal fire in your home you heaped on the wood and then the coal. And the coal, being a fossil fuel, had a tremendous potential of energy inside it. If you could get the energy out of the old coal, it could warm your toes, you see, and toast your bread if you wanted it to. The energy locked up in the coal had got to be released, so you set a fire to it and that released the energy, and it warmed your toes. But eventually it went out and left you with a horrible lot of ashes in the grate—dead as a doornail. Have you ever known, when you came down in the morning, that the ashes that were as cold as ice and dead and dusty with no fire in them, had gone back again and formed into a bit of coal? You've never noticed that, have you? No, of course you haven't, because it doesn't happen.

That's how it is in the universe. Energy is being dissipated, not destroyed, but dissipated so it no longer becomes available for use. If you want some more heat, you'll have to get some more coal, that's all. That's happening everywhere. It happens to the sun up in the sky. It's putting out thousands and millions of tons of energy every day. It will grow less. Some stars get to a point where they begin (because of their internal mechanisms) first of all to grow to an enormous size and become what they call red giants, and then they can explode.

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[12] *Universes*, London, Routledge, 1989, 14 (popularised recently in David Deutsch's book *The Fabric of Reality*, London: Penguin, 1997).

[13] *One World*, London: SPCK, 1986, 80.

[14] Oxford: Oxford University Press, 1979, 68.

There is this principle noticed in all creation. If you build your lovely house and leave it for seventy years, well, it becomes dilapidated, doesn't it? You have a nice, fine cut Tyrone Crystal glass on your table. The baby knocks it off onto the tile floor, and it smashes. Do you ever find smashed up glasses coming back overnight and becoming whole glasses again? You don't, do you? No, the arrow of development in the universe is going one way, as they say; the arrow of time, if you like. The arrow of change is only going in one direction.

You say, 'Yes, but what about plants? They grow. You put a funny looking bulb in the garden and, lo and behold, it develops into a marvellous array of stalk and leaf and petals and flowers that are delightful. That's going against the old decay business, isn't it?'

Yes, it is.

'How's that?'

Because it is dependent on the input of energy from the sun and the energy supplied locally to that plant makes it grow of course. And so you were once a six-inch long or so little bit of stuff, and the energy from the sun that made the porridge grow and the milk and everything else and, shining on you, made you grow to the great, aristocratic figure that you are now. That's the local supply of the energy but, by that same token, the old sun that supplies the energy is going down, like the fire in your grate. The universe not only had a beginning, it's going to end, says God.

Now comes the interesting thing. If the universe in that sense is running down and energy is running down, it can't have been running down eternally, can it? How can it have been running down eternally? It must have had a beginning then, so it could start running down. I've been running down for this last seventy-four years. I haven't been running down for all eternity, or else I should be a Methuselah already, shouldn't I? But the universe had a beginning and it will also have an end.

When we see an image of the remnants of a supernova that exploded and spewed out some of its stuff across the face of the universe it's not a star but the remains of one. The universe is running down. Scripture says, '[The earth and the heavens] shall all wax old as a garment and as a vesture you will fold them up, and they shall be changed' (Heb 1:11–12). There's no need, my good Christian friend, to get pessimistic about it. If you, like me, are getting old, well its part of the plan. You too one day will be changed with a spiritual body like unto the glorious body of our risen Lord, and there shall come new heavens and a new earth (Isa 65:17; Rev 21:1).

Of course there's a very big lesson to be learnt from the fact that the universe had a beginning. Our earth had a beginning and it isn't going to last forever, and that is the lesson taught us by Peter in his epistle: that life is temporary in the form we know it now. Our universe is temporary. The decisions that we make here in this temporary world are going to affect our eternal destiny. And Peter, in his old life, soon to put off the tabernacle and go into eternity, tells us that his major concern is to get his fellow believers to grasp it and realise it (2 Pet 1). Life is temporary. God help us not to treat temporary things as though they were eternal. It is the significance of this life that it is the preparation for the eternity to come.

What is it all for?

So the universe had a beginning. That raises another big question, doesn't it? What is it for? If the universe had always been there eternally, you could treat it like a brute lump of matter: 'Well it was always there. Nobody knows how. It was just there.'

But it had a beginning, and we naturally ask: 'Well who started it and what for?' It is here that science is bankrupt. Science can tell us (and God be thanked for science) how the universe works, and we're enormously grateful for it. What science cannot tell you is why the universe is there to start with. Scientists can explain how it works but not why it's there. And that is why we need, not merely the evidence of creation around us, we need God's self-revelation in his word to tell us what it's *for*.

If you go into a physics lab or a chemistry lab in the university somewhere you will find these learned looking folks in their white coats and there are machines making noises and lights are coming out here and other things going buzzing and test tubes everywhere. And over here is another vessel, sort of round with a spout and a handle over the top, and it's got water in it. It's obviously being heated up.

You say, 'What is that for?'

How would you decide what it was for?

You say, 'Well I'd start by measuring it. Then, the thing is made of, let's see now, that looks like aluminium, or it could be stainless steel, and the water inside is composed of hydrogen and oxygen in due proportion, and the stuff underneath is gas. We can explain what it is and what it costs (rather a lot). And the gases in the water are getting excited! That's what boiling is anyway. And then they get so excited they start to go away as steam.'

You can have all the scientific explanations in the world, but what those explanations couldn't tell you is why the scientists are boiling the water. They can tell you how it boils, but why are they boiling it? What experiment is it part of?

Well if you ask them bluntly you may find that, no, it's not part of any experiment. Lunchtime has come and they're boiling it to make a cup of tea! You wouldn't know that, would you, unless you could consult the scientists themselves as to why they're doing it?

So it is with the vast universe around us. Science can tell us how it works, but why is it there at all? That would involve asking us why are we here at all. How should we know unless God had shown it to us? 'Of him and through him and unto him, were all things made' (see Col 1:16). This world makes sense; it has a purpose. Every human being has a reason for existence and a purpose. The charge of Scripture is this, that whereas God made us to do his will, 'All we like sheep have gone astray. We have turned every one to our own way . . .' (Isa 53:6). It's not that we're all necessarily vicious, but living without regard for the purpose of the Creator who made us.

That is why we as believers, let alone the unconverted, need to listen to our Lord's exhortation on how we should pray. The very first thing we pray for is, surely: 'Our Father which art in heaven, *hallowed* be thy name' (Matt 6:9). With all the otherness, with all the holiness, with all the majesty and glory of it, God forbid we should ever get little ideas about God and be confined to our narrow little interests, or even, in that sense, merely interested in our personal salvation and a ticket to heaven. 'Our Father which art in heaven, hallowed be thy name. Thy kingdom come, thy will be done on earth as it is in heaven' (vv. 9–10). And let

us not pray it as though we were imposing on ourselves some heroic discipline. It is a marvel, isn't it? You're not an accidental mite in cheese! You are God's idea, God's thought, and he created each one of us with a destiny far more glorious than we can possibly imagine, and he will be loyal to us as our Creator with a loyalty expressed in the death of his dear Son.

Some people don't want a universe that is made by God

Let us observe these quotations as we go out to preach the gospel of the Creator and Redeemer. Here's Stephen Hawking in his book, *A Brief History of Time*:

> Many people do not like the idea that time has a beginning, probably because it smacks of divine intervention.[15]

Here was Sir Arthur Eddington in his day:

> Philosophically, the notion of a beginning of the very present order of nature is repugnant . . . I should like to find a genuine loophole.[16]

Why? Listen to Sir John Maddox, until recently editor of *Nature*, the high, prestigious, scientific magazine. This is not a bird watching sort of thing; this is perhaps the highest journal in the world for announcing scientific experiments and their results. He pronounced the idea of a beginning 'thoroughly unacceptable', (what an adjective to use!) because it implied 'an ultimate origin for our world' and gave creationists 'ample justification' for their beliefs.[17] So here's the editor of the foremost scientific journal in the world saying that we must rule out a beginning for one reason amongst others: that it gives creationists ample justification for their beliefs.

Romans is true: 'The evidence of creation is manifest to them,' says Paul, and men will be held accountable for it. God holds the view that 'they are without excuse'. And to say the universe had no beginning and there is no plan, no purpose, no God, no Creator, is to 'hold down the truth in unrighteousness' (see 1:19–20).

Ladies and gentlemen, my contention is therefore that we Christians, particularly in our modern age, cannot afford to neglect this aspect of our basic Christian gospel. The beliefs of our children in the schools, of our students in the universities, the workers in every technological lab in the country, the teachers and those in the pulpits, need to hear not only the voice of the Word of God but the strength of the evidence coming from science and our understanding of the universe that confirms our belief in what God says. There is evidence from the universe that there is a God to whom we are responsible. We shall be held to account for it, because the attempt to suppress that evidence is culpable and indictable before God.

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[15] *A Brief History of Time*, London: Bantam Press, 1988, 46.

[16] 'The End of the World: From the Standpoint of Mathematical Physics', *Nature*, 127 (1931), 450.

[17] *Nature*, 340 (1989) 425.

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Biology/Biochemistry, Design Argument, Language

I would like now to deal with two major topics. We are thinking of what we may learn from creation around us in the broader sense, not merely the story of the creation that we have in Genesis 1, but creation in the sense of the whole created universe and us included. We have begun to consider what we may observe from creation with the help of science and how there is evidence galore to confirm our faith in what holy Scripture says.

This morning we talked about cosmology. In the first part of this particular session I would like to talk about the evidence that we have from biology and biochemistry. Then, when we have dealt with that and have had some questions on these matters, to turn to what we can learn from the language faculty with which the Creator has endowed us. For the language faculty is likewise a part of creation and points us in the direction of the fact that we owe this faculty to our loving and rational and intelligent Creator himself.

What can we learn from biology and biochemistry?

The first thing we can perceive with the help of modern science is the overwhelming odds against life having originated by chance. I quote here from the most recent of the issues of the *Scientific American* dropped on my doorstep just the other day, and here is the new editor, John Rennie, and in his editorial he comes up, amongst other things, with these remarks:

> No one yet knows precisely how evolution acted during the origin of life. But even if the first cells fell out of the blue sky, that would not erase the action of evolution since then.[18]

Now you'll notice the distinction that he's making. I'm not sure his predecessor, John Maddox, and other such people would have admitted the same thing. They would claim that life itself originated by chance through some process of evolution, but evolution strictly so-called can only begin to happen when you have a form of life already started. Evolution, normally described, cannot begin to explain how the whole universe started, and that is what he is admitting: 'No one yet knows precisely how evolution acted during the origin of life.' The old experiments that were made that seemed to suppose that life could spontaneously arise out of inorganic matter by strokes of lightning or something happening on primitive bits of chemical have not proved true, and modern science has to a large extent abandoned the whole notion and has come round to the position that we don't really know how life started.

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[18] *Scientific American*, Vol 282, No. 2 (Feb. 2000), 2.

Let me point out in that connection that in some literatures you'll read the more modern idea that, yes, matter can appear out of nothing; it can appear out of a vacuum. They say that there was initially a quantum vacuum and that, if you get a quantum vacuum in the laboratory, you will find that particles of matter appear and disappear with lightning speed out of nothing, out of the vacuum. But of course that is horribly misleading, at least to laypeople, who suppose that a vacuum means a vacuum, or in other words, nothing. Whereas in this theory, a quantum vacuum is not nothing; it is a state of energy in which the energy is completely balanced, negative and positive, and therefore nothing is happening. It is a quantum vacuum, but a quantum vacuum is not *nothing*; it's a field of energy. And in that situation, yes, you can get quarks of various kinds and nature coming suddenly into existence and disappearing, but that's a very confusing notion. It doesn't mean what the Christian would mean by creation *ex nihilo*, creation out of literally nothing. It presupposes an energy field.

Anyway, to get back to Rennie, he wants to say that:

> Evidence from every subdivision of biology and every other scientific discipline supports evolution. Evolution unifies all the diverse observations of biology as no other idea can. That is why I call it a fact.[19]

Well this being a free world, anybody is free to say what they think of course, but normally *fact* means something that is actually established. He calls it a fact, not a theory, and of that we should be aware for so many of our books in schools and elsewhere refer to evolution as a fact. It is not a fact. It hasn't been proved and demonstrated in the normal scientific method. It rests on presupposition and conjecture and cannot be demonstrated as a fact. That is an important distinction to get hold of. But what we can see through modern science is the overwhelming odds against life having originated by chance.

What are the odds?

Consider this quote from the famous astronomers Fred Hoyle and Chandra Wickramasinghe. Neither of these men are believers in God, not in any serious meaning of the term. Wickramasinghe was a colleague of our friend John Lennox for some years in the mathematics department of Cardiff. Listen to what they say regarding the assembly of the amino acid chains necessary for life:

> A simple calculation then shows that the chance of obtaining the necessary total of 2000 enzymes by randomly assembling amino acid chains is exceedingly minute. The random chance is not a million to one against, or a billion to one or even a trillion to one against, but p to 1 against, with p minimally an enormous super-astronomical number equal to $10^{40,000}$ (1 followed by 40,000 zeros).[20]

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[19] *Scientific American*, Vol 282, No. 2 (Feb. 2000), 2.

[20] Hoyle and Wickramsinghe, *Cosmic Life Force*, London: J. M. Dent & Sons Ltd., 1988, 134.

Here are men who do not believe in God but have come mathematically to the conclusion (in a whole book on the mathematics of evolution) that the possibility of getting life by chance is this enormous, astronomical number to one against. They continue:

> The odds we have thus computed are only for the enzymes and of course, correct arrangements within many other important macromolecules of life, besides enzymes, must also be considered. The molecules histone-4 and cytochrome-c are two such examples, each with exceedingly small probability of being obtained by chance. If all these other relevant molecules for life are also taken account of in our calculation, the situation for conventional biology becomes doubly worse. The odds of one in $10^{40,000}$ against are horrendous enough, but that would have to be increased to a major degree. Such a number exceeds the total number of fundamental particles throughout the observed Universe by very, very many orders of magnitude. So great are the odds against life being produced in a purely mechanistic way that the difficulties for an earthbound mechanistic biology are, in our view, intrinsically insuperable.[21]

You may remember in our first session we considered what Sir Roger Penrose said about the accuracy required to establish the second law of thermodynamics. There wouldn't be enough particles in the universe to write the number down, so great are the enormous odds against it being by chance. Now here are Hoyle and Wickramasinghe talking about the origin of life: 'There wouldn't be enough particles in the universe to write the number down', they say, because the odds against it happening by chance are so great. They continue:

> The conclusions we have reached in our book are derived from known experimentally and observationally tested properties of the Universe, including not least among them the property that living cells can replicate. The rival theory of the 'chemical evolution' of primitive life, and of the evolution of life to progressively higher levels entirely through random processes, is an uneasy combination of dogma and wishful thinking.[22]

Ladies and gentlemen, it's a very strange situation when, even since this was written some decades ago, schools and school textbooks in many parts of the world have told the kids that life could have started by chance from inorganic matter. So here is Sir Fred Hoyle on it, and he says it's impossible on conventional evolutionary theories to account for the origin of life having started here on earth. His particular solution is, or was, that life therefore came in from outer space somewhere, brought in by a comet or two. But as anybody could see, that is but to push the problem further back for if it came from outer space, how did it start out there anyway?

So there we have it, and we may call that, if you like, statistics and the origin of life. It is statistically impossible (or virtually impossible) to think that life started by chance.

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[21] *Cosmic Life Force*, 134.
[22] *Cosmic Life Force*, 135.

Irreducible complexity

This idea has been made famous by Michael Behe's book, *Darwin's Black Box*, and I suspect that many of you have read it so that I have no need to dwell too long upon it. But Michael Behe has called attention to what he has called *irreducible complexity*.

The simple analogy that he uses to explain it to the likes of me (who need a good deal of explaining) is the mousetrap. You have a mousetrap, and it's a plain piece of wood or any other material you like, and there's a bit of metal that comes over as a hammer to smite the careless mouse, and of course there has to be a spring so that it will come over with force enough to cut the mice amidships. And then it has to be kept open, so it has a catch to keep it open. When the mouse, moved by greed for cheese, approaches the bait, it is so arranged that as the mouse starts to nibble the cheese and upsets the equilibrium, the hammer comes down and smites it.

Now in that simple example, Behe says, you have an instance of irreducible complexity. You can't start off with a plain bit of wood some 100 million years ago and catch one or two mice, and suddenly 10 million years later a bit of iron comes from nowhere, falls out of Jupiter or something, comes down and rests on the bit of wood, and you catch a few more mice. And then the spring out of your grandfather clock suddenly bursts and, by accident, it too arrives on this bit of wood where there's this bit of iron and (somehow or other) accidentally they get together, and now they make a hammer on the spring. That's no good; the thing has all got to be there to start with, or else it doesn't work at all. It is thus displaying what we call irreducible complexity, and Behe and others have called attention to examples of this in nature.

The giraffe and purpose in evolution

Consider our dear friend the giraffe. The evolutionary explanation of giraffes and their extraordinary length of neck is that the giraffes saw the leaves up aloft on the top of the trees and decided they would be good to eat and stretched their necks to reach them. As they gradually stretched them and stretched them and stretched them and stretched them, the neck eventually got high enough. But then evolutionary theorists say among themselves, 'That won't do' because, if evolution is true, there is no purpose behind it. Purpose driven evolution is untrue to the theory of evolution. It can't be that the giraffes saw these green leaves at the top of a tree and said, 'What a pity my neck isn't long enough. I'll see if I can do some exercises and go to my chiropractor and stretch my neck so I can reach the leaves.' No, that would be purpose, wouldn't it? And the theory of evolution rules out purpose by definition, though a lot of evolutionists, when they forget themselves, talk as if there were purpose behind it. 'We can tell,' says some lecturer on BBC radio, 'how this could come about, because this was necessary for . . .' But that supposes purpose, which is false to the theory of evolution.

It must be that the giraffe had had an ordinary neck to start with (though, like some people have, perhaps it had rather a lot of neck). And those that managed accidentally to get a longer neck survived the more easily, because the longer their neck came to be, the more leaves they could gather. There's no purpose in it. It's just that those that happened by

accident to get longer necks survived, and therefore longer necks began to be bred through the progeny of such giraffes.

That, of course, is an absolutely simplistic idea. Because if giraffes started with small necks and they gradually grew larger so that then they could reach the leaves up at the top of the tree, what happened when the giraffes, having to drink, bent their long neck downward to the water to start drinking? If you can't imagine what would happen, you try to do the same. Put your arms down on the floor first and drop your neck down into some basin of water and keep it down for as long as you need to ingest a pint of water. You'll have trouble with the blood pressure! And you imagine the troubles the poor old giraffe would have had with his blood pressure when he put it down like that, if it was by accident it had produced a long neck.

Upon examination we have learned that many necessary mechanisms are built into the dear old giraffe's neck and into its brain and its arteries, so that it can bend its neck down and drink without destroying itself and suffering from a stroke and being in bed for the rest of its life. Some arteries, approaching the head, branch into the *rete mirabile* in the neck, which equalizes blood pressure when the giraffe bends down. Other arteries bypass the brain. The whole thing is engineered with a very complex engineering system, so it can have a long neck and bend the neck down to drink water and not suffer serious physiological damage. It's an example of complexity. If these various mechanisms weren't in place and it just had a long neck that could reach the trees, then, when it bent down to drink the water it would cease to be.

Blood clotting and cascade mechanisms

Another example of that same kind of thing that Behe calls attention to in his book is the *cascade mechanisms* in the human body. Take for example what happens if you get a surface wound, say if you cut your finger. The marvellous cascade of chemical reactions then takes place automatically. If you cut your finger and it starts bleeding and there were no mechanism to stop it bleeding, you'd bleed to death of course. So when you cut your finger there is a set of chemicals that will come and make the blood clot in the hole that you've made, to stop the blood going on and on and bleeding you to death. It's a marvellous mechanism that causes the blood to clot when it gets to the hole.

'Ah,' you say, 'but there's a difficulty here, isn't there?' Yes, because if the blood was always in the condition where it could clot, well you'd be dead before you were alive (if you see what I mean) because the clot would be in your brain or in your lungs or somewhere else and you'd be dead. You can't have the blood in the condition in which it is already clotting, so it usually has got to be in the condition where it isn't clotting. But as soon as the old finger is cut, something's got to happen to it so that it starts clotting. Oh, but that's not enough, is it? Because if on the way round from your heart, down your arm towards the hole in your finger, it started clotting when it was in the higher part of the arm, you'd be dead again, or have to have the arm amputated. It's got to clot, but it mustn't clot until it gets to the hole! And when it does get there it blocks the blood from going away anymore, and then a whole other mechanism starts to bring in necessary chemicals to fight any infection. And when they've done their job, here come the chemicals that start to heal the wound with genuine

flesh. And when that's all happened, the old scab falls off the top and then the blood has got to go back to what it was before.

That is a mechanism so complicated that if the biochemists put it in chart form to show what happens from the time the wound is made to the time the wound is healed and things have gone back to normal, it would be an exceedingly complicated chart. There are a multitude of intricate chemical reactions—this bit of cell doing this and another bit coming along and cutting that in half and shunting a piece here and taking a piece away there and adding this substance, and eventually all coming together—over twenty reactions and processes that all have to happen. And if they were not there and happening properly, if any one of them went wrong in a healthy body, that body could be in very serious trouble. To suppose that cascade of highly organised reactions, with its precise timing, would be happening by chance is absolutely and sheer, unadulterated nonsense. It all had to be there, else the first human being who suffered a serious wound would have bled to death, and that would have been the end of that.

So we have considered these questions, first of all of statistical improbability, mounting to impossibility, that life should have started by chance; and we have thought of the next bit of evidence which is the idea of irreducible complexity. Now let's go onto information theory.

Information theory

We begin by thinking of what goes on in cells and of DNA in particular. When Darwin was theorising about evolution and the small permutations that he thought could take place and thus build up over millions of years, he knew virtually nothing about what is inside the cell. It has not been simply arbitrary faith that has cast doubt on evolution. It has been the progress of science that has made evolution look silly, because now we know (thanks to the scientists) what goes on in the cell, or we know a little bit; there is a vast amount yet to be discovered. But inside the cell there is what could be likened to a vast factory with all its subdivisions and an impossibly complicated mechanical system that carries the necessary information for the birth and development of a human being, plant, animal or what have you.

So now we come to what is called *information theory.* And this is A. E. Wilder-Smith talking about it in 1981, so this science is already twenty years old:

> By means of a double helix system of four letters, entire books filled with information could be written by merely altering the sequences—just as we write books by varying sequences of the letters of our alphabet. In this manner, the double helix system within a human sperm and a human egg contains the total coded building instructions for synthesising the complete human being. On paper, using our alphabet system, this human genetic information on one human zygote [the union of sperm and egg] would fill over 1,000 volumes each of 500 pages—a total of 500,000 printed pages worth of information and chemical instructions. The egg, and the cell in general, is a masterpiece of miniaturised information storage and retrieval. One such zygote

> contains the entire information and instructions required to build an entire human being and also that required to synthesise all his and her offspring![23]

Now that is extraordinary, isn't it?

Information

What do we mean therefore by the term *information*, when we talk about information theory? We must try not only to keep awake but to understand that when the engineers use the term *information*, they're using it in a specialised sense. We talk about information when we say something to somebody else and we hope that somebody else gets the idea and absorbs it. That's the impartation of information, but when the scientists, and the engineers in particular, talk about information they're thinking in engineering terms.

If you want to make a key to open the lock on your front door, the engineer sits down and decides how you'll have to shape that key. There will have to be a dent here and a bit sticking out there and another bit here and different sizes and so forth, in a different order on the key. In engineering terms you'd call that the information that has to be put on the key in order for it to do the job. The DNA in the human cell is carrying information like that, and consider how spectacular it is! The information carried on the DNA controls the growth of the embryo into the foetus; it controls the material, the shaping of the bits and pieces—the skull and the arms and the legs and the nervous system. And it controls the timing of each (it's no good making eyes if you haven't got a skull to put them in, for instance). The information in the DNA controls the whole foetus until the time of birth, and it will control that process too. It will control its growth afterwards, all through life and, lo and behold, if that child marries and they have a child, that information is carried on to the next generation.

That is interesting, isn't it? There is enough information, as we've read, to fill five hundred thousand printed pages if you spelt it all out in our language. The question it raises is, where does the information come from?

The analogy I use for this kind of thing goes back to my youth (I'm getting old and you know how old people are, remembering their youth). I can't see any woman here old enough to know about this, but in the early days of washing machines they were big tubs. There was a thing that went round in the middle, and you put the water in and the snowflakes or whatever they were. Then there was a slit on the side at the top of the machine, and you had a square bit of plastic, and when you looked at this plastic it had got notches in the sides: it had a series of notches on one side and a series of notches on the other side, and those were at different spaces. Now if you wanted the linens programme in the machine, you turned the old bit of square plastic round this way and you put it in like that and, lo and behold, that (so to speak) told the machine what to do: 'Do linens for Mrs Smith and do it well, because she'll want it done well.' If at the end of that you wanted, not the linens, now you wanted the woollens and the coloured clothes, you took that square bit of plastic out, turned it round and put it upside down. It had another series of notches, and you put that in the machine and, lo and behold, that told the machine to do woollens and coloured clothes.

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[23] *The Natural Sciences Know Nothing of Evolution*, Master Books, 1981, 82.

Now if you had taken that bit of plastic and showed it to me and said, 'What do you think that is, Gooding?', I would have said in my wisdom, 'It's a piece of plastic.' Then you'd have said, 'What else is it?' and I'd have said, 'There's nothing else there; it's nothing but plastic.'

I would have been right, wouldn't I? It's nothing but plastic. But I would be horribly wrong too because, though it's nothing but plastic, it was carrying information for the machine and its control. That's what those notches were; that bit of plastic was carrying the ideas of the engineer. The whole system of the washing machine plus the controlling mechanism started life in the mind of the engineer as concepts. Then, when he saw what was needed for the machine to be able to carry out these programmes, he put the information on the plastic. It would be important to distinguish between the information and the plastic, wouldn't it?

So it was that a human being or any other animal (or a vegetable for that matter) was given the information by the great engineer: 'in whom all things were created' (Col 1:16). The whole concept and the information had its origin in the mind of our blessed Lord: 'In him were all things created' (v. 16). That is why Scripture calls our Lord 'the beginning'—'he himself is the beginning' (v. 18). Creation didn't begin when the first brick was laid for the foundations; creation began in the mind of the Creator as a thought. That's non-material; that is spiritual. Information is non-material. It was the thought of the Creator that was then implanted on matter. And to think of the whole process: the chemistry carrying the information from the mind of the Creator, through the zygote and through every stage of development and on to birth, working through all of the processes necessary in order to see that the miracle takes place.

From information theory, therefore, we infer an intelligent, personal designer. But, of course, not everyone will agree with that, and they have their objections.

Divine design

I've mentioned previously the concern some raise that if people are allowed to go on believing that thunder is the voice of God speaking, then there will be no scientific investigation into its cause. But if we rule God out, then we can look for and discover a scientific explanation for thunder. So its invalid, some will say, to bring in the idea that this thing before you, could be designed. That destroys the whole notion of science. That's talking nonsense, isn't it?

In the first place, let's use the analogy of a Ford motorcar that for some reason and somehow, landed in the middle of a Stone Age tribe in the middle of somewhere, and the owner went off and left the engine running. The locals didn't see either his coming or his going, but there is this thing now in their midst, and it's making a noise. And the people get round it and they notice some funny writing on the front, and eventually they learn the language and find out that it says 'Ford' on the front of the car. And they say to one another, 'That's Mr Ford; listen to him!' Then when the engine is running nicely they say, 'Mr Ford likes us. He's making a nice purring sound like our cat.' And when the thing backfires they say, 'Oh, Mr Ford is getting angry with us!'; because, in their pre-scientific age, they can't think of anything else but that there's a person, a Mr Ford, inside the engine.

But of course, then they become sophisticated and their children go to university and learn some science, and then they take the whole thing to bits and find out the truth: 'No, there's no Mr Ford in the machine. It isn't Mr Ford making it go. We can explain the whole thing by internal combustion and sparks and things. We can explain it from start to finish. We don't need to bring Mr Ford into it whatsoever. We've now got the scientific explanation of this thing.' Then they decide in their wisdom there isn't a Mr Ford and there never was!

Well you see they've been able to explain how it works, but deciding and finding out how it works is no evidence that there was not a designer, namely a Mr Ford. You won't find him by looking inside the engine, but the engine wouldn't have been there without him. If you want to explain how the engine came to be, how the cylinders were designed the way they are and how the spark plug went off at the right time, you'll have to bring in the designer, who is not in the machine, but was outside it and invented it and made it. And for teachers to tell kids that, because we can understand how things work therefore we don't need to bring God into it, is an abysmally low fault in logic.

Design

Is it scientific, therefore, to look at nature to see whether it is designed or not? For you who are scientists, I recommend this recently published book by William A. Dembski, who is a scientist and mathematician.[24] It is written for the general public. (I found it a bit difficult, but when I got to the mathematics I said, 'Wheelbarrow,' and passed on to get the general drift of the argument.) Dembski demonstrates that the detection of design in nature is not an unscientific thing. It is not indeed a matter of faith. The methods for detecting design in nature are as scientific as anything you could possibly wish for. That is a very important result, and if you are concerned with these matters, I highly recommend the book to you. If you want more severely scientific material, he wrote an earlier book published by Cambridge that puts out the thing in very strict scientific terms.[25]

Yet while it is true that nature is designed and that you can detect that fact scientifically, it cannot tell you who the designer is. That is another thing, isn't it? Creation shows God's power and deity. It can't show you his heart. For that, we shall have to turn to God's self-revelation in Scripture and in the person of Christ.

What is the best explanation?

Let us consider one final example to show that it is not unscientific to detect design in nature, and that is what is called *abduction*.

Now all of you may not be scientists, but I would guess that some of you like Agatha Christie novels—the 'Who done it?' kind of story. In other words, you love the detective science. Now it is the fact that when you get forensic science and other sciences like archaeology and history, they have to proceed by the method we call abduction. Not deduction, nor induction, but abduction. What does that mean? That means that in life you are faced with some facts, and your job is to account for the facts and to see how best to account for the facts. So you start by considering all the surrounding details and you think

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[24] *Intelligent Design: The Bridge Between Science & Theology*, Downer's Grove, IL: IVP, 1999.

[25] *The Design Inference: Eliminating Chance through Small Probabilities*, Cambridge: Cambridge UP, 1998.

about them, classify them, see their implications, and you argue from all these details what would be the best explanation of the original fact. That's what we call *abduction*.

A forensic scientist is dealing with something that happened in the past. You couldn't be there to televise it; and you can't put the past through a computer. You have to deal with the past event and try and give the best explanation for that happening in the past. That's not unscientific. Forensic scientists use it every day of the week; archaeologists use it; historians use it. There's no reason why scientists shouldn't.

So let's play Agatha Christie. You join with me in this detective clue. (There's no money at the end of it, but there will be a tea.) Here is an accident that you come across. A car is found at the bottom of a cliff and the owner inside is dead. Now that's a past fact: it's happened. You weren't there, there's no computer record of it, no photographs of how it happened. How will you come to the best explanation of what caused this accident? You'll have to proceed by abduction.

So here's possible explanation number one. The man parked too near the edge, forgot to put the handbrake on, half dozed asleep and the thing rolled over while he wasn't looking. It's a possible explanation, isn't it? There are men like that. I'm one of them.

'Oh, but wait a minute, there's another fact that rather goes against that explanation.'

'What's that?'

'Well when the brakes were examined, they were found not to have been connected properly.'

'Oh, well then that wasn't the man's carelessness. Perhaps that was the garage man. He'd taken it in for a test you know and, like some garages do, they hadn't done the thing properly and forgot to reconnect the brakes.'

'Oh, well that's an accident then.'

That's the second possible explanation.

'Oh, but wait a minute. Here are some more facts. The brake cable has been cut.'

'Oh dear. We hope that isn't the garage man. That looks as if it's deliberate.'

And there's the other fact: they found out there are drugs in the man's blood. What does that mean? Come on you experts.

'Well it could mean it was suicide, and if he'd taken the drugs and cut the brake lines and allowed the car to go over the cliff, he may have been hoping folks wouldn't find out about the drugs and that it will be regarded as an accident, though it was in fact deliberate suicide.'

'Oh, but wait a minute. The man had no motive for suicide. He had the most beautiful wife in the world, had a Mercedes Benz and one hundred and fifty thousand pounds a year and all that the rest. He had no motive. And what's more, when they took fingerprints and DNA samples, they found DNA that didn't belong to the driver at all but to somebody else.'

What are we doing? We're trying to explain a fact of the past by gathering all the information around it and working out from that backwards to what will be the best explanation of that thing in the past. Forensic scientists use that method. They're looking for design, aren't they? They're looking to see whether the thing is an accident or designed. We don't say of forensic scientists that because they do this they can't be scientists.

The archaeologists use it too. They come across a bit of stone: 'Now is this a bit that accidentally fell off the cliff as a flake of stone, or is it designed?' And they look at the marks

on the stone and say, 'Ah, this is deliberate. This has been chiselled and flaked and deliberately made as an arrowhead.' What, with only that little information to go on? We don't say the archaeologists are not being scientific. And of course the historians are constantly using the same method. It's their job to explain the past by the various theories based on the information. So if we do it in science as Christians and look at the evidence around and ask ourselves: 'What is the best explanation for how this came about?' that is not unscientific. And that is a point to be made.

Working within our limitations

You'll find the shouts of the atheists all over the literature: 'Once you talk about design, you've destroyed the whole of science.' That is absolute nonsense, and we're not for destroying science; we are for science, for the scientific method. But we are promoting the fact that the scientific method has its limitations.

The Ford motorcar example shows us that we can rightly investigate the engine to see how it works; that kind of work is the job of science. But when we have found out how the universe works, it would be foolish to say because we know how it works that we know where it comes from, or to say that there was no designer. Mr Ford is a different level of explanation entirely. This, not incidentally, also answers the silly question that is sometimes asked, 'If God designed and made the universe, who made God?' Precisely because Mr Ford is outside of the engine and the motorcar he is an adequate explanation of how that car came to be. God the designer and creator of the universe is not an explanation from inside the universe, but a different level of explanation.

What we can perceive about the origin and nature of language

In the short period left to us in this session I want to point to another area of creation and ask what information it supplies us with. That is the question of the origin of human language. This is an exceedingly important area for the simple reason that, from one point of view, language is the highest thing in human development. Even an evolutionist, if you take his point of view and think that language evolved, agrees that language is the highest attainment of the human species. Therefore, to account for it is obviously an exceedingly important thing. Science itself would not be possible without language. But how do we humans get language?

It has not evolved from animal cries

Now the old fashioned evolutionary view was that we arrived at language by the evolution of animal cries. A little lamb was eating its grass, doing nobody any harm, when it moved round the side of a rock and saw a lion. It went 'baa!' out of sheer fright. When that had happened a few thousand times and lambs had gone 'baa!' on sight of a lion, all the other lambs learnt to recognise that 'baa!' meant there was a lion coming. And so it was thought perhaps that human language evolved from that rather humble beginning. There are very few serious linguists perhaps that would like to maintain that very simplistic view now.

Don't take my word for it. Let's read the words of a very famous champion of evolution, Professor Gaylord Simpson. It's a bit old now, but we'll come to the more modern thinkers in a moment. In 1966 he said,

> Human language is absolutely distinct from any system of communication in other animals. That is made most clear by comparison with other animal utterances, which most nearly resemble human speech and are most often called speech. Non-human vocables are, in effect interjections. The difference between animal interjection and human language is the difference between saying, 'Ouch,' and saying, 'Fire is hot.'[26]

Do you see the difference? 'Ouch' is but an interjection, an animal's reaction to feeling heat. The sentence 'Fire is hot', is a sophisticated, logical, grammatical statement with noun, verb and complement. Simpson continues:

> Darwin's study and many later studies sought to trace the evolutionary origin of language from a pre-human source. They have not been successful.

(Recall that this is an evolutionist talking, one of the world leaders in evolutionary theory.)

> As a recent expert in the field has said, 'The more that is known about [communication in monkeys and apes] the less these systems seem to help in the understanding of human language. Moreover at the present time no languages are primitive in the sense of being significantly close to the origin of language. Even the people with least complex cultures have highly sophisticated languages, with complex grammar and large vocabularies, capable of naming and discussing anything that occurs in the sphere occupied by their speakers.[27]

When you find the most primitive Stone Age tribe that you could possibly find on the face of the earth, you will find that its language is not primitive. In fact, some of those earlier languages are marked by a complication that the more modern languages have smoothed out over the centuries; they are exceedingly complicated. There is no evidence that human language has evolved from simplistic notions into the more sophisticated thing that languages are. As Simpson goes on to say, 'The oldest language that can be reconstructed is already modern, sophisticated, complete from an evolutionary point of view.'

Now that is important because while things we've discussed such as stars and suns and moons and cells are important, language is something that is open to us all. We use it every day of the week, and it is a phenomenon that has to be accounted for. It is a very important thing that we should grasp the exceeding wonder of what language is. Don't listen too much to people who say, 'Oh, that's only words.' Do remember that the great Creator of the universe is referred to as 'the Word'. God has given to us, his creatures, this inestimable gift of language that we might communicate with him who is the Word.

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[26] 'The Biological Nature of Man', *Science*, Volume 152 (April 22, 1966), 476–7.
[27] 'The Biological Nature of Man', 476–7.

Yes, but here comes Professor Noam Chomsky. He is a very well-known atheist and also a Marxist, or virtually a Marxist, with no time for God. Listen to him on language:

> It is perfectly safe to attribute this development [of innate language structures] to natural selection so long as we realise that there is no substance to this assertion, that it amounts to more than a belief that there is some naturalistic explanation for these phenomena.[28]

There is no evidence. This is Chomsky talking: atheist, Marxist, expert in language. And he says that to attribute the rise of language to natural selection and evolution is not based on evidence; it's only a statement of wishful thinking.

Language implies a built-in language faculty

What do we mean therefore by language? Chomsky has called our attention to the fact that in order to have language, you have to have an innate language faculty. And that doesn't just mean you can learn French or Spanish or some other language.

What we mean by language

Let's think what language is. This is some profound thought that I managed to come up with after some hours of intensive analysis!

Subject—Object

(*a*)	Two people:	Peter and Mary
(*b*)	Activity:	loving
(*c*)	But who loves whom?	
(*d*)	The one who loves	= the Subject
(*e*)	The one who is loved	= the Object

What does it mean to have a language? Well here are two people: Peter and Mary and they're engaged in this activity, which is: loving. But the question arises of who loves whom? In grammar we call the one who does the loving the *subject* and the one who is loved the *object*. That is an exceedingly important, logical distinction.

At the basis of language is logic, the ability to distinguish logical things and so perceive who the subject is and who the object is and what the activity is. It doesn't matter which language you speak. Different languages use different methods of expressing that logical difference. English does it by word order. The subject stands first, before the verb, and the object after the verb.

In this heart-warming statement: 'Peter loves Mary', we indicate who the subject is by putting Peter first and who the object is by putting Mary after the verb. And it's Peter who does the loving, whereas if you alter the order in English—Mary loves Peter—it indicates that Mary does the loving. In other words, in English, we indicate this logical distinction of who is the subject doing the activity, and who is the object who is *suffering* the activity. (You may

[28] *Language and Mind*, London: Harcourt, Brace and World, 1972, 97.

laugh at that word in this context, but this is meant to be serious now, not laughable!) We indicate that kind of distinction by word order.

Latin has a different system altogether. Consider these words: *Petrum amat Maria*. That does not mean 'Peter loves Mary.' *Amat* does mean 'loves', but the sentence doesn't mean Peter loves Mary. It means the very opposite: 'Mary loves Peter.' In Latin, it's not the order of the words that indicates that logical concept; it's case ending. So the subject is in what we call the nominative case. 'Maria' has a nominative case ending. The object is in the accusative case. So it's *Petrum* instead of *Petrus*, and it's the endings of the words that indicate which is the subject and which is the object. 'Peter loves Mary' would be *Petrus amat Mariam*: *Petrus*, not *Petrum* and not *Maria*, but *Mariam*.

So different languages have different ways of expressing this logical distinction, but goodness me, it is an important distinction, isn't it? That Peter is said to love Mary is no guarantee that the opposite is true—that Mary loves Peter! I've known of actual cases where it wasn't true!

What are we getting at? Well we must understand what language *is*. It's not whether you speak Russian or French or English or German. All those languages can express the basic, logical concepts, but before you can express them, you must have them. You must have the ability to think, to conceive of, these different logical relationships and then express them in a way that's suitable, whether it's in Japanese or Icelandic. The basis of the language faculty is logic and the ability to distinguish it.

Hypothetical conditions in language

It is an amazing thing how soon a child can cope with quite sophisticated logic. They can, for example, understand the distinctions being made if someone says, 'If you are a good boy this afternoon, Mummy will give you an ice cream for tea.' That's not bad going for a four-year-old, is it? That's asking the child to conceive of a hypothetical situation: '*If* you are good' (which is very hypothetical—a condition that might not even exist!). And you expect a four-year-old to understand that kind of logic. That is a marvellous thing, isn't it? You try it on your dog, Fido: 'If you are a good dog today, I'll give you a bone.' You might as well save your breath. It hasn't got the inner logic faculty. There's the amazing thing; the child has it from very early on, without having to be taught it explicitly. And he or she will eventually learn more complex statements of hypothetical conditions such as: 'If it were to rain tomorrow, I should not go', and be able to use them when communicating.

The ability to learn language

As we have observed already, language may be expressed in written form and in different languages, whether German, French, English or any other. Language is even more often transmitted by sound, and spoken language, which comes before writing, is a far richer thing. But deeper still are the ideas and concepts being expressed, whether by voice or writing or Morse code or even flags. And when we think about how meaning is conveyed, we necessarily must think about topics that are not always popular, namely grammar and syntax. Unpopular though they may be, yet they are essential components of language because of the *logical* function that they have. To suppose that this level of complexity, with

all of the groupings and subdivisions of clauses that language is capable of, has evolved, borders on nonsense. And that is highlighted for us if we return for a moment to the built-in language faculty, or what we might call the learnability of language.

Derek Bickerton points out what is involved in learning a language and explains how even a single sentence presents a prodigious problem for a speaker or hearer who lacks a language system:

> Try to rearrange any ordinary sentence consisting of ten words. There are, in principle, exactly 3,628,800 ways in which you could do this, but for the first sentence of this paragraph only one of them gives a correct and meaningful result. That means 3,628,799 of them are ungrammatical. How did we learn this? Certainly, no parent or teacher ever told us. The only way in which we can know it is by possessing, as it were, some recipe for how to construct sentences, a recipe so complex and exhaustive that it automatically rules out all 3,628,799 wrong ways of putting together a ten word sentence and allows only the right one. But since such a recipe must apply to all sentences, not just the example given, that recipe will, for every language, rule out more ungrammatical sentences than there are atoms in the cosmos.[29]

That's a basic language faculty. If we take the first sentence from the Bickerton quote there are ten words in it: 'Try to rearrange any ordinary sentence consisting of ten words.' But for them to make sense, they've got to be in the right order, haven't they? It's no good saying: 'Rearrange any sentence try ordinary of consisting to ten words.' It wouldn't make any sense at all. To get the meaning out of those ten words, they've got to be in the exact right order. How did we learn that, of the 3,628,800 ways in which you could arrange those ten words in that sentence, only one of them gives the correct and meaningful result? How on earth do we manage to get our words the right way round? (Now you might want to say that I don't always manage to do it all the time, but on the whole.)

It's an extraordinary thing a child learns. How does it manage to learn to communicate accurately and to sense it and be able to express itself and get the words the right way round, and the concepts that those words are expressing? Because God, in his mercy, provided something inbuilt in the human psyche, this language faculty, without which we should not be able to learn or speak any language to any extent at all. And here I am saying what Noam Chomsky would say, though he wouldn't bring up God in the discussion.

The need to learn language

I can't let you go without taking advantage of the occasion to have a little exhortation. Luther said, 'Keep at language, for language is the sheath that carries the sword of the spirit'.[30] I hope all of us, and the younger ones present particularly, see the implication of it. There has been an educational crime committed in our schools in this last 30 years by the left wing educationalists. They have to some extent, to my knowledge, deliberately forbidden schools

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[29] *Language and Species*, Chicago: University of Chicago Press, 1990, 57–8.

[30] See 'To the Councilmen of All Cities in Germany That They Establish and Maintain Christian Schools,' in *The Christian in Society II* (ed. Walther I. Brandt; trans. Albert T. W. Steinhaeuser and rev. Walther I. Brandt; *Luther's Works* 45; Philadelphia: Muhlenberg, 1962 [orig. 1525]), 360.

to teach language in the sense of grammar and syntax and logical analysis, so that many of our young people, unlike their grandparents, find it very difficult to analyse a piece of writing of any substance. They go for the impression instead, and if it makes a big, hot impression they go for that immediately, but analysing it and understanding the logical connections in the flow of thought, they find very difficult even at university level, as I learnt to my cost.

It is not their fault; it's the fault of people like one of Her Majesty's Inspectors of Schools who, when he found out that an ex pupil of mine, now a headmaster in a new school, had appointed a teacher of English who taught spelling and paragraphing and précis and logical analysis and paragraphing and all that kind of thing, told the headmaster to get rid of the teacher.

It means that our young folks sometimes can't cope with a sermon that lasts more than two minutes. So you'll hear the sermons on BBC Radio, not now a sermon of ten minutes but half a minute or so and then some music, another minute and then some music. Oh, my dear brothers and sisters, we are not all meant to be equally intellectual, but God has written his word for all the people of God. When I look back upon grandmothers who could sit and enjoy God's holy Word, they'd been taught at least the basics of the logic according to how its language works. Have mercy on our young people. But you young people give yourself to language. That means to Scripture and the language that he who is the Word of God has written for our sakes. So that we may, in our turn, honour him who gave us the language faculty that we might understand the things that are so freely given us of God in language!

Logical function in language

I come now to this final point, which you may think is a silly little point. What is the difference in function between 'its' and 'it's' and how would you know which is the right one to use? Consider these two sentences; they're both about Mr Smith's dog:

> It's not mustard; it's beefsteak it likes.
> Its food it likes very much: it's its kennel it dislikes.

Why would you use 'it's' with an apostrophe both times in the first sentence but only once with an apostrophe in the second? What is the difference between 'it's' with an apostrophe in the first sentence and 'its' without an apostrophe in the second?

Recently a university, that shall be nameless lest I be covered with shame, published an advertisement for a post that had two glaring grammatical mistakes in it. And I heard on the BBC recently that a local education authority issued pamphlets to school teachers on how to teach that contained two remarkable, juicy misspellings in them. That is not merely a superficial thing. In the end it comes down to basic logic. The key to knowing whether 'its' should have an apostrophe or not is this:

> it's = an abbreviation of it is = pronoun + verb.
> its = possessive adjective, neuter

Compare the following:

cf his food (Mr Smith's)
her food (Mrs Smith's)
its food (the dog's)

In the abbreviation of 'it is' the apostrophe marks that you've left the second 'i' out. Instead of saying 'it is' you say 'it's'. 'So we have the sentence: 'It is not mustard, it is beefsteak it likes.' But 'its' without the apostrophe is a different thing altogether actually. That is a possessive adjective in the neutral. Compare 'his food' (that's Mr Smith's), 'her food' (that's Mrs Smith's) and 'its food'. There's no apostrophe you'll notice (any more than 'his' has an apostrophe or 'her' has an apostrophe) because 'its' is being used here as an adjective. So 'its food' (rather than his or hers, a neuter is used here) refers to the dog's food.

Why do I mention it? Well the fact that our public gets it wrong nowadays fifty-one times out of one hundred is evidence that the logic is missing somewhere. This is only a small matter, but if we are to understand the things given us of God in holy Scripture we shall need, of course, the Holy Spirit's illumination, but we shall also need the illumination to understand what God has written in logical categories, grammar and syntax and so forth. God give us the wisdom to pay him the compliment, when he's given us such great potential, that we see to it that we develop that potential to the maximum of our ability.

3

The Basis of Morality and the Mind-Body Problem

A question arising: the stages of creation

Now we have a question with which to begin this present session, which we did not have time to give an answer to at the end of the last. The question is as follows:

> How do we understand, firstly, the matters relating to time and particularly the stages of the creation as given us in Genesis 1 and, secondly, with the succession of days? And thirdly, do we correlate those days with the so-called geological ages that we find in the rocks, or some scientists say we find in the rocks, and how in general do we understand those days? Are they, so to speak, earth days or long periods of time, or something else?

Now that is a very important and perceptive question, and I am grateful to you for it. I despair of answering it in a few moments because it is such a fundamentally important question, so I simply give you the present state of my thinking, which is extraordinarily obscure on the topic. This is not to avoid your question, but I think there are a lot of elements that go toward answering it.

Creation in stages

When I said that creation was done in stages, I meant it to refer to the fact that Genesis 1 does not tell us that in the beginning God spoke and the whole universe came into being forthwith, at once and immediately. It does not say that. If you ask me, 'Could God have done it that way?' well, I say God is almighty and he could have done it that way if he pleased. The question is not 'Could he have done it?' but, rather, what he actually did. According to Genesis I understand it that, on whatever interpretation you give, he did not do it all at once; he did it on a succession of days. And when we look at what he did, it wasn't just repeating day after day for accumulative effect. It was a progression from the less simple to the much more complicated and a succession that brings you to day six with the creation of man. That has theological implications. It seems to imply that the creation was done in progressive stages, getting ready for the crown of creation up to that moment, which was the creation of human beings.

And God said

Next I was calling attention to the fact that each of those stages in the creation were initiated by a word of God: 'And God said'. It is further to be noted in that connection, that whereas in most of the days the phrase 'And God said' comes once at the beginning, there are two days

in which the phrase occurs twice. On the first occasion that it occurs twice, it occurs at the bridge between inorganic and organic material: 'God said . . .' on the third day, the dry land appeared and so forth. But then, when it comes to the creation of plant life, you have another occasion on that same day: 'And God said'. In other words, the inorganic did *not* become organic simply by development.

Development by design

Now that is significant because God has used the principle of development in the course of creation. The outstanding example is human beings themselves. God made one man and one woman. Paul asserts in Acts 17 that 'of one' (that is of one person), God has created all the races of men: red, yellow, black and white, all being precious in his sight. But red, black, yellow and white are not special creations; they are developments of the original creation, are they not?

That is what Scripture itself asserts, and God, having created the human gene pool, deliberately created it so that it could give variation in all sorts of features within the human species. It is not a matter of frogs developing into humans, but instead what is normally called *microevolution;* that is, development within a species, and that God has deliberately done. So, therefore, all the different colours and races and characteristics of the humans have come by development out of the original creation. So God has used development, and that is an important thing to notice, but the bridge between organic and inorganic was not by development. It required another input of the divine word.

So it also is on day six. In the first half of the day we read, 'And God said', and he made animals. In the second half he spoke again and he made human beings, but not human beings by development out of animals. On that day the phrase, 'And God said' is used twice, because the introduction of human beings into the world required another input of energy.

Now this I say with all reverence. The coming into our world of the God-man Jesus Christ was not by a simple process of development. It meant nothing less than the incarnation of the Word of God.

So that's what I meant by stages.

The days of creation

Now, what do I think those days that are listed in Genesis are? Were they earth days of twenty-four hours as some people assert, or do they cover long periods of time? A third question worth asking is whether they were the days of one earth week, or were they days of twenty-four hours each, spaced out over undefined periods of time with periods of time in between each of those days? That is not an absurd suggestion. Seven days would still, even if they were interspersed with long periods of time, produce a series of days on which our human earth week could be constructed with its six days of work and one of rest on the seventh.

The debate has continued from time everlasting and I daresay will continue until we all get home to glory. Being a fence sitter by inclination I like to listen to the evidence from all sides. I wouldn't presume to be dogmatic on it in these five minutes that we have to address it. What I think one can say is this. First, if it comes to the point of a creative word, such as,

'And God said let there be light', I don't suppose God has to take more than a split second to say it. The reason I don't think he has to take ages to say that is because I believe, not just in development, but in a creative input: word, a command of creative input of information. What I personally think is open to much thought and perhaps interpretation.

A matter of time

Some will argue that when the creative word was said, what was commanded and created was created in a split second. So when God said, 'Let us make man', the human pair appeared out of nowhere in that same split second. But Genesis itself will say that's not so. Genesis 1 does just say God made man and woman, male and female but Genesis 2 explains that he took some time about it. He first made Adam, and he called all the animals in front of him and he asked Adam to name them. Then eventually he said there wasn't a help suitable for Adam among the animals and he put him into a deep sleep and he made Eve. So all that took some hours, I suppose. So it didn't happen in a split second. Did it happen in a day of twenty-four hours? And did all the other things happen in days of twenty-four hours, such as God making the sun, the moon and the stars?

In relation to that issue I'm impressed by the efforts of some Christian scientists, such as Russell Humphreys, who has revised some of the explanations of the young earth position. I'm impressed by a Jewish physicist who wishes to be loyal to the Old Testament Scripture and creation and believes in it.[31] Both of these scientists point to our concepts of time as Einstein formed them. Not only is time relative throughout the universe (meaning it is not the same in all places), but in certain conditions it is stretched. If you believe, for instance, in a Big Bang then you'll probably know about what is called *the event horizon* (sorry about these jungle of terms, I haven't got the time to expound them). As it shrinks it is mathematically demonstrable that time will increase, that is, be stretched. This gravitational stretching of time is not just space being stretched but time as well. The result is that if we measure the length of an event from earth's point of view, we might say it took a day. If you were to regard it in its own time and relevant part of the universe, it would perhaps involve millions of years. Now that is modern physics, and I'm not expert enough to tell you whether it is right or wrong; I refer you to the literature.

So the question is whether Genesis is saying that the formation of the stars and the heavens and so forth happened in one of our days. But if so, does that necessarily imply that our twenty-four hour days, as we call them, apply throughout the universe? I think that's another thing altogether. Our days are twenty-four hours long, but you say, 'What is an hour?' Well an hour is the 24th part of the time it takes our planet to turn around once. So time on Jupiter is quite different, because it turns round rather quickly. And a year is the time we take to go around the sun, but that's rather a different length of thing for people (if there were any) on Venus or Saturn. I think therefore, we have to allow for these things. That's one element in it.

[31] Gerald Schroeder.

A matter of the text

Secondly, I do notice that whereas the days of Genesis 1 all begin with the phrase 'And God said', if they are always the same, then day one doesn't begin until verse 3: 'And God said, "Let there be light".' In that case there were things happening before day one. In verse 2: 'God created the heavens and the earth and the earth was without form and void and darkness was upon the face of the deep.' What is the deep? 'And the Holy Spirit of God moved on the face of the waters.' What waters? The Bible doesn't stop to explain. It seems to me a strong case can be made for the fact that not everything was done in six days; there were things before the six days started, namely the things mentioned in verses 1–2.

As I say, it is conceivable to me that the days were days of twenty-four hours but not necessarily the days of one earth week. It could be there were days of command and then times of development of the implications of the command then, subsequently, another day. More than that I wouldn't want to say because if I said more I should be unfair to both sides in the debate.

Death before sin?

I would just comment on one further thing. Those of our dear brothers and sisters in Christ who feel very strongly about a young earth (as distinct even from a universe) urge that if the claims of the geologists, palaeontologists and things are right, then there were long ages when dinosaurs were around and destruction happened and death existed. And they say it is quite contrary to the Bible to suppose there was death before Adam sinned. They quote to that effect Romans 5:12: 'By one man's disobedience, sin entered into the world and death by sin, so that death passed upon all . . .' Now the question is, what is meant by 'all'? Does it include lions and tigers and things or just all human beings? Was there no death at all before Adam? If the Bible actually teaches that, well I say in advance I believe it, for I believe whatever the Bible says. I believe that, if that's what the Bible actually says and means.

There are moments, some Wednesdays and Friday afternoons, when I wonder whether the Bible means that there was no death at all before Adam sinned. It's not meant to be a joke or facetious to say that Adam only had to walk across the ground in the garden of Eden and many biological, living things were crushed out of existence. Then there is the whole question of the food chain.

More strong than the argument in Romans 5:12 is the Scripture in Romans 8 that says God subjected the earth (or Adam did) to vanity, to frustration (v. 20). The Greek for vanity is *mataiotēs*. 'One day creation shall be delivered from her bondage to *corruption*' (v. 21). I think I would need still to be convinced that the words 'vanity' and 'corruption' should be applied to the food chain. I'm not sure myself that when our Lord ate fish, for instance (part of the food chain), that this was an instance of corruption. Disease is corruption, and frustration. But, that smaller things should be food for the sardines that I then eat, is another matter. Whether to call the food chain corruption and vanity, of that I'm not so sure. I think it is a thing that we all should take seriously, and I say that meaningfully. This is not condescension on my part, and I'm out for all the help I can get in thinking and deciding about these things.

The basis of morality and the mind-body problem

With that, I want to come now to deal with two further topics that arise out of our contemplation of creation and where, as Christians, we shall be obliged to think, and think repeatedly, about what our Bibles say on these two particular themes. I beg leave to mention them, simply to point out that as things go on in our modern day (though these questions have always been important) they will come to the fore perhaps more pressingly than they have done hitherto. We shall need to be in a position, if we can, by God's grace, to understand exactly what Scripture says and therefore to stand for God's truth.

The basis and authority of morality

We sometimes divide morality up into *morality* and *ethics*. In ethics we're talking about actual, nitty-gritty practice. If a person is in a vegetative state, should a doctor come to the conclusion it would be better for all concerned to switch off the life-support processes? That was being argued recently on a radio programme. They were arguing this case for switching off life-support and one lady involved in the conversation was protesting that she had been told her that her mother's life-support system should be switched off. Her mother had been in a vegetative state for some weeks. But the daughter resisted it and was subsequently very glad she did, because her mother revived and lived another five years. That is an example of the ethics of the case. These are complicated, practical questions, but our decisions at that level must be based on a prior consideration. That is why we must think about morality as a whole.

Playing by the rules

What is the authority behind our concepts of right and wrong? Is there a final authority, or is morality like the rules of a game? The players get together and make up the rules, so if somebody says, 'That was a foul', then you consult the rules as to whether it was a foul or not. So there are the rules and then there are, what you might call, the ethics, or how you apply the rules. Is tripping up the man as he was about to score a goal and punching him in the nose with your elbow wrong? Is that unethical? Well then, you would go back to the rules to find out. But who made up the rules?

Is the authority behind morals simply that? You make up the rules, and you all agree to play by them. Therefore each individual case of ethics is decided along the basis of rules you've made up. And if you get to a point where you decide you'd like to change the rules, well if everybody agrees, you start playing by the new rules.

Why shouldn't it be that way? I mean, superior people play rugby and that has its rules, and you're allowed to pick up the ball. There are others (rather less broad in their opinions) and they play football and you mustn't pick up the ball in that game. I don't know why you put those restrictions on life and liberty! But you say, 'Well they're two different games. You can play which game you like, as long as you all agree.'

Is that how morality is? There are some modern theories of morality that would have it that way. Morality is simply an agreement that humankind makes among themselves:

'These are the rules we'll agree to follow. You mustn't put your finger in my eye.'

'Why not?'

'Well if you do, I shall put my finger in your eye. We shall both then be minus an eye, and that isn't a sensible way to carry on, so let's make up some rules. We shall agree not to put our fingers in other people's eyes.'

Is that all it is?

Imagine you go to another part of the world and you come across people playing a 'game' by different rules. They're cannibals. You say to one of them, 'You shouldn't eat people.'

The man would say, 'Why not?'

'Well because we don't think that's good.'

'Oh, but I'm playing a different game from what you are. You made up your rules. I make up my rules.'

Well now, if that is the only authority behind morality, how would you prove that wasn't a very good game the cannibal was playing? And why should he submit to your rules?

And if morality is like that, wouldn't it be even worse if it's a matter of taste? You think it's not good taste to gas six million Jews. Well, you try and tell Hitler that. He would say, 'But you don't like gassing Jews? Well don't gas them then. I do like gassing Jews.'

And what's the difference? We all have different tastes, even in fruits. You like oranges? Well I don't like oranges. I like bananas. 'Well,' you say, 'okay, you don't like oranges so don't eat oranges then. You like bananas, well, eat them; I hate bananas.' I can't enforce my way on you if it's a matter of taste.

Is there any authority behind our ideas of what is right and wrong?

Written on the heart

We know of course what the Bible and the Christian gospel say about this whole business of morality, as a presupposition of our need of the gospel. Romans 2 tells that there is a law written on our hearts by God the Creator. This is a universal sense in the human heart of what you might call right and wrong, not in particulars that this is necessarily right and that is necessarily wrong but the basic principle; the basic consciousness that some things are right and some things are wrong, some things are fair and other things are not fair. It is a feeling that even a young child has. On the nursery floor they have it: 'Not fair!' says the child. Well where did he get the idea that the world was meant to be fair? As he grows older, his sense of things not being fair will become a bit cynical because we live in a world where lots of things aren't fair. But the child is surprised to find that things aren't fair. Where did he get the idea from they would be?

We have a conscience, says Paul, because we have the law written on our hearts, and we show it by our very behaviour (see Rom 2:1–16). There's Mrs Brown talking to Mrs Smith about Mrs Pink:

'Have you heard what Mrs Pink has done?'

'No.'

'She's run off with another man.'

'Oh, that isn't good.'

'No, but you see her husband was a rotter.'

So one is accusing and the other is excusing. Why should you bother to do either, if there's no standard of right or wrong? The very fact that we accuse some and excuse others,

says the apostle, shows that we have a knowledge, an awareness, a standard of right and wrong. It's put there by God and means we shall be answerable for it in the day of judgment. If a person tries before the final judgment to say that they didn't know there was any such accountability, God will simply play back their life and show them making decisions: accusing, excusing, showing an awareness that there is an absolute authority.

Now, that's what the Bible teaches and if there is an absolute authority, in the end it isn't merely a matter of social contract. It's not a matter of culture, of utilitarianism, which says we behave to secure the maximum pleasure for the maximum number of people.

Utilitarianism

It sounds nice, doesn't it? We organise morality and behaviour on the utilitarian principle, so we maximise the good for the maximum number of people. It leaves the question open: 'What is good?' Who decides what is good? In Cambodia, Pol Pot decided that intellectuals weren't good and murdered about half a million of them. On his view, he was maximising good for the maximum number of people. Get rid of all the intellectuals and the majority in the country will have a lovely time. Is that right? Who decides what is good?

Let me remind you of some of the other egregious ideas that have come up in the course of history.

Social Darwinism

When Darwinism was young there arose people who thought that it would do more than, as they thought, explain how human beings came to be by evolution. They thought that the principle of evolution governed our behaviour also so that 'the survival of the fittest' was not just a law in the jungle, it was the way people were meant to behave anyway. So that eventually, as Darwin himself put it, given a number of years, the Caucasian race, already superior to the Negro race and a lot of others (as Darwin thought), would have eliminated all the other races. Here is 'the survival of the fittest'; good Darwinian mutation and natural selection. And a man called Chamberlain (an Englishman alas) got that kind of stuff eventually into Hitler's head with his doctrine of the superiority of the Aryan race, and with what results we know. Hideous, wasn't it, making the principle of evolution the governing principle of morality and behaviour?

Sociobiology

Of course that has become very old fashioned. More popular from the 1970s onwards is what has been called sociobiology. It was given its famous statement by a certain E. O. Wilson. He was originally a Baptist who professed to be a believer and became a militant atheist. In one of his books he explains that his faith began to falter when he found his minister smoking a cigar, and he became an atheist. Well anyway that's sad enough, but that is what he says in one of his scientific books.

Now his notion is not social Darwinism (survival of the fittest) but that our social ethics are built upon our biology. It is our genes that are the basis of morality because, according to him, we are nothing but the product of our genes. From the end of your hair to the toenails on your feet, you are the production of your genes. All that lies between, including the brain and its circuits and everything else, are controlled by the genes, and that's all there is. So therefore

your morality, your sense of right and wrong, is ultimately built upon the genes. It is Wilson's thesis, explained in many a book, that if we want to behave like good human beings, what we have to do is to consult our genes. I don't know how you go about it; it's a difficult thing to do before breakfast anyway, to get hold of the genes and talk to them as to what they intended, but that's his notion.

You come across difficulties in that, don't you? Are we nothing but genes? Well then how would you find fault with Adolf Hitler, to quote him once more? He could say, 'It's my genes made me do it.' So Wilson has to come to some very difficult explanations. Basically, his idea is that the genes do control us, but they've got us on a long leash, like a puppy dog that goes wandering all over the place. The puppy is largely out of control, but every now and again the owner pulls on the leash and pulls it back. So the genes have got us on a long leash, and when we wander all over the place morally, then eventually the genes call us back again. Well if you're going to reduce things to that kind of theory, then exit rationality, I suppose, because what made us go wrong in the first place? What is the old dog inside us that went and stretched the leash and tried to get off it? What was he made of—something that wasn't genes?

Richard Dawkins of Oxford, Professor of the Public Understanding of Science, has a similar theory. In his famous book, *The Selfish Gene*, Dawkins expounds a similar view to that of E. O. Wilson on the genetic basis of human morality. Our genes are concerned, so he says, solely with using human bodies for the purpose of replicating themselves. This then is their strategy, and it is this strategy that is written into the genetic code in every cell in our bodies and brains. So our genes control us morally then, as well as intellectually. And yet Dawkins assures us that somehow (he does not explain how) we are free to rebel against our genes: 'We are built as gene machines . . . but we have the power to turn against our creators. We alone on earth can rebel against the tyranny of the selfish replicators.'[32]

Although we are built as gene machines, he says we have the power to turn against our creators. Well that's good news. 'We alone on earth can rebel against the tyranny of the selfish replicators.' It's almost comical, isn't it? For if we are nothing but genes, how do *we* get to rebel against our genes? What on earth is there in *us* that isn't controlled by our genes, if we're nothing but genes? Are the genes themselves divided and warring amongst themselves, so one lot of genes rebels against the other lot of genes? And if that is so, how would you decide between the genes? It would be nonsense, wouldn't it? But this is Dawkins, Professor of the Public Understanding of Science in Oxford and very popular in his writings. This is sheer, logical nonsense.

Don't take my word for it, but listen to Professor Steven Rose. I don't know that he believes in God either but Rose acutely observes,

> If on the other hand, it is not our genes that are rebellious, what other options are available? Dawkins never says, but implicit in his argument is that somewhere there is some nonmaterial, non-genetic force moulding our behaviour.[33]

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[32] *The Selfish Gene*, Oxford: Oxford University Press, 1976, 215.

[33] *Lifelines: Biology, Freedom and Determinism*, London: Penguin Books, 1997, 213–14.

So even Steven Rose would point out to us how nonsensical it is to think that any of us could rebel against our genes if there weren't some non-genetic force within us.

The final authority behind morals

What outside authority is there? Well, as I've said already, the Bible tells us. There is a God. He's written his law on our hearts; he's guided us by the very mechanisms of nature. But way and beyond that he has been pleased to reveal himself through the Prophets and, finally and supremely, through Jesus Christ our Lord. So then God is the authority behind morals. People will argue against you and say, 'But if that were so, why are people's behaviours so different all round the world? So some people think it's right to burn your parents when they die and other people won't burn them; they bury them. And other people don't burn them or bury them but eat them. So how do you account for those kinds of differences if there is a God who sets the moral tone for every people in every place?'

So they try in that way to argue against it. But now consider this example from ancient Egypt and judge whether it shows the universality of the law written on the heart. John A. Wilson has provided us a list of claimed virtues from the Egyptian 'Book of the Dead'. The Book of the Dead was a kind of document that was attached to a person's body when he or she was buried. The idea was that after death the person had to face the final judgment, which would decide whether he or she would be admitted to eternal life or not. (We know that eternal life is a gift, but for the moment that's beside the point. This is what they thought.) The document therefore contained the person's defence statement, so to speak, claiming that he or she had not done wrong and broken the moral laws. What moral laws? Well here is this ancient Egyptian of millennia ago, giving expression to what he feels is right and wrong and claiming he's not done wrong:

> I have not committed evil
> I have not stolen
> I have not been covetous
> I have not robbed
> I have not killed man
> I have not damaged the grain measure [i.e. commercial malpractice]
> I have not caused crookedness
> I have not told lies
> I have not been contentious
> I have not practised usury
> I have not committed adultery.[34]

How many of these would you disagree with as moral laws? What a similarity they show all over the centuries, of a man's consciousness of what is right and wrong, even to particular ethics! It's interesting to notice that the Bible says that God has written this sense on our hearts. It also says that, along with that mechanism, he's put one or two others.

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[34] *Ancient Near Eastern Texts Relating to the Old Testament*, ed. J. B. Pritchard, 3rd edition, Princeton, NJ, 35.

Conscience

It's an uncomfortable affair, wouldn't you agree? It's like the alarm clock in the morning, when it wakens you at the proper time, but uncomfortably. You feel like bashing it hard and turning it off. Well if you do it enough times, then you'll mess the mechanism up and it won't ring anymore. But is conscience an inbuilt thing? We sometimes say, 'My conscience wouldn't let me do that.' Fear of what would happen if we did it can arise: 'Oh, I've got a bad conscience about doing this.'

Did you try to engineer conscience? Where does conscience, linked with this sense of right and wrong, come from? And it can have a physical manifestation. Some people can't blush you know. It's a pity, isn't it? The Prophets said about the people of Israel, they were such hardened sinners they couldn't even blush (Jer 6:15; 8:12). Conscience of having done wrong will cause us sometimes to even blush, if we're healthy. These are mechanisms put into our heart by our Creator of course. We only have to look at the sense of right and wrong over time, even down to particulars.

Who decides for God what is good?

But there is one big argument used against the notion that God is the author of morality, the authority that will hold us to account in the day of judgment. The argument that is brought by the philosophers against that idea that God is the authority behind the moral sense is called *The Euthyphro Problem*. It is so called because it was first put forward and explicitly stated by Socrates in a dialogue in which he was supposed to be discussing things with a man called Euthyphro who was trying to define holiness.

'What is holiness?' says Socrates to Euthyphro. 'How would you define holiness?'

Euthyphro thought for a while, and he said, 'Well holiness is what the gods like.'

'Oh yes, thank you very much. That's a very nice answer. So holiness is what the gods like . . . but just another question,' says Socrates. (He was an irritating chap, Socrates.) 'Holiness is what the gods like. Tell me, do the gods like this or that because it is holy, or is it that the gods like it so then it becomes holy?'

Old Euthyphro took quite a few paragraphs to digest that. You have my permission to take a bit longer if you want to.

If God is the author of, the authority behind, morality, and tells us what is good and what is bad, which way round is it? Did God approve of it because it is good in itself, or does it become good simply because God commands it? And the philosophers would argue, 'If God commands it because it is good, then it must be good independently of God's command. So it's already good and that's why God, looking at it, says, "Well that's good, so I'll command it".' If that's how it is then the good exists before God commands it. That would mean goodness is a standard to which God himself is subject. That in turn would mean that there is something above God that controls God, namely goodness, and that God is not the supreme authority, but some standard of goodness way above God is. Well that's impossible.

Let's take the other side. If something becomes morally good just because God commands it, then whatever he commands becomes good. That would mean that God could command anything at all, however bad or shocking, and it would become good simply because of God's arbitrary command, and that would mean that God was no better than the worst of dictators.

So they say both of those things are impossible, therefore it must be that it isn't God who stands behind morality; morality must be completely autonomous. If you haven't met the argument before, well thank the Lord for that, but if you're going to argue the case seriously, there are lots of people who have heard of the argument. What is the answer to it?

The argument is fallacious of course and springs from a failure to realise that we are here dealing with both God's will and command on the one hand and God's essential character on the other. Let's take one of God's basic commands, 'Be you holy, for I am holy' (Lev 11:44–45, 19:2, 20:7; 1 Pet 1:16). The command to us is to be holy. It is not the arbitrary command of an unscrupulous tyrant. However, it is not based on some law external to God either. It is based on the essential character of God. 'You be holy, because I am holy,' says God. So it's not a question of his arbitrary command. He does command it; he has the right to command anything he pleases. But he only commands what he pleases, and what he pleases is controlled by his own innate, essential, holy character. That's why God, in his own being, is the sum total of perfection. That is why, for instance, he cannot lie or be unfaithful, because he cannot deny himself (2 Tim 2:13; Titus 1:2). He cannot act out of character; he cannot command anything out of character with himself. He is the sovereign who has the right to command, but he is the perfection of all holiness whose commands are always consistent with his own character, not with some external law superior to him.

The authority behind morals, says holy Scripture, is God himself. It is in practice provable that ultimately people cannot be good without God. That is not to say that everybody who is an atheist is a downright evil and vicious person, as bad as bad could be. It is making the logical point that if our systems of morality are to be properly founded, so that when the storm comes they don't fall and collapse, they must be built on God as the ultimate moral authority in the universe.

Bioethics

One more problem, and this time I'm only going to mention it briefly. This question of morals and its basis is going to come to the fore. There's a book on the table that I brought along, though not to persuade you to agree with it. It is entitled *The Genetic Gods*. I was at a conference yesterday on bioethics—that necessarily is going to become an increasingly important topic of debate. The greater power that the experts are getting into their hands for genetic manipulation is going to raise gigantic ethical problems. It's no good us being ostriches, sticking our heads in the sand and damning all genetic science. It offers much promise of good to mankind for the healing of diseases that are genetically based and so forth and so on. But it will raise big questions inevitably. Is the cloning of humans anything more than what happens to twins in the womb? What is *life*?

It's not merely the experts who have to wrestle with these things. They will arrange conferences, such as yesterdays, on considering where ethics can come into the modern, rapidly developing science of genetic manipulation. But it is of course for us to consider as well. If one of your relatives has Alzheimer's and the doctors say, 'Well look here, through in vitro fertilisation we produce a number of spare embryos. We let them grow a little while and develop stem cells from them. We could take those stem cells and inject them into the brain of your relative. That would retard (if not cure) the Alzheimer's.' What would you say?

Is it right to produce embryos and let them grow in vitro, in a dish? Is it right to engineer and create human beings to solve the medical problems of other human beings? If somebody were willing to donate a kidney to you, wouldn't you take it? Where does spare part surgery cease to be wrong? If you can technically clone a human being, should you? These are enormous problems to be thought through at the level of ethics, but behind the ethics we must keep hold on the ultimate authority. The moral authority is with God. And human beings are made in the image of God and not made simply to be a *means* for other things. These matters are exceedingly important therefore.

The mind/body problem

The other thing that's going to loom large is the question of the mind/body problem, or we might say the mind/brain problem. As I said before, we shall not doubt that we all have brains. The question is whether the brain is the same thing as the mind. To put it another way, while the brain is formed of chemistry, electrical impulses and neurons and what have you, is that all there is? Or, in addition to the material part, the physics and the chemistry of the brain, is there a non-material part in a human being?

What Scripture says

There is no doubt what Scripture says. Say what you will, Scripture does indicate that man is not just matter, not just so much physics and chemistry; there is a non-material part. There is spirit as well as flesh, and we see that in the way Scripture talks of the death of believers:

'I have a desire to depart and be with Christ . . .' (Phil 1:23)

'I must soon put off this tabernacle . . .' (2 Pet 1:14)

'Today you shall be with me in Paradise . . .' (Luke 23:43)

'. . . absent from the body, present with the Lord.' Or the other way round, present in the body is to be, in that sense, absent from the Lord. 'And I would rather,' says Paul, 'be absent from the body and present with the Lord' (see 2 Cor 5:8–9).

It is not true to say that, according to Scripture, when a believer dies that's the end of him pro tem until the resurrection comes. And supremely that is not true of our Lord. Did our Lord cease to exist for the three days and three nights when he was in the tomb? The thing is unthinkable. But there are a surprising number of people (and not only atheists but evangelical Christians nowadays) who in thinking about these things have come to the conclusion that man is just one thing—physics. They are what are called technically, *monists*.

What monists says

There is a book recently published entitled *Whatever Happened to the Soul?* Its contributors, most of them evangelicals and all of them theists, argue that man *is* a soul; he doesn't *have* a soul. They are monists. They hold there is no spirit part of man; man is just material. They don't deny that he will eventually be raised from the dead. They do deny that he's anything other than, say, physics. That is going to be very important as computer science gets on towards making computers that come more and more to resemble the human brain. If ever they manage it, the question of what man is will become exceedingly important.

Now here would not be the place to examine the many different permutations held by the monists. Though they agree that man is but one substance, they have all sorts of permutations of that particular stance, and I should not try to describe them. I point it out to be fair to them that they don't all agree on how you would explain man in monist terms. But let me take some examples.

Consider what Gilbert Ryle said (way back in the dark ages of the dinosaurs, 1949) as he assured the world that we have to give up this idea that there's 'a ghost in the machine'. In other words, we are but machines in that one sense, and there's no sort of spirit or soul inhabiting us; we are but matter. He's defending the view when he says: 'Man need not be degraded into a machine by being denied to be a ghost in the machine.'[35] That's the notion. If you claim that your body is not the whole sum of you, but there is a soul or a spirit—a non-material part in you, Ryle would have said you are one who believes in 'a ghost in the machine'. And ghosts, being unsubstantial, nobody much believes in them. But the new science that had already started when Ryle came up with his phrase was undermining him already.

Consider this by Paul Davies and John Gribbin in their book *The Matter Myth*, much later in 1991:

> Today on the brink of the twenty-first century, we can see that Ryle was right to dismiss the notion of the ghost in the machine–not because there is no ghost but because there is no machine.[36]

For what is 'the machine' made up of? And we come back to the point we were discussing earlier about information being prior to matter and spirit preceding matter. This quotation is interesting for these two men don't believe in God as far as I know.

So perhaps the majority are monists of one sort or another, including some evangelicals, but not all scientists and philosophers are monists. Let's see what the other side say, the dualists.

What dualists says

I quote just two of them. Karl Popper, the great and famous philosopher of science, in the reprint of his book in 1998 says,

> the mind as the pilot of a ship—the body; a simile which I regard as in many ways excellent and adequate; so much so that I can say of myself 'I believe in the ghost in the machine'.[37]

Popper didn't believe in God, but he believed that there is a part of the human that is like the pilot in the ship, not to be confused with the ship nor with the engine of the ship. The one who, though acted upon by the engine and who looks at the controls, is nevertheless independent of them and takes the final decisions.

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[35] *The Concept of Mind,* London: Hutchinson, 1949, 328.

[36] *The Matter Myth: Towards Twenty First Century Science*, London: Viking, 1991, 302–3.

[37] Karl Popper and John C. Eccles, *The Self and Its Brain: An Argument for Interactionism*, London: Routledge, repr. 1998, 105.

A lot of things in our brains carry on for us. For instance, you've got a problem and can't think it out. You've thought about it a lot and your mind is tired, so you say, 'I'll sleep on it.' You go to bed, and in the morning you've got the answer because the old brain box has been working underneath and sorted out the problem for you.

If you're a driver like me, coming down the motorway you'll presently say, 'Have I come by Hillsborough or not? I can't remember it. I was on autopilot, I suppose.' Of course, when you come to Belfast with all the endless traffic, then you've got to concentrate. But a lot of things are done for us by our brain, and we mustn't forget it. But are we simply brain? Are we just super-duper computers, or is there a non-material part in us—the mind (spirit if you like)?

Look now at what John Eccles says. He was a Nobel Prize winner for neurophysiology and a believer, alas in his days believing in the evolution of the body but, as he would have it, in the creation of the self or the soul:

> Since materialist solutions fail to account for our experienced uniqueness, I am constrained to attribute the uniqueness of the Self or Soul to a supernatural spiritual creation. To give the explanation in theological terms: each Soul is a new Divine creation which is implanted into the growing foetus at some time between conception and birth.[38]

So he was a dualist, and what your view on that would be, I'm not quite sure. Do you have an immortal soul like the gospel preachers tell us, or a spirit? How did you get it? Did it come through your parents, or did God implant the soul in you, direct from God, sometime between conception and birth? I shall not attempt to solve that one for you. I hope I do provoke you to start thinking and looking at what Scripture says about the thing.

Eccles continues:

> It is the certainty of the inner core of unique individuality . . . that necessitates the 'Divine creation'. I submit that no other explanation is tenable; neither the genetic uniqueness with its fantastically impossible lottery, nor the environmental differentiations which do not *determine* one's uniqueness, but merely modify it.[39]

There's a word to the geneticists. He goes on:

> This conclusion is of inestimable theological significance. It strongly reinforces our belief in the human Soul and its miraculous origin in a Divine creation—there is recognition not only of the Transcendent God, the Creator of the Cosmos, the God in which Einstein believed, but also of the loving God to whom we owe our being.[40]

There speaks a neurophysiologist, brilliant in his day, a Nobel Prize winner and a believer. It shocked a lot of his colleagues and even some of his evangelical colleagues as well.

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[38] *Evolution of the Brain, Creation of the Self*, London, Routledge, repr. 1996, 237.
[39] *Evolution of the Brain*, 237.
[40] *Evolution of the Brain*, 237.

The immaterial acting on the material

Let's come to the heart of the question, which sometimes the scientists point at. What is the difficulty in thinking that man is part spirit as well as material? This is the idea that materialistic monists find impossible to accept or even to conceive of. They ask, 'How can an immaterial entity (call it self, mind, soul or spirit, or what you will) act on, impinge on, affect, move, cause to act, a material entity: the brain?'

Their first difficulty, so they say, is this: science knows nothing of invisible, immaterial entities; it cannot measure them nor conduct experiments on them. Science cannot allow that they exist; they are figments of people's imagination. They are ghosts in the machine and, like all ghosts, non-existent.

If scientists can't deal with immaterial things, well, in their work as scientists that's one thing, but of course our whole basic faith is based on this—that God is spirit. You can't put God in a machine; you can't detect him by that method. But if non-material spirit can't impinge on matter, how on earth did God create the universe to start with?

Let's hear what some of the other scientists say, and with this we'll finish. Scientists who talk like this say they can't allow things that they can't measure; they can't allow that they exist. Scientists who talk like this are not really being consistent. No scientist has ever yet seen a quark, but scientists all believe in quarks. They infer their existence from the effect they have on other particles and the trail that this leaves behind in the cloud chamber. Moreover, no scientist has ever yet seen energy. Indeed, no one knows or can say what energy is. Now do notice that, please.

If you want a little fun at dinnertime, and you're sitting next to a scientist, ask him in all innocence as you're swallowing your carrot, 'Oh, there's a thing that's been puzzling me recently. I wonder, could you tell me, what is energy?' And they will start to explain.

'Well energy can neither be created nor lost, and it is the power to do work.'

And then, when you've eaten a potato or two, say, 'That's very interesting. Yes, this is what energy does. But what is it?'

And sometimes they'll say, 'What do you mean, what is it?' Because scientists are not given to asking silly questions.

Well, wait a minute, is it a silly question?

What is energy? Richard Feynman (Nobel Prize winner again) devotes a chapter of one of his books to the topic of the conservation of energy. In the course of that chapter he remarks, 'It is important to realise that in physics today, we have no knowledge of what energy *is*'.[41]

Shall you deny there is such a thing as energy? Will you deny that energy can impact upon matter? That would be nonsense, wouldn't it? We don't know what energy is; we can't see it. We can see its effect. As our Lord said in a humble analogy, 'The wind blows where it wills. You know not where it comes from or where it goes' (John 3:8). You see its effect. You can't see it itself. As Popper points out:

> Perhaps the clearest physical example against the thesis that only like things can act upon each other is this. In modern physics, the action of bodies upon bodies is mediated by fields–by

[41] *Six Easy Pieces: The Fundamentals of Physics Explained*, London: Penguin Books, 1995, 71–2.

> gravitational and electrical fields. Thus like does not act upon like, but bodies act first upon fields which they modify, and then the (modified) field acts upon another body.[42]

It is evident also that information affects our minds, brains and bodies but is itself non-material. Moreover, the thesis that only like things can act upon each other, and therefore an immaterial mind cannot act upon a material brain, is not borne out by the rest of nature.

Conclusion and charge

And with that fearfully reduced lecture, I leave the topic. My motive is to draw it to your attention and encourage all of us, as best we can with God's help, to think about these matters. The time will come when the second beast, the false prophet, will make an image of the first beast. What shall be given to him to give to the beast so that the beast can tell who has and who hasn't got the mark of the beast, according to Revelation 13:15? Is it 'breath' or 'spirit'?

Jannes and Jambres opposed Moses. When he cast down the rod and it became a serpent, they cast down their rods and they too became serpents (Exod 7; 2 Tim 3:8–9). How far will God allow men to go? We need to give some thought to it, for the consistent emphasis of Scripture is that, in the last days, there shall come horrible deceits, sophisticated deceptions—'the lie' (2 Thess 2:11). Though we may not be here to see it and will have gone home to glory, John says in his day that 'already antichrist is with us' and 'there are many antichrists' (see 1 John 2:18; 4:3).

God give us the grace and strength to think about these things, to search our Scripture, to see what the mind of God is and the evidence for what a human being *is,* that we might be ready to stand boldly in our witness for the Lord in the coming generations while he leaves us here.

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[42] Davies, *The Self and Its Brain*, 182.

About the Author

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