

IV. God and the New Physics

For¹

Throughout the 19th Century and for most of the 20th it was axiomatic in a number of intellectual circles that the fading away of belief in God would be an inevitable consequence of the spread of scientific and rational thought. As early as 1882 Nietzsche could claim that 'God is dead in the hearts of men, science and rationalism have killed him.'² Of course Nietzsche subsequently recognised that he had been premature 'I come too early...this tremendous event is still on its way.'³ Yet Nietzsche and many other leading intellectuals of the nineteenth and early twentieth century such as Karl Marx, or Sigmund Freud, or Bertrand Russell had no doubt that belief in God would die out as scientific knowledge spread. Such a view even found several champions within the Christian Churches in the 'Death of God' movement of the 1960s and the 'Sea of Faith' movement of the 1980s.⁴

However belief in God has not died out, and appears to have undergone, in some quarters at least, a substantial revival. Indeed according to Paul Johnson, author both of the *History of Christianity* and of *Modern Times*, 'The most extraordinary thing about the twentieth century has been the failure of God to die...At the end of the Twentieth Century, the idea of...God is as lively and real as ever.' Johnson believes that the reason for this is that science and religion have come to a new harmony. Indeed he even claims that the situation has changed so drastically that 'the great majority of those who work in the scientific world perhaps as many as eighty percent now profess some kind of religious belief'.⁵

In terms of scientists in general Johnson's figures are obviously wrong, but presumably he must be referring only to scientists working in the area of the so-called new physics where, according to Terry Miethe, 'The argument from design has very recently gained acceptance among many scientists.'⁶ Keith Ward makes a similar point about the new physics when he observes in his book *The Turn of the Tide* that 'Just when philosophers had thought that the argument from design was gone for ever, the physicist brings it back again'.⁷

The reason for this is that according to Russell Stannard, Professor of Physics at the Open University, 'the very latest revelations of science instead of posing fresh difficulties, have led to new harmony, and the methods of investigation used in

¹ The 'For' section is written by Paul Badham, Professor of Theology and Religious Studies at University of Wales Lampeter; it is an extract from his book *The Contemporary Challenge of Modernist Theology* (University of Wales Press, Cardiff, 1998). This will be followed by a response, by David Cockburn, to the arguments Badham presents.

² R.J. Hollingdale, 'Introduction' to Nietzsche, *Thus Spoke Zarathustra* (Harmondsworth, Penguin 1961) 10.

³ F. Nietzsche, "The Gay Science" Aphorism 125 in W. Kaufmann, *The Portable Nietzsche* (New York, Viking, 1954) 96.

⁴ Don Cupitt, *Taking Leave of God*

⁵ Paul Johnson, "Peaceful co-existence" *Prospect* London, Issue 7, April 1996, 34-38.

⁶ Terry Miethe and Antony Flew, *Does God Exist?: A Believer and an Atheist Debate* (New York, Harper, 1991) 65.

⁷ Keith Ward, *The Turn of the Tide: Christian Belief in Britain Today* (London, BBC Publications, 1986) 45.

science and religion, far from being opposed to each other in their outlook, are in many ways similar.⁸ Paul Davies goes even further and insists that in the light of the new physics we can legitimately claim that 'science offers a surer path to God than religion.'⁹

Before this sea-change took place among some scientists, most philosophers of religion believed that the arguments for God's existence had been definitively answered by Hume and Kant and there was little mileage in refuting them except as an introductory exercise for first year philosophy students. Let me give two examples of this. When I was a student in the late 60's Ian Ramsey resigned from the Nolloth Chair of the Philosophy of the Christian Religion in order to become Bishop of Durham and several leading philosophers proposed that the Chair be abolished since the subject was dead. Fortunately the proposal was resisted and the appointment first of Basil Mitchell and then Richard Swinburne led to a tremendous resurgence of interest in the subject.

As another example Kai Nielsen, a Canadian philosopher and a convinced atheist, wrote in 1971 that philosophers who took the claims of religion seriously were 'very much in the minority and their arguments have been forcefully contested.' But nearly twenty years later Nielson's estimate of philosophical attitudes has changed. He believes that 'Philosophy of religion in Anglo-American context has taken a curious turn in the past decade...what has come to the forefront ...is a group of Christian philosophers of a philosophically analytic persuasion, but hostile to even the residues of logical empiricism or Wittgensteinianism, who return to the old topics and the old theses of traditional Christian philosophy and natural theology.'¹⁰ We should of course notice that Nielsen describes this development as 'curious', indicating that he himself is unconvinced by it. We should also note that philosophers not engaged in the current discussions in the philosophy of religion often remain unaffected by it. Nevertheless if we are looking simply at the current status of the arguments for the existence of God it is interesting to notice Richard Purtill's evaluation of the scene: 'All the traditional arguments have able and respected defenders and if there is not a consensus in favour of philosophical arguments for God's existence it is no longer true that there is a consensus against.'¹¹

The main reason for this new interest in the arguments for the existence of God mainly focuses on the relevance of recent developments in physics to two of the classic arguments for the existence of God. The reason for this interest is that there appears to be a surprising correlation between what scientists have discovered about the universe and what the theistic religions have historically claimed. Judaism, Christianity and Islam affirm that the universe and time were created from nothing by God. They also affirm that the universe is God's handiwork in the sense that God designed all that is. Science as such can make no comment on such claims. As Kant

⁸ Russell Stannard, *Science and the Renewal of Belief* (London, SCM, 1982) Cover.

⁹ Paul Davies *God and the New Physics* (London, J.M. Dent, 1983) ix. Cf also *The Mind of God* (London, Simon & Schuster, 1992).

¹⁰ Kai Nielsen *Contemporary Critiques of Religion* (London, Macmillan, 1971) 19 and 'Foreword' to K. Parsons, *God and the Burden of Proof* (New York, Prometheus 1989) 7

¹¹ Richard Purtill, 'The Current State of Arguments for the Existence of God' *Review and Expositor* Vol. 82.

argued in his *Critique of Pure Reason* science as such can only work within the limits of what is ultimately available to us through the senses as interpreted within the categories of space and time. Since God cannot be known through the senses and transcends both space and time, God's reality is not the kind of reality that science can make any comment upon. On the other hand if science were to conclude that the universe did come into being literally from nothing, and if the fundamental constants of the universe gave the appearance of having been 'carefully chosen' with a view to the evolution of 'observers' then such conclusions would at least be highly congruent with the concept of a Creative Mind behind the Cosmos. Let us explore the evidence behind such notions.

The first phenomenon I want to look at is the hypothesis usually referred to as the 'Big Bang' theory of creation. This is the claim that the universe as we know it has not always existed but came into being from nothing fifteen billion years ago. Four leading astronomers put it like this: 'The universe began with a great explosion from a state of infinite density about 15 billion years ago.... [S]pace and time were created in that event and so was all the matter in the universe.'¹² But as William Craig points out 'infinite density' is precisely equivalent to 'nothing'. No object can possess infinite density for 'if it had any size at all it would not be infinitely dense'¹³. Hence a literal application of the Big Bang model implies that the universe came into existence from 'nothing at all'. There is a strong consensus among contemporary scientists, including Russian scientists, that this is so.¹⁴

No consequences necessarily follow from accepting this fact. From a strictly scientific perspective one can simply accept as an ultimate fact about reality that the universe came into existence from nothing 15 billion years ago. Antony Flew defends this view strongly, reminding us that well over 2000 years ago Straton of Lampsacus had contended that 'the existence of the universe and whatever may be discovered to be its fundamental laws ought simply to be accepted as the explanatory ultimates for which no further explanation is either necessary or possible.' From Flew's perspective Stratonian atheism is therefore as valid as ever and he calls for scientists like Stephen Hawking to cease talking about the 'The Mind of God' as if this could provide some 'other kind of cause'.¹⁵ Flew's view is similar to Peter Atkins' who insists that that 'the whole universe tumbled out of absolutely nothing' but Atkins adds 'There is no purpose behind it, it just happened to happen'.¹⁶

Other scientists are less happy about such a view. As Stephen Hawking says in his *Black Holes and Baby Universes*, after everything that science can say 'You still have the question: why does the universe bother to exist? If you like, you can define God to be the answer to that question.'¹⁷ Clearly such a response is not the only one. It remains possible that the sudden emergence of the universe, and the surprising way it

¹² William Craig citing J.R. Gott III, James E. Gunn, David Shramm and Beatrice M. Tinsley, 'Will the Universe Expand Forever' *Scientific American* (March 1976) 65 in W.L. Craig and Q. Smith, *Theism, Atheism and Big Bang Cosmology* (Oxford, Clarendon 1995) 43.

¹³ William Craig, *Theism, Atheism and Big Bang Cosmology*, 43.

¹⁴ Cf. I.B. Zel'dovich and I.D. Novikov, 'Contemporary Trends in Cosmology', *Soviet Studies in Philosophy*, 14 (1976) 46-7 (Cited by Craig on p.44)

¹⁵ Antony Flew, 'Stephen Hawking and the Mind of God', *Cogito*, (Spring 1996) 59.

¹⁶ Said on Video, *Whose World? An Exploration of Science and Belief* by Adam Ford, (London CTCV 1987). Cf. P.W. Atkins *Creation Revisited* (Oxford, Freeman 1992).

¹⁷ Stephen Hawking, *Black Holes and Baby Universes* (London, Bantam 1993) 159.

developed will always remain inexplicable. But from a scientific point of view there is something very odd about Atkins' claim that it 'just happened to happen'. The whole scientific enterprise got going only when people stopped supposing that things just happened to happen and began to look for explanations, reasons and causes. Certainly within the natural order this is utterly axiomatic so it is puzzling that when it comes to the cosmos as a whole one should abandon the quest for explanation. The problem is of course that if one is to give any kind of explanation for the whole cosmos tumbling out of absolutely nothing one is forced to posit some cause which transcends the cosmos and this is a very challenging concept.

In fact the reason why the 'Big Bang' is thought by many physicists to be relevant to belief in God is that it appears to give an empirical foundation for an important version of the cosmological argument for God's existence. This is known as the Kalam Cosmological Argument and was developed by two medieval Islamic scholars, Al-Kindi and Al-Ghazali. It goes like this:

1. Everything that begins to exist has a cause of its existence.
2. The universe began to exist.
3. Therefore the universe has a cause of its existence.¹⁸

Philosophers have always accepted that if the first two premises were true the conclusion would follow. But during the Middle Ages the second premise was derived from a complicated and to us not very convincing philosophical argument about the logical impossibility of an actually infinite temporal series, so the argument didn't carry much weight and is generally thought to have been refuted by Immanuel Kant in his first *Critique*. What Kant argued is that any alleged proof 'attempted independently of empirical principles' and simply asserting the impossibility of infinite regress on speculative principles of reason in fact presupposes what it seeks to establish and is therefore subject to all the objections he had earlier raised against the ontological argument.¹⁹ Richard Swinburne fully agrees that there is no future in *a priori* arguments which purport to show that the universe must have had a beginning. But the whole situation is transformed if the argument is based on *a posteriori* observation by scientists that as a matter of empirical fact the universe did have a beginning²⁰. Once this is accepted then the second premise seems to be true.

That leaves the first premise: 'everything that begins to exist has a cause of its existence'. Here I have to confess that I share William Craig's view that this premise is 'so intuitively obvious...that probably no one in his right mind *really* believes it to be false. Even Hume himself confessed that his academic denial of the principle's demonstrability could not eradicate his belief that it was none the less true.'²¹ What David Hume actually wrote was: 'Allow me to tell you that I never asserted so absurd a proposition as *that anything might arise without a cause*: I only maintained that our Certainty of the Falsehood of that Proposition proceeded neither from Intuition nor Demonstration; but from another Source'.²² All that Hume had intended to show was

¹⁸ William Lane Craig, *The Kalam Cosmological Argument* (London, Macmillan, 1979) 63.

¹⁹ I. Kant, *Critique of Pure Reason* 1781 in Kemp Smith's translation (Macmillan 1964) 507-518.

²⁰ Richard Swinburne, *The Existence of God* (Oxford, Clarendon, 1979) 131-32.

²¹ William Craig, *Theism, Atheism, and Big Bang Cosmology* 57.

²² *The Letters of David Hume* ed. J.Y.T. Greig, (Oxford, Clarendon, 1932 Vol.1) 187. Cited in Craig 57.

that the principle of causation was not analytic, and therefore it was *logically* possible that it *might* not always apply. However all our experience teaches us that in real life the principle of causation in fact *always does apply*. As Craig says: ‘Constantly verified and never falsified, the causal proposition may be taken as an empirical generalisation enjoying the strongest support experience affords.’²³ It is therefore not unreasonable to suppose that the principle of causation which applies to everything of which we have experience should also apply to the universe itself. And if we accept that the universe came into being from nothing it is rational to postulate a transcendent cause of its existence.

Antony Flew points out that all the argument actually establishes is the existence of a ‘physically unknowable cause of the Big Bang’.²⁴ However this is a by no means insubstantial thing to have established, and it is certainly far more than Flew would have conceded as possible before the rise of the new cosmology. Ninian Smart suggests that the argument shows the existence of a ‘Cosmos-Explaining-Being’, and argues that to be religiously important the idea would have to be enriched.²⁵ This is undoubtedly true. The God of the religious believer is *more* than the ‘physically unknowable cause of the big-bang’ being postulated by this argument. But God is *not less* than the Creator. It is no accident that all the Christian Creeds start with affirming belief in the Creator. They then go on to affirm that this Creator has made himself known in Christ. But the starting point is belief in God. Similarly in Jewish and Islamic thought. What matters for Judaism is the covenant between God and Israel, and what matters for Islam is the belief that Muhammad was the definitive Prophet of God through whose recitation of the Qur’an, God’s will has been made known. But in all cases the initial belief in God is the necessary condition for further beliefs about God’s character and mode of self-disclosure.

In this argument the concept of God being employed is either the Timeless God of classical theism, or the biblical picture of God as ‘from everlasting to everlasting’.²⁶ In neither case does it make sense to ask ‘what caused God?’ The first premise of the Kalam Cosmological argument is that ‘anything that begins to exist has a cause of its existence’. Since no theist believes that God began to exist, that question has no application to God.

The coming into being of everything from nothing does not compel belief in God because as we have already noted it is always open to an atheist to say that if the universe did come into being from nothing this should simply be regarded as an inexplicable fact. But one can at least legitimately say that the widespread belief among modern physicists that the universe exploded into existence from nothing at all more compatible with the theistic belief that God created the universe out of nothing than any previous scientific world-view, and this is a highly significant development.

However although there is a strong consensus that the universe as we know it began with the Big Bang a significant number of physicists deny that this should be understood as an absolute beginning. Some believe that provided enough matter

²³ William Craig, *Theism, Atheism and Big Bang Cosmology*, 61.

²⁴ Antony Flew, ‘Stephen Hawking and the Mind of God’, 57.

²⁵ Ninian Smart, *Philosophers and Religious Truth* (London, SCM, 1964) 104.

²⁶ Psalm 90:2.

exists in the universe there will come a time when gravitational forces will eventually stop the expansion of the universe and it will collapse on itself in a 'Big Crunch' analogous to the Big Bang. If this will happen in the distant future then it is likely that it also happened in the distant past and hence that the Big Bang was the ultimate product of an earlier Big Crunch! Another theory is the quantum fluctuation theory. This holds that it was only matter that originated in the Big Bang, but that background space-time, quantum field and laws of nature were already in operation.²⁷ A third theory is the Hartle-Hawking model. According to Ward this seeks 'to eliminate the background space-time and generates the temporal state of this universe out of a wider timeless domain of three-spaces' linked in 'fuzzy' ways. The model aims to resolve time as we experience it into a wider mathematically statable reality.²⁸ The key point in this theory is that it presupposes that the universe has no beginning or end, no boundary or edge. Hawking believes that if this theory were to be confirmed it would raise in an acute form the question, 'What place then for a Creator?'²⁹ On the other hand as we shall see Hawking is quite clear that the Big Bang plays a key role in the way our current universe has developed and that the fundamental constants of reality are extremely finely tuned and this might point in a rather different direction.

If any of these alternative theories to the classic Big Bang view end up by gaining general acceptance then the Kalam Cosmological argument would need to be modified. It would lose its original primary premise which was that the universe literally began from nothing and hence requires a transcendent cause to explain its coming into being. Instead one would have to argue that the state of the universe before and after the Big Bang was so fundamentally different that the coming into being of this fundamentally different universe requires a transcendent cause. We will return to this issue later when we see how great these differences actually are. But before doing so we might note that if the universe in some sense always existed as posited both by a theory of oscillation between Big Crunch and Big Bang and also by the Hawking-Hartle model, this would pose no difficulty for the traditional understanding of the Cosmological argument.

Christian theological tradition has for the most part accepted the assumption of St. Thomas Aquinas that the dependence of the universe upon God has nothing whatever to do with whether or not the universe began to exist or not. The same conclusion was reached by Muslim philosophers like Ibn Sina (Avicenna) or Ibn Rushd (Averroes) who did not work within the Kalam framework of Al Ghazali.³⁰ Both Aquinas and his Muslim counterparts thought that belief in creation ex nihilo was a doctrine derived from scripture rather than philosophy. From a philosophical point of view even if the universe had existed from all eternity it would still be dependent on God.

Keith Ward is a strong contemporary defender of this view. He argues that the 'intelligibility, beauty and (mathematical) harmony of the universe'³¹ as described by modern mathematical physics might best be interpreted as showing 'how the material

²⁷ My account is compressed from Keith Ward, *Religion and Creation* (Clarendon Press, Oxford, 1996) 295.

²⁸ Keith Ward, *Religion and Creation*, 295 (summarising chapter 8 of Stephen Hawking, *A Brief History of Time* (Bantam Press, London, 1988))

²⁹ Stephen Hawking, *A Brief History of Time* (Bantam Press, London 1988) 141.

³⁰ Oliver Leaman, *Medieval Islamic Philosophy*, (Cambridge University Press, 1985, Chapter 1.)

³¹ Keith Ward, *God, Chance and Necessity* (One World, Oxford, 1996) 25.

cosmos can be understood as arising from a deeper intelligible, beautiful and non-material reality. This paves the way for a better understanding of God as a self-existent reality which generates the whole material universe'.³² He thinks that there are many far more cogent reasons for believing in God than just positing God to account for a supposed 'first temporal moment'. Indeed Ward believes that the nature of the existence of the universe is a far more compelling reason for believing in God than the coming into existence of the universe would be. For Ward it would be odder to suppose that the universe as a 'highly ordered mathematical domain exists on its own than to say that a material universe just comes into being on its own'.³³

This understanding of the Cosmological argument leads very naturally to a consideration of the second new argument for the existence of God, namely the argument derived from 'The fine-tuning of the Universe'. The starting point is that 'Cosmologists, physicists and astronomers have identified a number of special conditions which had to be fulfilled in the structure and evolution of the universe if human life was one day to exist within it'.³⁴ These conditions, often referred to as 'cosmic coincidences' have led to the formulation of the so-called 'Anthropic Principle' which suggests that the way the universe came into being and subsequently evolved was in some way related to the emergence of human life.

This principle is based on the discovery over the past twenty to thirty years of 'how complex and sensitive a nexus of conditions must be given in order for the universe to permit the origin and evolution of intelligent life on earth. Today in the various fields of physics, astrophysics, classical cosmology, quantum mechanics and biochemistry, various discoveries have repeatedly disclosed that the existence of intelligent carbon-based life on earth at this time depends upon a delicate balance of physical and cosmological constants such that were any of these quantities to be slightly altered the balance would be destroyed and life would not exist'.³⁵

Such facts almost instinctively lead one in the direction of thinking about God. As Stephen Hawking observes in his *Brief History of Time* 'The initial state of the universe must have been very carefully chosen indeed if the hot big bang model was correct right back to the beginning of time. It would be very difficult to explain why the universe should have begun this way, except as the act of a God who intended to create beings like us'.³⁶ When Hawking says that the initial state of the Universe must have been 'very carefully chosen' he refers to what writers describe as the 'fine-tuning' of the Universe in the first moments of creation. For example, Hawking says that the heat of the Universe one second after the Big Bang had to be exactly as it was because a decrease of heat by as little as one part in a million million would have caused the Universe to collapse. One part in a million, million is 10^{12} , a fantastically remote chance. But other features of the Universe had to be even more 'carefully chosen': Electro-Magnetism and gravity had to be correct to one part in 10^{40} , the rate of expansion to 10^{55} , density to 10^{60} and the smoothness of expansion to 10^{123} . All

³² Keith Ward, *Religion and Creation*, 296.

³³ Keith Ward, *Religion and Creation* (Clarendon Press, Oxford, 1996) 295.

³⁴ John Hick, *An Interpretation of Religion* (Macmillan 1989) 82.

³⁵ Cafer Yaran, 'Scientific objectivity and theistic belief'; an unpublished paper based on his Ph.D. thesis *The Argument from Design in Contemporary Thought* (Lampeter 1994).

³⁶ Stephen Hawking, *A Brief History of Time* (Bantam 1988) 127.

these and many other constants had to come right simultaneously for the Universe to come into being and to evolve in the way it did. Paul Davies says that the odds against all of them coming right together are at least one followed by a thousand billion, billion zeros. The evidence cited above is derived from the work of leading mathematical physicists as summarised in John Leslie's acclaimed work, *Universes*³⁷. For anyone who is not a mathematician it is difficult to understand the basis on which the authorities cited by Leslie work out these figures. However the fact of the fine-tuning of the Universe seems to be agreed by all concerned whichever way they subsequently interpret such facts.

The evidence for the fine-tuning of the Universe totally destroys Hume's attempted refutation of the argument from design by postulating instead the Epicurean hypothesis that given unlimited time the particles of the Universe would go through every combination possible to them. For we simply do not have unlimited time available, and moreover the statistical chances relating to the fine tuning of the Universe are unimaginably greater than the number of sub-atomic particles in the Universe.

The question is how does one explain the fact that if up to thirty of the most significant physical features of the universe had been infinitesimally different, galaxies would not have formed, planetary systems would not have developed and human beings would never have evolved³⁸. The universe looks as if it had been 'designed with the goal of generating and sustaining observers'.³⁹ This is what lies behind the development and discussion of the so-called 'Anthropic Principle'. This exists in both 'weak' and 'strong' forms. The Weak Anthropic Principle says 'We must be prepared to take account of the fact that our location in the universe is necessarily privileged to the extent of being compatible with our existence as observers'. However the chances seem far too remote to be content simply with that position. Let me give an analogy which I have heard Richard Swinburne develop. Imagine a prisoner before a firing squad. All twelve soldiers miss on three occasions and therefore the prisoner is freed. We would not be content to account for his survival simply on the basis that had he not survived the story could not be told. Instead we would look for explanations in terms of the motivation of those who aimed to miss. So too with our presence as observers in the cosmos. The odds are so unlikely that they cry out for explanation in terms of purpose. Hence to make sense of the Cosmos one seems compelled to move to the Strong Anthropic Principle and say 'The Universe (and hence the parameters on which it depends) must be such as to admit the creation of observers within it at some stage.'⁴⁰ In other words the fine-tuning of the Universe leads most naturally to the view that it was goal-directed by some intelligence for the emergence of life and mind. According to Paul Davies 'far from exposing human beings as incidental products of blind physical forces science suggests that the existence of conscious organisms is a fundamental feature of the

³⁷ John Leslie, *Universes* (Routledge 1989) 29,37,3,29,29,28.

³⁸ Brandon Carter, 'Large Number Coincidences and the Anthropic Principle in Cosmology' 1974 cited in John Leslie, ed. *Philosophical Cosmology and Philosophy* (Macmillan, New York 1990) 27. Cited in Cafer Sadyk Yaran 'Scientific Objectivity and Scientific Belief' *In Depth Winter* (1996) 84.

³⁹ John D. Barrow and Frank J. Tipler, *The Anthropic Cosmological Principle* (Oxford and New York, Oxford University Press 1986) 22.

⁴⁰ Carter in Yaran as note 32.

universe. We have been written into the laws of nature in a deep and I believe meaningful way.⁴¹

Does this agreed evidence for the fine-tuning of the Universe prove the existence of a designer God? Not absolutely, for if there were an infinite number of Universes, or even many thousand trillions of Universes one might expect a few to evolve naturally in the way ours has done.⁴² Hence H. Everett's 'Many-world quantum theory' has developed as a naturalistic way of making sense of the phenomena which others attribute to a designer God.⁴³

However one of the most basic principles of science is 'Ockham's Razor' according to which the simplest hypothesis is always the most plausible, and a philosopher should always 'claim existence for as few non-sensible realities as one possibly can' (or in the traditional Latinised translation should 'avoid multiplying entities beyond necessity'.) In this context one could argue that Many-world quantum theory is the most extreme possible instance of a defiance of Ockham's razor. To invoke an infinity of universes in order to explain the remarkable features of the only universe of which we have any knowledge is a remarkable alternative to the God hypothesis. As Swinburne comments, 'faced with such difficulties, we could judge it altogether better to reject the many-universes approach, putting our trust instead in the God hypothesis.'⁴⁴ The same conclusion is reached by the mathematical physicist turned theologian, John Polkinghorne who argues against the many world hypothesis: 'a metaphysical suggestion of equal coherence and greater economy is that there is only one universe which is the way it is because it is not any old world, but the creation of a Creator who wills it to be capable of fruitful process.'⁴⁵

Sir Roger Penrose, Professor of Mathematics at Oxford argues that for our Universe to come into being in the way it has done the 'Creator's aim must have been precise to an accuracy of one part in 10 to the 10 to the 123'. Penrose points out that this is such an extraordinary figure that no one could possibly even write the number down in full. If we were to write it out in the ordinary denary notation it would be 1 followed by so many '0's that 'if we were to write an '0' on each separate proton and each separate electron in the entire universe - and we could throw in all the other particles as well - we should fall short of writing down the figure needed'⁴⁶. When one is talking of odds like this there seems no meaningful difference between creating out of nothing at all, and selecting at odds of this inconceivable order out of the phase space of possible universes!

The second range of data we explored were all based on the apparent agreement that our universe has been incredibly finely tuned as if for the purpose of the emergence of

⁴¹ Paul Davies, *The Mind of God: Science and the Search for Ultimate Meaning* (London, Simon & Schuster 1992) 203.

⁴² John Leslie, *Universes*, 6-8.

⁴³ William Lane Craig, 'The Teleological Argument and the Anthropic Principle' in W.L. Craig and M.S. Mcleod, *The Logic of Rational Theism: Explanatory Essays* (New York, Mellen) 142-43.

⁴⁴ In John Leslie, 'Modern Cosmology' in E. McMullin, *Evolution and Creation* (Notredame, Notredame University Press, 1985) 112.

⁴⁵ John Polkinghorne, 'A revived natural theology' in J. Fennema and I. Paul, *Science and Religion: One World Changing Perspectives on Reality* (Utrecht, Kluwer Academic Publishers 1990) 88.

⁴⁶ Roger Penrose, *The Emperor's New Mind* (Oxford University Press, 1989) 444-45.

life and mind. This can be regarded as a new version of the Argument from Design. These new arguments from modern science do not prove the existence of God, but they do show that belief in God is a very reasonable way of making sense of the way the world is. Faced with such evidence, belief in God might seem more probable than any alternative explanations of reality. This is a radically different situation than that which applied in the recent past in the intellectual world. But I believe it does show that perhaps believers in God might legitimately claim the high ground in the contemporary debate.

Against

Not everyone is convinced by the kinds of argument presented above. We will now consider a range of responses to them.

The Cosmological Argument

Paul Badham suggests that recent developments in physics, combined with a pervasive feature of our normal experience of the world, greatly strengthens the traditional Kalam Cosmological Argument. The argument is this:

1. Everything that begins to exist has a cause of its existence.
2. The universe began to exist.
3. Therefore the universe has a cause of its existence.

The argument appears to be valid: that is to say, the conclusion follows from the two premises. (Though I will have something to say a little later about the relation of the premises to the conclusion.) The key question then is: do we have adequate grounds for accepting the premises. Badham argues that we have highly compelling grounds for accepting the first premise, and, further, that recent science has filled a crucial gap in the traditional cosmological argument: that of providing grounds for the second premise.⁴⁷ I want to consider these suggestions.

Premise 1: Everything that begins to exist has a cause of its existence. Badham quotes the following remark by Craig: ‘Constantly verified and never falsified, the causal proposition may be taken as an empirical generalisation enjoying the strongest support experience affords.’ Since experience provides strong grounds for the claim that *everything* that happens has a cause, we have strong grounds for supposing that the world as a whole has cause. I would like you now to pause for a moment and to make a note of your answer to the question: is Craig correct in his suggestion that the causal proposition [‘Everything that happens has a cause’] is ‘constantly verified and never falsified’ in our normal experience of the world?

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Well, I don’t know about your experience of the world, but it is certainly not true of my experience. If I am to count simply on experience I can only say that every day I am confronted with instances of apparent falsification. To give a single, extremely regular, example from my own life: I put my glasses down in one place; half an hour later they have moved from there to another place *without any cause at all!* Taken at face value, that, and other things of the form, is what I experience. Of course, I don’t

⁴⁷ See pages 8-9 of this module where the question of a possible infinite regress of causes is discussed.

believe that that is the way it really is. I always assume that there is some explanation of things seeming this way: no doubt I misremembered where I left them; or perhaps somebody moved them from one room to the other. One way or another, nothing happened without a cause. That, as I say, is what I assume in cases such as this. But so far as what I actually experience in such cases goes the evidence seems to support the conclusion that now and then things do happen without a cause. For I don't normally stop to work out what actually happened, and sometimes when I try to work it out I simply can't.

Here is another, very different, kind of example. I decide on the spur of the moment that it would be nice to have a chat with John, with whom I have had no contact for over a year. Just as I am about to lift up the phone it rings and John is on the line: for no particular reason he had decided to call for a chat. It was, some will say, a coincidence: there is no explanation of - no cause of - John's phoning me at just the moment when I was about to phone John. Of course, some things that *seem* to be coincidences are not really so. (Perhaps we later manage to piece together an explanation: it is the anniversary of the death of a mutual close friend, and this set the thoughts of both John and myself on a path that led to the other.) And some people suggest that a hidden hand is at work in *all* cases of apparent coincidence. But as far as our actual *experience* goes, 'coincidences' seem to provide another domain of counterexamples to the thesis that everything that happens has a cause. (As at all other points while working on this, or any other, module, if you feel a nagging doubt about what I have said here, make a note of your doubt before reading on.)

I have been speaking of the principle that 'Everything that happens has a cause'. Premise 1 of the cosmological argument is, in fact, slightly more specific than this; for it is concerned with the causes of a particular kind of event: events of coming into existence. I leave it to you to decide whether Craig's claim about what our experience teaches us is any more plausible in relation to the proposition: 'Everything that comes into existence has a cause of its coming into existence'.

I must stress again that, in my everyday life I do not in practice doubt, nor am I encouraging you to doubt, that everything that begins to exist has a cause of its existence. I assume, as, I guess, does pretty well everyone else, that if a cake, a house, or a pile of gravel appears where there was none before there is some cause of this. Whether I have good reason to assume this is, however, another matter. We cannot, I think, take it for granted quite as readily as do Badham and Craig in their defence of the cosmological argument that we do have such reason; and, I suggest, we certainly cannot find such reason in the suggestion that our everyday experience never runs counter to it.

There is a further point here. What we are concerned with in the cosmological argument is the coming into existence of a rather particular kind of thing: the universe. This may be important. When, in the practical affairs of everyday life, we assume that if something has come into existence there must be some explanation of its doing so, we have in mind a picture of what would count as an explanation. At a very general level, the assumption that we make appears to be of the form: if something new comes into existence this is the result of the bringing together in this particular arrangement of the parts of which it is composed. A coming into existence is a combining in a specific way of a number of things – such as the bricks of which a

house is composed - that already existed. But now the whole point about ‘the universe’ – what allows it to play the key role in this argument - is precisely the fact that, as it is supposed, *nothing* existed before it: there were no previously existing elements out of which it was then constructed. In view of this striking difference, it is not at all clear that we can safely carry over our normal assumptions about things coming into existence having causes.

So our question now becomes: does our normal experience of the world provide us with grounds for making any assumption about *cases like this*: cases, that is, in which something comes into existence not as a result of a combining of elements? Make a note of your answer to this question.

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The trouble, as the philosopher C.S. Peirce remarks, is that: ‘Universes are not as plentiful as blackberries’. It is not as though we have had a good bit of experience of things popping into existence from nothing – composed, that is, of parts that simply did not exist before - and found that they always have a cause. Our normal experience of the world can provide no grounds for any claim about what it is reasonable to assume in such a case.

Premise 2: The universe began to exist. My comments on this will be brief, and will amount to little more than a word of warning. Most of us are not physicists, and would not make head or tail of the professional writings of physicists dealing in advanced cosmology. We are dependent on popular presentations of their results by the physicists themselves or others. Now considerable care may be needed in accepting at face value what is said in these presentations. It is important to remember that the original work of these scientists is highly abstract and theoretical. Most of what they write for their professional journals is, I suspect, in the form of mathematical symbols; at any rate, we can be quite sure that it is not in the form of familiar English. What is more, the speculations that are of most interest to the theologically minded are often right at the frontiers of physics, where the scientists themselves may be struggling. There is, however, a big popular demand for pronouncements from the experts on these matters, and so considerable pressure for someone to try to articulate in simple English the conclusions that are reached.

Now it is important to keep all of this in mind as it serves as a caution against assuming too readily that we have a remotely adequate grasp of what is being said. Consider the issue that is our immediate concern: the coming into existence of the universe. In popular presentations that I have encountered, the question of what there was before the ‘Big Bang’ has, in so far as I could understand what was being said, been answered in three, apparently incompatible, ways. Some presentations suggest that there was literally ‘nothing’⁴⁸ before. Others that there was energy, which, with the Big Bang, turned into matter. And still others that there were 11 dimensions, 3 of which, in the Big Bang, became space, 1 time, and the other 7 matter! While I am sure that the physicists are doing their best to explain their discoveries to us, honesty may

⁴⁸ I place ‘nothing’ in scare quotes as I am really not certain that I know what it means in this context. Of course, if somebody tells me that there is ‘nothing’ in the room next door I probably know what she means. But does this example really help us very much in the cosmological context that is our present concern: a context, for example, in which even time and space are to count as ‘somethings’?

compel us to admit that we have only the faintest of glimmerings of what they are talking about. We should, I suggest, be extremely cautious in constructing potentially life-changing arguments on such a basis.

The relation of the premises to the conclusion. I considered the suggestion that the first premise of the cosmological argument is one that our everyday experience of the world gives us overwhelming reason to believe. There is, perhaps, a slightly different way in which the premise might be defended. It is sometimes suggested that the acceptance of something like this premise is a necessary condition of science. It is, then, not so much that we have some evidence for supposing that the premise is true, but that we have to work with this assumption if we are to go in for science. For scientific enquiry is driven by a refusal to accept that anything happens without an explanation: it is of the essence of science that we attempt to fill every gap in our explanations of how things happen.

I have expressed that thought in a number of slightly different ways. But however it is expressed, I am doubtful whether it will help us. The reason is this. While it is true that one who maintains that the universe came into existence without a cause would be left with an embarrassing explanatory gap in his general picture of the world, we will equally be left with such a gap if we maintain that the world was caused to exist by God. For, on the one hand, we are only satisfied by this proposed explanation because we think of God as a being of a radically different kind from the created world or anything in it. If we pictured Him as just another being *within* the creation we would be left with an explanatory question of exactly the same kind as that with which we started. We would be left with the question: what is the cause of *His* existence.⁴⁹ But now, the more different we think of Him as being, the more space there will be for the question: how could anything *He* does bring about the existence of the world? The more different we think of Him as being, the less room there will be for any account of a mechanism by means of which He brings the world into existence.

Now it might, with some justice, be replied that this talk of a ‘mechanism’ is out of place here. The situation is simply this: God willed that the world should come into being, and it did. This is to say, in effect: what we have here is a mystery that we must just accept. Fine. But then it becomes clear that in introducing God to fill an explanatory gap, we have, in fact, done no such thing. We have simply exchanged one mystery for another: the mystery of the world’s coming into existence without a cause for the mystery of how God’s willing something should bring that thing about.

Since my argument here is, I think, liable to be misunderstood I must stress again that my point is not that there is a problem with the idea of God creating the world. My suggestion is, rather, that there is a problem with the following reasoning: because the hypothesis that God exists would fill an explanatory gap, we have reason to believe that He does.

⁴⁹ Paul Badham suggests in his defence of these arguments that the question ‘What caused God to exist?’ does not arise because the theist does not believe that God began to exist. This may be a good response to the point that I make it here. If so, I will have to draw back a bit. One might argue simply that the theist does in fact insist that God is a being of a radically different kind from the created world or anything in it; and that it is not at all clear what would be the significance of calling ‘God’ a being of which this was not so. This would be enough for the rest of my argument at this point.

The same point, or a closely related one, can be made in a slightly different way. It is suggested that it is a deep rooted assumption in our thought about the world that whenever something comes into existence there is a cause of its doing so; and on the basis of this assumption it is argued that it is reasonable to suppose that there is a God who brought the universe into existence. Now we need to note here another deep-rooted assumption: when a person, or some other thing, brings something into existence there is some way in which she does so. As we can express this, there is an answer to the question 'How did she do it?' What is more, not just *any* answer to that question will do. Thus, suppose that after we have been away from home for a month we return to find, to our astonishment, a new house standing on the previously empty plot next door to ours. To our question 'How did it get there?' we receive the reply 'The milk-woman snapped her fingers' (or, perhaps, 'The block of flats down the road gave birth to it'.) On further questioning our informant insists that it is not that the milk-woman has a team of builders who respond to her every snap; it was the snap of her fingers itself that directly brought the house into existence. Can we say that, while no doubt leaving us slightly baffled, our informant is at least acknowledging the requirement that whenever something comes into existence there is a cause of its doing so? Take a moment to ask yourself how you would answer that question.

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My own answer is that I would not say this. What he has offered us is not, as it stands, a possible candidate for the cause of the house coming into existence. As I have said, 'The milk-woman snapped her fingers' might be turned into a candidate by the suggestion of a further mechanism linking her action with the appearance of the house. But in the absence of any such suggestion our informant is not even making a serious attempt to address our question 'How did this get here?' - any more than is the person who responds to our question 'What is holding up this metal beam?' with the words 'A snowflake'.

In the light of this, we can ask: have we provided an answer to the question 'What brought the universe into existence?' when we say 'God did?' The above considerations suggest that even to be a candidate for an answer we must have some conception of a possible mechanism by means of which He did it; we must have some conception of a possible answer to the question 'How did He do it?' What is more, not just any old answer to that question will do - any more than 'She snapped her fingers' will, just like that, be an answer to the question 'How did the milk-lady bring the house into existence?'

Could there be answer of the required form to the question 'How did He do it?'? I leave that as a question for you to reflect on. Its importance, in summary, is this: in the absence of any picture of what such an answer might look like, the suggestion that God did it may no more meet the requirement that there be a cause of the universe coming into being than the suggestion that a snowflake is doing it meets the requirement that there be something holding up a metal beam.

The Argument from Design

Paul Badham suggests that the traditional argument from design has been significantly strengthened by the recent recognition of ‘the fine-tuning of the Universe’. He quotes the following summary of current scientific understanding:

Today in the various fields of physics, astrophysics, classical cosmology, quantum mechanics and biochemistry, various discoveries have repeatedly disclosed that the existence of intelligent carbon-based life on earth at this time depends upon a delicate balance of physical and cosmological constants such that were any of these quantities to be slightly altered the balance would be destroyed and life would not exist.

In the light of the suggestion, made by scientists, that the odds against all of these quantities coming right together are simply colossal, Badham writes:

The odds are so unlikely that they cry out for explanation in terms of purpose. Hence to make sense of the Cosmos one seems compelled to move to the Strong Anthropic Principle and say ‘The Universe (and hence the parameters on which it depends) must be such as to admit the creation of observers within it at some stage.’ In other words the fine-tuning of the Universe leads most naturally to the view that it was goal-directed by some intelligence for the emergence of life and mind.

In response to this argument, I would like to suggest first that the extreme unlikelihood of an event is not, in itself, any grounds for saying that there must be an explanation – a cause - of its happening as it does. Consider the following example. I toss a coin one thousand times, and it comes down in a totally random sequence: heads, tails, tails, tails, heads, heads, tails Now the odds against that sequence are exactly the same as those against a sequence of 1000 consecutive heads. *Every* possible sequence is equally unlikely. Yet we do not insist that there must be some explanation of the random sequence⁵⁰. We only judge that there is reason to suppose that there must be an explanation of what happens if it is in some sense special: for example, if we got a sequence of 1000 heads. Now there may be some puzzling questions here. *Why* should we suppose that the one series, but not the other equally improbable one, must have a cause? In what sense is the one sequence, but not the other, ‘special’? And how ‘special’ does a sequence have to be to stand in need of explanation? While a full treatment of these issues would require some form of answer to these questions, I am not, I’m afraid, going to attempt to supply any such answers. My discussion will stick (as did the defence of the argument from ‘fine-tuning’) at the level of our intuitive sense of what does and what does not stand in need of explanation in terms of some prior cause. In line with that, the lesson that I am taking from the coin tossing example is this: the argument from the fine-tuning of the universe to God requires the claim, not simply that the conditions needed for the

⁵⁰ Some care is needed here. Perhaps we think that there must be an explanation of the result of each throw taken individually: for example, an explanation, perhaps in terms of the precise force and angle at which my thumb struck it, of its coming down heads on a particular throw. But in the case where it comes up heads 1000 times in a row we strongly suspect, not simply that there is a cause of each individual toss producing a head, but that there is some overarching explanation that links together each of the thousand tosses: for example, that the coin was weighted.

emergence of observers are extremely - astronomically - unlikely, but that the emergence of observers is, in some relevant sense, '*special*'.

How, if at all, is such a claim to 'specialness' to be defended? It may not be possible to offer any very adequate answer to this question without doing the detailed work that I have said I am not going to attempt. But a few things can, perhaps, be said.

Here is one thing that might be said: 'The emergence of observers – at least, the emergence of human beings – is enormously important to *us*. That is sufficient grounds for judging it to be 'special' in the sense required for the argument'. What do you think of that proposal? Can you think of an analogy - another example - that might help us to assess the proposal?

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Here is an analogy that occurs to me. I am one of 1000 people who have been condemned to death by a despotic ruler. In his great mercy he declares that each of the condemned will draw a straw and the one who draws the shortest will be set free. I draw the shortest. Now the odds against my doing so are 1000 to 1. Pretty long odds; and my having drawn the shortest is enormously important to *me*. For all that, sticking to the intuitive level at which we have been operating, it does not seem right to insist that there must be an explanation of its having been me who draws the shortest straw.

The case is different in various respects from that involved in the fine-tuning argument. If you think there are differences that are significant for the validity of the reasoning involved in each of them you should make a note of these. I will make only the following comment: the example of the condemned men suggests that the enormous important to *us* of the emergence of observers is not, in itself, sufficient to make this event 'special' – special in the sense required by the fine-tuning argument. As we might put this, we need to find a more objective sense in which the emergence of observers is 'special' if the argument is to go through.

'Well, setting all that to one side, is it not transparently clear that the emergence of conscious life – and, more specifically, of human life – is something deeply special: special in a sense such that it manifestly cries out for explanation when we recognize the quite fantastic odds that were stacked against its ever happening?' Well, some will certainly find this transparently clear; and it may well be that if one *starts* from a position of religious belief of some form one is likely to do so. Suppose, however, that one starts from the assumption that life is a tale told by an idiot, full of sound and fury, signifying nothing. Suppose that one starts from the assumption that consciousness in general, and human life in particular, is just one more of the absurd things thrown up by the roaring, rambling processes that make up the history of the universe: processes that, as one sees it, are apparently going nowhere at all. If one starts from *that* point one may not recognize anything here that cries out for explanation.

Perhaps, then, the situation is this. While a key premise of the argument is likely to appear clearly sound from the perspective of one who already has religious belief, it may not do so to one who is not already within that perspective; and it is far from

clear how we could show such a person that the premise is one that she should accept.⁵¹

What is, perhaps, the same point can be made in another way. Badham quotes the observation by Barrow and Tipler that the universe looks as if it had been ‘designed with the goal of generating and sustaining observers’. Is it unfair to reply: ‘Well, it may look like that to them; but to someone with rather different interests it would look as if it had been designed with the goal of generating and sustaining fossilized ammonites or digital watches; and to someone with different interests again it would not look like something that had been designed at all (and certainly not designed by a being that is worthy of our reverence and praise)’?

I have deliberately presented this in the form of a question. I am not certain that this response to the fine-tuning argument and the anthropic principle *would* be fair. It might, for example, be replied: ‘The fact that this version of the argument from design will cut no ice with some, particularly disenchanted, people hardly shows that it is not a genuine argument that has real force. After all, there are limits to what one should expect from *any* argument. The fact that we can’t teach advanced mathematics to someone who won’t pay any attention whenever we get to numbers above five hardly shows that there are no genuine arguments in advanced mathematics’. I must leave it to you to decide whether this might be a good response to what I have said.

Religious implications of the arguments

I will close with a brief comment on possible religious implications of these arguments for the existence of God. It is possible that the picture of God’s relation to the universe that is presupposed by (or implied by) these arguments raises potentially awkward theological questions. The picture is one in which God created the universe at a particular past point in time. Now if one thinks of the matter like that it might seem that there must be room for the question: what was God doing before He created the universe? Are we to picture Him as trying to decide whether it is a good idea to create a universe? Or, perhaps, as trying to work out how to do it, or as waiting for a rainy day on which He has nothing better to do? Now these questions are, I take it, clearly idiotic. That is to say: a religious believer should find them clearly idiotic. But now, if there is something wrong with the questions there must, it seems, be something wrong with picture of God’s creation that led to them: the picture, that is, that is embodied in the forms of argument for His existence that we have been considering.

Suppose that someone responded to the above charge in the following way: ‘Since God is not in time, this talk of what He was doing *before* He created the universe is senseless. For God there is no “before” or “after”’. Do you think that this would meet the difficulty?

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⁵¹ If the situation is something like this it might help to explain why thoughtful and intelligent believers and non-believers cannot agree whether arguments of this form are any good.

It seems to me clear that it would not. There may well be something right in the thought that God is not in time: that is to say, this may well be a claim that the religious believer should make. It does not, however, appear to be a claim that can be combined with the picture of God's creation that we have been considering. For the suggestion of the arguments we have looked at is that 15 billion years ago God did something that brought the universe into existence. And that, surely, requires that God is in time.

In the light of these considerations, it seems to me possible that the believer would do well to picture the dependence of the world on God in a quite different way: should not think of this dependence in terms of its having coming into existence at some point in the past as a result of some action on God's part. While I do not have anything very positive to propose at this point, it may be helpful to close with a question. While those who put forward the arguments we have been considering are particularly struck by the idea that the world came into existence (with the 'big bang') at a particular point of time in the past, are they clearly right to be? Should we, that is, be *more* struck by this than by the fact that it *continues* in existence? Is the world's popping into existence from nothing more extraordinary than the fact that it does not pop out of existence into nothing? I am tempted to say that if the existence of the world is astonishing what is astonishing about this has nothing to do – or at least nothing specifically to do - with how it came to be; and so nothing to do with the scientific arguments that are eloquently articulated by Paul Badham in the first half of this section.⁵²

In this section of the module you have been presented with two very different assessments of a particular set of arguments for the existence of God. There is much here that remains unresolved. As at every other point in this module, our aim has not been to tell you how to think about these issues, but to give you some help in thinking them through for yourself.

READING

- P.Davies, *The Mind of God* (London: Simon & Schuster, 1992), chs. 7-8.
R.Le Poidevin, *Arguing for Atheism* (London & New York: Routledge, 1996), chs 3-5
J.Polkinghorne, *Belief in God in an Age of Science* (New Haven & London: Yale University Press, 1998), ch. 3.
J.J.C.Smart & J.J.Haldane, *Atheism & Theism* (Oxford: Blackwell Publ., 1996)
R.Swinburne, *Is There a God?* (Oxford University Press, 1996), chs. 2, 4.
K.Ward, *God, Chance and Necessity* (Oxford: Oneworld Publ., 1996), chs. 1-3.

⁵² Paul Badham touches on suggestions of this form on pages 25-6.