

No mercy on the violent river of life, - his summary of River out of Eden--The Telegraph May 10, 1995

An exchange between Michael Poole and Richard Dawkins. Posted by Christian Students in Science (CIS). Originally published in Science and Christian Belief Vol 6 April 1994 and Vol 7 1995:

No mercy on the violent river of life - An exchange between Michael Poole (Christian Students in Science) and Richard Dawkins

Article in The Telegraph Wednesday May 10th, 1995

Article Adapted from River Out of Eden

CHARLES DARWIN lost his faith with the help of a wasp. "I cannot persuade myself," Darwin wrote, ---that a beneficent and omnipotent God would have designedly created the Ichneumonidae with the express intention of their feeding within the living bodies of caterpillars." Actually, Darwin's gradual loss of faith, which he downplayed for fear of upsetting his devout wife Emma, had more complex causes.

His reference to the Ichneumonidae was aphoristic. The macabre habits to which he referred are shared by their cousins the digger wasps. A female digger wasp not only lays her egg in a caterpillar (or grasshopper or bee) so that her larva can feed on it. According to Fabre she also carefully guides her sting into each ganglion of the prey's central nervous system so as to paralyse it but not kill it. This way, the meat keeps fresh.

It is not known whether the paralysis acts as a general anaesthetic, or if it is like curare in just freezing the victim's ability to move. If the latter, the prey might be aware of being eaten alive from inside, but unable to move a muscle to do anything about it. This sounds savagely cruel but nature is not cruel, only pitilessly indifferent. This is one of the hardest lessons for humans to learn. We cannot accept that things might be neither good nor evil, neither cruel nor kind, but simply indifferent to all suffering, lacking all purpose.

The river of my new book's title is a river of DNA and it flows through time, not space. DNA is the hereditary chemical that characterises every living thing by carrying its genetic specifications. This is a river of information not of bones and tissues: a river of abstract instructions for building bodies, not a river of solid bodies themselves. The information passes through bodies, and affects them, but it is not affected by them on its way through.

Instead of a river of genes, we could equally well speak of a band of good companions marching through geological time. All the genes of one breeding population are, in the long run, companions of each other. In the short run they sit in individual bodies and are temporarily more intimate companions of the other genes that share a body. Genes are the smallest unit of heredity and they survive down the ages only if they are good at building bodies that are good at living and reproducing in the particular way of life chosen by the species.

But there is more to it than this. To be good at surviving, a gene must be good at working together with the other genes in the same species - the same river. To survive in the long run, a gene must be a good companion. It must do well in the company of, or against the background of, the other genes in the same river. Genes of another species are in a different river. They do not have to get on well together: not in the same sense, anyway, for they do not have to share the same bodies.

The feature that defines a species is that all members of any one species have the same river of genes flowing through them, and all the genes in a species have to be prepared to be good companions of one another. A new species comes into existence when an existing species divides

into two. The river of genes forks in time.

From a gene's point of view, speciation, the origin of new species, is the long goodbye. After a brief period of partial separation, the two rivers go their separate ways forever, or until one or other dries extinct into the sand. Secure within the banks of either river, the water is mixed and remixed by sexual recombination. But water never leaps its banks to contaminate the other river.

After a species has divided, the two sets of genes are no longer companions. They no longer meet in the same bodies and they are no longer required to get on well together. There is no longer any intercourse between them - and intercourse here means literally sexual intercourse between their temporary vehicles, their bodies.

When we think of the divide that leads to all the mammals, as opposed to, say, the stream that led to the grey squirrel, it is tempting to imagine something on a grand Mississippi/Missouri scale. The mammal branch we are talking about is, after all, destined to branch and branch and branch again until it produces all the mammals from pigmy shrew to elephant, from moles underground to monkeys atop the canopy.

The mammal branch of the river is destined to feed so many thousands of important trunk waterways, how could it be other than a massive, rolling torrent? But of course this feeling is wrong. When the ancestors of all the modern mammals broke away from those that are not mammals, the event would have seemed no more momentous than any other speciation. It would have gone unremarked by any naturalist who happened to be around at the time. The new branch of the river of genes would have been a trickle, inhabiting a species of little nocturnal creature no more different from its non-mammalian cousins than a red squirrel is different from a grey.

It is only with hindsight that we see the ancestral mammal as a mammal at all. In those days it would have been just another species of mammal-like reptile, not markedly different from perhaps a dozen other small, snouty, insectivorous morsels of dinosaur-food.

Natural selection is concerned only with the narrow present - with the survival of DNA through millions of successive present moments, strung out along millions of branches of the river of DNA. Natural selection is as indifferent to the distant future of the race as it is indifferent to the suffering of the individuals being selected. For, to return to our pessimistic beginning, when the utility function - that which is being maximised - is DNA survival, this is not a recipe for happiness.

If nature were kind, she would at least make the minor concession of anaesthetising caterpillars before they are eaten alive from within. But nature is neither kind nor unkind. She is neither against suffering, nor for it. Nature is not interested in suffering one way or the other unless it affects the survival of DNA.

It is easy to imagine a gene that, say, tranquillises gazelles when they are about to suffer a killing bite. Would such a gene be favoured by natural selection? Not unless the act of tranquillising a gazelle improved that gene's chances of being propagated into future generations. It is hard to see why this should be so and we may therefore guess that gazelles suffer horrible pain and fear when they are pursued to the death - as most of them eventually are.

The total amount of suffering per year in the natural world is beyond all decent contemplation. During the minute that it takes me to compose this sentence, thousands of animals are being eaten alive, others are running for their lives, whimpering with fear, others are being slowly devoured from within by rasping parasites, thousands of all kinds are dying of starvation, thirst and disease. It must be so.

If there is ever a time of plenty, this very fact will automatically lead to an increase in population until the natural state of starvation and misery is restored. Theologians worry away at the "Problem of Evil" and a related Problem of Suffering. On the day that I originally wrote this paragraph, the

newspapers were filled with one of those heartrending disasters, the tragic crash of a busload of children.

Not for the first time, clerics were in paroxysms over the theological question, in the words of The Sunday Telegraph, ---How can you believe in a loving, all-powerful God who allows such a tragedy?"

The paper went on to quote one priest: "The simple answer is that we do not know why there should be a God who lets these awful things happen. But the horror of the crash, to a Christian, confirms the fact that we live in a world of real values: positive and negative. If the universe was just electrons, there would be no problem of evil or suffering.

On the contrary, if the universe were just electrons and selfish genes, meaningless tragedies are exactly what we should expect, along with equally meaningless good fortune. Such a universe would be neither evil nor good in intention. It would manifest no intentions of any kind.

In a universe of blind physical forces and genetic replication, some people are going to get hurt, other people are going to get lucky, and you won't find any rhyme or reason in it, or any justice. The universe that we observe has precisely the properties we should expect if there is, at bottom, no design, no purpose, no evil and no good, nothing but blind, pitiless indifference. As that unhappy poet A E Housman put it:

For Nature, heartless, witless
Nature
Will neither know nor care.

DNA neither knows nor cares. DNA just is. And we dance to its music.

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A Critique of Aspects of the Philosophy and Theology of Richard Dawkins
Michael Poole

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Pronouncements made by scientists about religion are frequently seen as carrying some special authority. Undue weight may therefore be attached to their views on matters outside of their own fields of expertise. This possibility seemed to be particularly acute during Richard Dawkins' 1991 Royal Institution Christmas Lectures, both on account of the number of antireligious assertions and of the youth of the audience. It is because of the widespread attempts which Dawkins has made to disseminate his personal world - view in the name of science, that a paper examining his claims seems called for. For those unfamiliar with his works, this paper offers a commentary on scientific naturalism.

Keywords: Richard Dawkins, design argument, evolution, explanation, faith, God, language, meaning, meme, metaphor, miracles, purpose, religion, selfish gene, supernatural.

Introduction

Richard Dawkins is Reader in Zoology in the University of Oxford. He has a deservedly high reputation in his field of ethology, and his book *The Extended Phenotype* has been described by one reviewer as 'a contender for the title of the most important contribution to evolutionary biology in the 1980s'. However, since this book is possibly one of Dawkins' less contentious works so far as the subject of this paper is concerned, it does not feature prominently here.

Dawkins has also made numerous television appearances, major ones including *The Blind Watchmaker*, BBC 2 Horizon, 19 January 1987 and the 1991 Royal Institution Christmas Lectures, *Growing Up in the Universe*, broadcast on BBC 2 in December 1991 and repeated one year later.

In addition to his Zoological studies, Dawkins has made frequent excursions into philosophy and theology in his popular writings, on television, in debates and in letters to the press. He has contributed to the science/religion debate by pointing out, along with others, weaknesses in the arguments of those Creationists who claim that evolution cannot account for the development of complex features like the eye. But he has also relentlessly advocated the conflict thesis.

Theology

It might appear odd to speak of the 'theology' of Richard Dawkins on account of his declared aversion to the subject, not least in his letter to *The Independent* following the announcement of the setting up of the Starbridge Lectureship in Theology and Natural Science at Cambridge.

What has 'theology' ever said that is of the smallest use to anybody? When has 'theology' ever said anything that is demonstrably true and is not obvious? ... What makes you think that 'theology' is a subject at all?

However, Dawkins' position can better be understood by initially clarifying what kind of a god he does not believe in. So the first part of this paper outlines Dawkins' published views on such theological matters as God, faith, miracles, the supernatural, and religion in general. This is followed by more general philosophical considerations about the nature of explanation, reductionism and the use of language. There is of course no sharp dividing line between the theology and the philosophy under review; it all falls beneath the umbrella of philosophical theology.

Religion

Dawkins' view of religion is that it is a scientific theory:

... until recently one of religion's main functions was scientific; the explanation of existence, of the universe, of life ... So the most basic claims of religion are scientific. Religion is a scientific theory. [SCAG - key at end of paper]

Such a claim indicates the need for clarifying (i) the nature of a scientific theory and (ii) the distinctions between the meaningful and valid ways in which terms and criteria for testing truth - claims are used within science and religion. Each of these would be huge tasks in themselves. Some points about the differences between the two disciplines will emerge in what follows, but all that is necessary at this stage is to recognise that Dawkins claims that science and religion are rival explanations of our world. This claim is pivotal to his whole position, making the subject of the nature of explanation central to this paper. But before reaching that section, Dawkins' notion that these types of explanations are in competition will be evident in his views on the intermediate subjects.

God

In accordance with the above, Dawkins sees the 'hypothesis of God' as an explanatory hypothesis which is in competition with evolution by natural selection: 'God and natural selection are, after all, the only two workable theories we have of why we exist.' [EP p. 181] Dawkins' oft - repeated

objection to the 'hypothesis of God' is frequently based on the notion of complexity -

... any God capable of intelligently designing something as complex as the DNA/protein replicating machine must have been at least as complex and organised as that machine itself. Far more so if we suppose him additionally capable of such advanced functions as listening to prayers and forgiving sins. To explain the origin of the DNA/protein machine by invoking a supernatural Designer is to explain precisely nothing, for it leaves unexplained the origin of the Designer. [BWM, p. 141]

and also on the concept of probability, for

... any god worthy of the name must have been a being of colossal intelligence, a supermind, an entity of enormous sophistication and complexity. In other words, an entity of extremely low statistical probability - a very improbable being. [SCAG]

This kind of reasoning, culminating in the question 'But who designed the divine creator?' [CLSG, p. ill is repeated in several places [e.g. CL 2]. Dawkins' constant assumption, echoing the popular demand, 'who made God?', is that since our common experience indicates that material objects have beginnings, God would also have had to have had an originator. In that sense, the 'god' in whom Dawkins disbelieves is a 'god' in whom the major world religions, Christianity, Judaism and Islam do not believe either. His assumption is a particularly interesting one from the point of view of consistency of argument, since it is precisely this kind of analogical argument that he so vehemently rejects if applied to the world having a designer by comparison with everyday artifacts having designers.
The supernatural

Again by invoking probability, Dawkins attempts to dismiss events which are claimed to be of supernatural origin. In his Christmas Lectures he assured his youthful audience that

Growing up in the universe. . . also means growing out of parochial and supernatural views of the universe . . . trying to understand how the universe works, not copping out with superstitious ideas that only seem to explain things but actually explain nothing. Well, you might say, can we really afford to be snooty about the supernatural? After all many of us have had uncanny experiences ... [CL 1]

In trying to persuade his audience that there is no substance to supernatural claims Dawkins used an argument which needs to be scrutinised carefully. He asked each of the young people to will the outcome of the tossing of a coin to be heads or tails and for those who got it wrong to sit down. Eight tosses eliminated all but one of the audience.

The 'achievement' of the 'winner' was interpreted thus:

It had to come out, because of the number of people here. It had to come out that somebody was apparently psychic ... he could have thought about ham - and - eggs.

Now when people write into the papers with uncanny experiences, it's just like that, because the circulation of a tabloid paper is up in the millions. There's got to be somebody out there having an amazing experience at this very moment and it means absolutely nothing. So ... whenever you hear a story about uncanny, spooky, telepathic experiences, think about this experiment and think about how likely it would be to come about anyway. [CL 1]

So the argument started off that, given enough people and enough time, even events which are of low probability for any one person are to be expected - and there is of course truth in this claim. Then came the enormous and unjustifiable leap of equating improbable events in the precise

calculus of statistical probability - in this case eight consecutive, correct predictions ('willings') of the fall of a coin - with 'uncanny, spooky, telepathic experiences', among which Dawkins would presumably include answered prayer.

In similar vein Dawkins warned that 'growing up - in the sense of achieving a grown - up understanding of the universe' [CL 5] carries dangers of self deception, for

... each of those mental tools - imagination, language and technology is double edged ... A brain that's good at simulating models in imagination - things that aren't there - is unfortunately, also, almost inevitably in danger of self - delusion ... if ever we hear a story that somebody has seen a vision, been visited by an archangel, heard voices in his head, we should be immediately suspicious. [CL 5]

Although we were not told why we should be immediately suspicious, the implication was that all these things are illusory and will eventually be displaced by a better understanding of science:

As time goes by and our civilisation grows up more, the model of the universe that we share will become progressively less superstitious, less small - minded, less parochial. It will lose its remaining ghosts, hobgoblins and spirits, it will be a realistic model, correctly regulated and updated by incoming information from the real world. [CL 5]

Blame for children retaining 'superstitious' ideas about God is laid upon schools and upon parents:

Most people, I believe, think that you need a god to explain the existence of the world, and especially the existence of life. They are wrong, but our education system is such that many people don't know it. [SCAG]

Children of a certain age believe what they're told. Father Christmas and tooth fairies are harmless enough. But a mind that's capable of believing in fairies is a mind that's vulnerable to all manner of other stuff. [CL 5]

How much of what we believe about our world is the result of what we have been conditioned or told to think? To what extent are we influenced by our parents and our surroundings? Or do we believe what we believe because we have actually and quite independently thought it through? [CLSG, p. 27]

But presumably Dawkins would not direct such criticisms against parents who taught their children that there is no God and insisted that answers to the question '. . . what is life and what, if anything, is it for?' can only be provided, as Dawkins claims, by 'science'. [CL 1] Also, in keeping with the sentiments expressed in the last quotation, would Dawkins commend children who, although reared by atheist parents, came to believe in God after having 'quite independently thought it through'?

Miracles

The notion of probability is once more invoked over the concept of miracle, which is lumped together with 'Chance, luck, coincidence'.

... events that we commonly call miracles are not supernatural, but are part of a spectrum of more - or - less improbable natural events. A miracle, in other words, if it occurs at all, is a tremendous stroke of luck. Events don't fall neatly into natural events versus miracles. [BWM, p. 139]

To regard miracles simply as events of very low probability may reflect one popular use of the word 'miracle' - to describe for example the unlikely event of somebody surviving a mid - air collision - but, apart from the rarity aspect, it has little to do with any biblical concept of miracle. For such events are usually associated with the agency of God, carrying with them the idea of a sign. Wonder,

significance and (usually) divine agency are all involved; they are not just 'more - or - less improbable natural events'. Dawkins' free use of 'improbable' does however raise questions about his use of the notion of 'probability'. What does he mean by calling God 'a very improbable being', or by saying: 'There's got to be [i.e. probable to the point of certainty] somebody out there having an amazing experience at this very moment' or indeed 'miracles . . . are part of a spectrum of more - or - less improbable natural events'? For Dawkins does not explicate the meanings he assigns to the term 'probability'. Is it simply a subjective expression of confidence? Is it a judgement based on calculation from probabilities calculated on some supposedly a priori grounds? Or is it a mathematical relationship? In the coin - tossing exercise, but certainly not with 'uncanny, spooky, telepathic experiences', the meaning of probability is precise, being the ratio of the number of ways in which something happens - eight consecutive heads uppermost - to the number of ways in which something could happen, which is 28, i.e. a probability of 1:256. But a long run frequency theory of probability is hardly applicable to God. Neither can it validly be applied to an 'amazing experience', when each one is unique (unlike the binary outcomes of coin - tossing) and each must be judged separately for its worth. There is no way of assigning mathematical probabilities to unique events. Faith

Faith is the great cop - out, the great excuse to evade the need to think and evaluate evidence. Faith is belief in spite of, even perhaps because of the lack of evidence ... Faith is not allowed to justify itself by argument. [SCAG]

Similar assertions appear on pp. 196ff SG and pp. 330f SG. 'Faith' religious faith that is - is taken by Dawkins to be unevidenced belief. It is not clear what he means by 'because of, the lack of evidence', but there is a perfectly unambiguous word already in the English language for unevidenced belief or for beliefs which are actually contradicted by the evidence, and that is credulity. Dawkins' indiscriminate use of the word 'faith' is confusing since the word is not univocal. While disparaging faith in religious usage, Dawkins uses faith with approval in another context:

Put your trust in the scientific method. Put your faith in the scientific method, There's nothing wrong with having faith . . . there's nothing wrong with having faith in a proper scientific prediction. [CL 1]

In addition to portraying 'faith' - used in a religious sense as unevidenced belief, Dawkins also depicts it as voluntaristic in character, devoid of substance, reflecting only the 'will to believe'. So he dismisses some Creationists' claims that the Paluxy River 'footprints' show that humans and dinosaurs were around at the same time, saying

they saw it because they wanted to see it. They believed it because it fitted with their world - view. They were blind to the truth that was staring them in the face. [BWM TV]

But this is a bad argument for rejecting anyone's views, for it tells us nothing about the truth or falsity of what they believe. One can both want to believe something and it can be true. The grounds for rejecting this particular claim are provided by geological and other evidence, not by whether anyone wished or did not wish to believe it. The difficulty about charging others with wishful thinking is that it is to use a double - edged sword, one which can be wielded equally well against those who believe that there is no God. Such a view of religious faith as voluntaristic, unevidenced belief stands in stark contrast to that expressed in the closing paragraph of F. F. Bruce's *The New Testament Documents*:

The earliest propagators of Christianity welcomed the fullest examination of the credentials of their message. The events which they proclaimed were, as Paul said to King Agrippa, not done in a corner, and were well able to bear all the light that could be thrown on them. The spirit of these early Christians ought to animate their modern descendants. For by an acquaintance with the relevant evidence they will not only be able to give to everyone who asks them a reason for the hope that is in them, but they themselves, like Theophilus, will thus know more accurately how secure is the basis of the faith which the now more accurately how secure is the basis of the faith which they

have been taught.

Christian faith is grounded on a combination of evidence, including that drawn from history, personal experience and the world around. The justification for such belief is, as Mitchell has argued, "in the nature of a cumulative case. Like the clues in a detective story, no individual items of evidence may be totally compelling on their own, but together they may build up a convincing case, sufficient for action."

Dawkins conducts a further foray against faith as '...capable of driving people to such dangerous folly that faith seems to me to qualify as a kind of mental illness... powerful enough to immunize people against all appeals to pity, to forgiveness, to decent human feelings.' [pp. 330f SG] The argument is a tired one. While acknowledging the atrocities that have been committed - supposedly in the name of God - and heeding the criterion of Jesus for distinguishing between the genuine and the bogus, that 'by their fruit you will recognise them' (Matt 7:15 - 23), it simply will not do to dismiss religious faith in this way. It is superfluous to list the noble deeds of the faithful. The bad argument can be highlighted by pointing out that some of the most evil deeds committed have been occasioned by sexual desire. But this is hardly a good reason for avoiding sexual activity. Right use, not disuse, is the antidote to misuse.

To summarise so far, on theological matters Dawkins treats the concept of God as that of a created being; faith as unevidenced belief; and miracles simply as 'more - or - less improbable natural events'. Confusion is inevitable since the words 'God', 'faith' and 'miracle' are the same words which Christians already use; and the meanings assigned to them by Dawkins are so different from biblical thought that they become a kind of theological 'Newspeak'.

Explanation

A major, probably the major, philosophical difficulty encountered Dawkins comments about religion is the equivocal way in which he uses the word 'explanation'. Take for example the following assertion:

The only thing he [Paley] got wrong - admittedly quite a big thing - was the explanation itself. He gave the traditional religious answer to the riddle, but he articulated it more clearly and convincingly than anybody had before. The true explanation is utterly different, and it had to wait for one of the most revolutionary thinkers of all time, Charles Darwin. [BWM, p. 41]

Now if all that Dawkins meant by this was that Paley's idea of separate creations was wrong in view of current understanding of the origin of species, the statement could pass without comment. But it is his claim in many different places that religious explanations are displaced by scientific ones which is open to criticism. His naturalistic position only admits physical explanations:

The kind of explanation we come up with must not contradict the laws of physics. Indeed it will make use of the laws of physics, an nothing more than the laws of physics. [BWM, p. 151]

Of course if the required explanation is a scientific one, the statement is unobjectionable. But there appears to be no acknowledgement, in any the writings of Dawkins which I have consulted, that religious explanation in terms of the actions of a divine agent are logically compatible with scientific explanations of the mechanisms of the processes involved. The concept of explanation is more multifaceted than Dawkins appears to recognise. To explain something is to make it plain and there are various ways of doing this. The literature on the nature of explanation is vast, but Brown and Atkins have set out a simple analysis of the concept:

Our typology consists of three main types of explanation. These may be labelled the Interpretive, the Descriptive and the Reason - Giving. They approximate to the questions, What?, How?, and Why? Interpretive explanations interpret or clarify an issue or specify the central meaning of a term or statement ... Descriptive explanations describe processes structure and procedures ... Reason-giving explanations involve giving reasons based on principles or generalisations, motives,

obligations values.

So, typically, an object such as a thermostat might have a number of compatible explanations:

An interpretive explanation

A thermostat is a device for maintaining a constant temperature.

A descriptive explanation

A (particular) thermostat consists of a bimetallic strip in close proximity to an electrical contact.

A reason - giving (scientific)

explanation Constant temperature is maintained because, when the temperature falls, the bimetal strip bends so making electrical contact. It switches on a heater which operates until at a predetermined temperature, the bimetal strip bends away from the contact, thereby breaking the circuit.

A reason - giving (motives)

explanation An agent wished to be able to maintain enclosures at constant temperatures to enable people to work comfortably, ovens to cook evenly, and chickens to hatch successfully.

It is with the reason - giving explanations that our concerns lie. For it needs to be understood that there is no logical conflict between reason - giving explanations which concern mechanisms, and reason - giving explanations which concern the plans and purposes of an agent, human or divine. This is a logical point, not a matter of whether one does or does not happen to believe in God oneself. For it is an invalid reason for rejecting the concept of a divine creator, that we understand how the world came into being. But this point is one which Dawkins consistently overlooks. He fails to acknowledge that there is no logical contradiction between the claim that living things are the outcome of evolution by natural selection and that they could also be the outcome of the plan and purposes of an agent God.

Dawkins' argument that 'Evolution starts from simple beginnings ... We don't have to start with a complicated thing like a creator.' [CL 2] might have some force if God's agency was indeed an explanation of the same type as a scientific explanation, in view of Ockham's principle that 'It is vain to do with more what can be done with fewer'. But the explanations are of different types, and the philosopher and theologian William of Ockham certainly did not mean that theological explanations were displaced by explanations of mechanisms! So in collapsing the distinction between these two type of explanations and treating them as alternatives, Dawkins is committing a type error in explanation. In fact he is making the classic explanatory type - error - Coulson's ubiquitous 'God - of - the - gaps' which accords 'god' the status of being the same type of explanation as a scientific one, one which can be 'plugged in' to the gaps which science is not yet able to fill. So, working from the erroneous belief that the God in whom Christians and others believe is a God - of - the - gaps, Dawkins' task must be to fill the gaps with scientific explanations on the further mistaken belief that they have replacement status for God. On this misconception, the gaps, being filled or capable of being filled, means that you do not 'need a god to explain the existence of the world, and especially the existence of life'.

There are of course very good reasons for trying to fill in the gaps. Coulson, who coined the phrase 'God - of - the - gaps', wisely recommended out of his Christian convictions that, 'When we come to the scientifically unknown, our correct policy is not to rejoice because we have found God; it is to become better scientists. For the scientific enterprise is based on a belief that gaps can be filled - but with scientific explanations, not with talk 'about' God. So there is a restricted sense in which it is true to say that science has no need for God, that talk about God is unnecessary in science. Its practitioners have chosen to confine science to physical observables and consequently talk about God forms no part of a scientific explanation. But that does not justify any scientist in claiming that the methodological decision to be silent about God means that science has disproved God! Reductionism

Reductionism also belongs under the canopy of explanation and it needs to be distinguished in its various forms. Using Ayala's nomenclature, there is the theologically benign methodological reductionism which is simply one of the standard scientific procedures of reducing things to their

component parts for study. Within this framework Dawkins' methodological approach fits comfortably:

For those who like 'ism' sorts of names, the aptest name for my approach to understanding how things work is probably 'hierarchical reductionism'. If you read trendy intellectual magazines, you may have noticed that 'reductionism' is one of those things, like sin, that is only mentioned by people who are against it The nonexistent reductionist - the sort that everybody is against, but who exists only in their imaginations - tries to explain complicated things directly in terms of the smallest part, even, in some extremes of the myth, as the sum of the parts! The hierarchical reductionist, on the other hand, explains a complex entity at any particular level in the hierarchy of organization, in terms of entities only one level down the hierarchy; entities which, themselves, are likely to be complex enough to need further reducing to their own component parts; and so on. [BWM, p. 13]

He illustrates his position by reference to the components of a car. However, from his naturalistic stance Dawkins also espouses reductionism in its second form of ontological reductionism [ontology: the study of existence, of being]. In denying God and the supernatural, Dawkins expresses his belief that the material is all that there is. Ontological reductionism, commonly abbreviated to reductionism and dubbed by MacKay as 'nothing buttery', 'is taken to imply that religion is just psychology, psychology is basically biology, biology is the chemistry of large molecules, whose atoms obey the laws of physics, which will ultimately account for everything!' The difficulty about any attempt to justify a dogmatic assertion that the material is all that exists, is that it would require some privileged insight into the way things actually are, in order to know whether it is true or not.

Design

The 'Argument from Design' in its best known form was expounded by the eighteenth - century theologian William Paley. Dawkins confesses an admiration for Paley. for his 'passionate sincerity,' even though he regards his solution as 'wrong, gloriously and utterly wrong. The analogy between telescope and eye, between watch and living organism, is false.' [BWM, p. 5] Dawkins is of course correct in recognising a philosophical weakness in one of the traditional 'proofs' of the existence of God - the Argument from Design. But there is more to be said about the matter of design than this. Dawkins allows that the natural world looks as though it has been designed and rightly attributes this to our experience of many complex and purposeful things which have been designed. But he then goes on to claim that, since the mechanism of chance variations + natural selection can account for the outcome of complexity, divine agency cannot be involved, whereas such an account neither proves nor disproves God's activity.

Living objects ... look designed, they look overwhelmingly as though they're designed. But it's terribly, terribly tempting to use the word designed. Time and time again I have to bite my tongue and stop myself saying, for example, that this swift is designed for rapid, high speed, highly manoeuvrable flight and, as a matter of fact, when talking to other biologists, we none of us bother to bite our tongues. We just use the word designed. But I've told you that they are not designed and coined the special word 'designoid'. . . [CL 2]

This [appearance of design] is probably the most powerful reason for the belief, held by the vast majority of people that have ever lived, in some kind of supernatural deity. It took a very great leap of the imagination for Darwin and Wallace to see that, contrary to all intuition, there is another way and, once you have understood it, a far more plausible way, for complex 'design' to arise out of primeval simplicity. [BWM, p. xiii]

Once again the underlying muddle over the nature of explanation has surfaced. Dawkins takes the existence of a mechanism accounting for adaptation as a reason for dismissing any idea of design. But the reason is baseless. The existence of evolutionary mechanisms modifies the form of Paley's claims, but it does not eliminate all idea of design. For instance, one argument favoured by Darwin was that the laws of nature were themselves designed. Charles Kingsley found it 'just as noble a

conception of Deity, to believe that He created primal forms capable of self development ... as to believe that He required a fresh act of intervention to supply the lacunas [gaps, missing parts] which He Himself had made. Indeed it could be argued that evolution by natural selection is a clever way of ensuring that available ecological niches are occupied; and that if climate and food supplies change, provided the changes are not too rapid, populations of living things are likely gradually to adapt to these changes, rather than dying out. In fact, Frederick Temple, in his 1884 Bampton Lectures made the point that

What is touched by this doctrine [of Evolution] is not the evidence of design but the mode in which the design was executed.. . In the one case the Creator made the animals at once such as they now are; in the other case He impressed on certain particles of matter ... such inherent powers that in the ordinary course of time living creatures such as the present were developed ... He did not make the things, we may say; no, but He made them make themselves.

The fact that the processes can be described - as Dawkins does - by words like automatic, does not eliminate any idea of divine agency. It is all very well to say that

A designoid object is an object that LOOKS good enough for it to have been designed, but which in fact has grown up by an entirely different process, an automatic, unguided and wholly unthought - out process. [CLSG, p. 11]

- but 'automatic' is not a word which entails 'unguided and wholly unthought - out'. In the second Gospel, Mark himself uses it:

A man scatters seed on the ground ... the seed sprouts and grows, though he does not know how. All by itself [automatos - Eng. automatic] the soil produces corn - first the stalk, then the ear, then the full grain in the ear. [4:2 7f, NIV]

As to whether processes which involve chance/random events + selection of some kind can be seen as divinely managed depends to some extent on the meanings attached to the words chance and random, something which is outside of the scope of this paper. Suffice to say that the technical meanings of these two terms carry no metaphysical overtones. Indeed, Bartholomew, Peacocke and others have argued that God can create through the operation of what we call chance, within a lawlike framework. But Dawkins does not appear to recognise that the two ideas of processes and agency are logically compatible. Yet, in an almost throwaway comment in the second of the Christmas Lectures, he appears to undermine his whole position of claiming that the processes of chance + selection are incompatible with the actions of an intelligent agent. For he referred en passant to the work of 'Ingo Rechenberg from Germany ... [who] designs windmills and he claims that he designs his windmills by a kind of natural selection.' [CL 2] In the TV programme, The Blind Watchmaker, Dawkins elaborated slightly on Rechenberg's 'evolution' of ideal shapes for aerofoil sections which minimise drag, and referred to the process as 'Darwinian design'.

Rechenberg's book 'Evolutionstrategie' Optimierung Technischer Systeme Nach Prinzipien der Biologischen Evolution, (Stuttgart: Fromman - Holzboog, 1973), is not, as far as I know, translated into English but, 'optimising technical systems according to the principles of biological evolution' presumably involves randomising certain key parameters and then selecting aerofoil sections according to desired outcomes. This double process of chance + selection is employed by a purposive, intelligent agent. So too is Dawkins' fascinating computer programme, Biomorphs planned by a purposive, intelligent agent - in this case the purpose being to illustrate evolution by natural selection. So any claim that chance/random variations + selection is necessarily incompatible with the actions of an intelligent, purposive agent, human or divine, is falsified by exemplars like these. Perhaps this is what a certain commentator on The Blind Watchmaker had in mind when he referred to Dawkins as The Blind Biomorphmaker.
Language & metaphor

One use of language which in a subtle way promotes the naturalistic view which Dawkins wishes to

advance is the reification of concepts like nature, evolution, natural selection and chance. Following in a long naturalistic tradition, exemplified by T. H. Huxley with his 'Dame Nature', concepts like these are often vested with attributes formerly ascribed to God and misleadingly credited with the abilities to 'choose', 'build', 'manufacture' and 'create' as in the following passages [*italics are mine*]:

Natural selection is like artificial selection, except that, instead of humans doing the choosing, nature does the choosing ... Natural selection, nature, is constantly choosing which individuals shall live, which individuals shall breed [CL2]

So am I really trying to persuade you that a blind, unconscious process, evolution, can build animal optics that rival human technology? ...but evolution, the blind designer, using cumulative trial and error, can search the vast space of possible structures ... blind chance on its own is no kind of watchmaker. But chance with natural selection, chance smeared out into innumerable tiny steps over aeons of time is powerful enough to manufacture miracles like dinosaurs and ourselves ... yet we evolutionists seem to be saying that it [the eye] was created by blind chance ... [BWM TV]

There is of course a sense in which the use of words in this way could be regarded as a legitimate literary device, on a par with 'Old Mother Nature' stories for children. Indeed, in Dawkins' defence it might be argued that he uses the words as such a literary device, since he makes the following disclaimer:

Natural selection, the blind, unconscious, automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of all life, has no purpose in mind. It has no mind and no mind's eye. It does not plan for the future. It has no vision, no foresight, no sight at all. If it can be said to play the role of watchmaker in nature, it is the blind watchmaker. [BWM, p. 5]

But the frequent use of the word 'blind', with its implication of absence of divine activity, indicates that Dawkins' intentions go further than the employment of a metaphysically - neutral literary device. Instead, the charge must be one of inconsistency; for if his statement immediately above stands, then many of his other assertions are highly misleading and need to be rewritten. The literary device is not legitimate if the purpose of such usage is to press the thesis that science obviates God. Such use of these words degenerates into nonsense if a creating God is denied while a creating chance (+ natural selection) is affirmed. Such Tychism will not do.

Further to Dawkins' use of metaphor, his expression, the selfish gene has attracted considerable attention. He offers his justification for the term - and his caveats against misunderstanding - in the following ways:

If we allow ourselves the licence of talking about genes as if they had conscious aims, always reassuring ourselves that we could translate our sloppy language back into respectable terms if we wanted to, we can ask the question, what is a single selfish gene trying to do? [SG, p. 88]

The metaphor of the intelligent gene reckoning up how best to ensure its own survival ... is a powerful and illuminating one. But it is easy to get carried away, and allow hypothetical genes cognitive wisdom and foresight in planning their 'strategy'. [EP, p. 15]

Dawkins has been criticised for his use of the 'selfish' metaphor. One series of 'full and frank' exchanges is found in three issues of Philosophy. Midgley criticises the metaphor in 'Gene - juggling' Dawkins responds in 'In Defence of Selfish Genes' [IDSG] and Midgley replies in 'Selfish Genes and Social Darwinism'.

Midgley's first article is decidedly polemical. She apologises in her second one for the tone of her criticisms and sets out in more measured form the difficulties which she sees as still remaining from the exchange of views. In response to Midgley's criticism of his use of the word 'selfish', Dawkins says

When biologists talk about 'selfishness' or 'altruism' we . . . do not even mean the words in a metaphorical sense. We define altruism and selfishness in purely behaviouristic ways ... I assume that an oak tree has no emotions and cannot calculate, yet I might describe an oak tree as altruistic if it grew fewer leaves than its physiological optimum, thereby sparing neighbouring saplings harmful overshadowing ... words may be redefined for technical purposes. In effect I am saying: 'Provided I define selfishness in a particular way an oak tree, or a gene, may legitimately be described as selfish'. [IDSG p. 557]

But despite the disclaimer, the phrase 'selfish gene' is metaphorical since 'a word or phrase denoting one kind of object or action is used in place of another to suggest a likeness or analogy between them'. Stipulative definitions are, of course, legitimate explanatory devices. Their value, however, depends on their power to clarify rather than to confuse. But 'selfish', as Midgley points out has such a common meaning that

It is by no means enough, in such cases, simply to give a new definition and repeat it from time to time. When a term is drawn from everyday speech like this, the force of habitual usage is far too strong for that.

Selfish, then, means here something like 'actually self - preserving in the long run' . . . It is true that philosophers are used to special technical definitions. But that does not mean that no standards apply to their manufacture.

A restricted sense ought to be one which forms part of the normal meaning of the word. It cannot be one which falls, as this does, right outside it ... the question 'why say selfish rather than self - preserving or self - replicating or self - perpetuating or competitive or the like?' is still serious.
Memes

The 'selfish' metaphor is pursued in Dawkins' concept of the 'meme', an entity which he introduces in the following way and amplifies in EP, p. 109.

I think that a new kind of replicator has recently emerged on this very planet ... but already it is achieving evolutionary change at a rate that leaves the old gene panting far behind ... We need a name for the new Replicator ... meme

Examples of memes are tunes, catch - phrases, clothes fashions, ways of making pots or of building arches. just as genes propagate themselves in the gene pool by leaping from body to body via sperm or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain ... [SG, p. 192]

As with genes, the qualities that give rise to high survival value among memes are given as 'longevity, fecundity, and copying - fidelity' [SG p. 194]. The idea of the meme is an interesting one but its noteworthiness in the context of this paper lies in how it is employed. For most of the developed examples of 'memes' on pp. 192 - 9 [SG] are ones which are used to convey highly negative images of religion. They include (i) the 'god meme' (ii) the 'hell fire' meme and (iii) a 'member of the religious meme complex [which] is called faith':

[i] The survival value of the god meme in the meme pool results from its great psychological appeal. It provides a superficially plausible answer to deep and troubling questions about existence. It suggests that injustices in this world may be rectified in the next. The 'everlasting arms' hold out a cushion against our own inadequacies which, like a doctor's placebo, is none the less effective for being imaginary. [SG p. 1931]

[ii] We have even used words like 'selfish' and 'ruthless' of genes, knowing full well it is only a figure of speech. Can we, in exactly the same spirit, look for selfish or ruthless memes? ... To take a particular example, an aspect of doctrine that has been very effective in enforcing religious

observance is the threat of hell fire ...

[iii] [faith] means blind trust, in the absence of evidence, even in the teeth of evidence ... The meme for blind faith secures its own perpetuation by the simple unconscious expedient of discouraging rational enquiry.

Dawkins displays a wholly instrumentalist view of the concepts of God, hell and faith. Erroneous ideas are assumed to underlie each of these concepts and arguments in their favour are not even entertained. The simile of a doctor's placebo is employed without any attempt at justification, simply because it suits Dawkins' view. It could equally well be asserted that the 'everlasting arms' are none the less real for being effective.

Dawkins' choice in developing these three particular 'memes' to illustrate the concept is indicative of an intrusive, overriding desire to discredit religion in general and Christianity in particular. But once again Dawkins has a double - edged sword in his hand when he tries to use the concept of 'memes' to debunk belief in God, belief in hell, and faith. For, according to 'meme - theory', disbelief in God, disbelief in hell, and unbelief are also memes which can be accounted for instrumentally, perhaps as desires to live precisely as one chooses and to escape any responsibility of a non - temporal kind! Dawkins' allied comparison of belief in God to a computer virus which goes on replicating itself is also a double - edged sword. For disbelief in God can equally well be compared to a computer virus.

Dawkins' attempts to make anti - religious capital in the treatment of a concept like a 'meme' is in keeping with the frequent asseverations which characterise other similar pronouncements, of which a few examples are given below:

Almost every species of bird is also perfectly capable of flying. Is it, then, another designed object? Actually, no! Birds may fly, but they were never designed. [CLSG, p. 10]

But there is no reason at all for us to expect any creatures to serve a useful purpose for us ... [CLSG, p. 19]

Originally there was no purpose in the universe. [CL 5]

If you ask people why they are convinced of the truth of their religion ... Nor do they appeal to evidence, There isn't any, and nowadays the better educated admit it. [SCAG]

Once again, such confidence would only be appropriate given some privileged insight into the way the world is.

Summarising the second part of this paper, Dawkins main arguments are variants based on an underlying misconception of the nature of explanation. The concept is not monolithic, but multifaceted. Scientific explanations are not the only types of explanation. Discussions about design, though changed from their Paleyeen form, are not eliminated by evolution, but modified. Metaphorical language requires particular care in its use since it can confuse as well as clarify, not least on account of the power of persuasion vested in a carefully chosen metaphor and of its ability to turn round and bite the user.

Meaning and purpose

Dawkins' attempt to deal with the question of purpose in life is the most difficult in which to discern an intelligible argument. Consistent with his view that 'Religion is a scientific theory' [SCAG], he expects science, and science alone, to be able to answer ultimate questions:

So where does life come from? What is it? Why are we here? What are we for? What is the meaning of life? There's a conventional wisdom which says that science has nothing to say about such questions. Well all I can say is that if science has nothing to say, it's certain that no other

discipline can say anything at all. But in fact science has a great deal to say about such questions.[CL 1]

Dawkins then goes on to state what he believes to be the answers which science is able to give about purpose. A difficulty about these proffered answers is not so much what they affirm but what they deny. From his naturalistic stance, Dawkins fails to acknowledge the possibility of additional and compatible purposes to scientific ones. His position appears very poignantly in the following interchange:

[after a little girl of six pointed out some flowers] I asked her what she thought flowers were for? She gave a very thoughtful answer. 'Two things', she said; 'to make the world pretty and to help the bees make honey for us.' Well, I thought that was a very nice answer and I was very sorry I had to tell her that it wasn't true. Her answer was not too different from the answer that most people throughout history would have given. The very first chapter of the Bible sets it out. Man has dominion over all living things. The animals and plants were there for our benefit. [CL4]

Dawkins overlooks the compatibility of such purposes as, 'to make the world pretty', to help the bees make honey and 'to help the bees make honey for us.' He answers his own question, 'What are flowers and bees. . . [and ourselves] really for?' [CL 4]

We are machines built by DNA whose purpose is to make more copies of the same DNA Flowers are for the same thing as everything else in the living kingdoms, for spreading 'copy - me' programmes about, written in DNA language.

That is EXACTLY what we are for. We are machines for propagating DNA, and the propagation of DNA is a self sustaining process. It is every living objects' sole reason for living... [CLSG, p. 21]

The word 'sole' acts, of course, as just another opportunity implicitly to deny any religious reasons for living. Dawkins' dislike of teleology - of goal - directed properties - shows signs of strain at times when he finds it 'terribly, terribly tempting to use the word designed' and when he claim that 'The plants tolerate the bees eating some of their pollen because the provide such a valuable service, by carrying pollen from one flower to another.' [CLSG, p. 19] The thought of a plant not tolerating bees is an interesting one.

On the grand finale of the cosmic drama of which we are part, Dawkins concludes

We can now see human purpose for what it really is. It is a product of our brains that has evolved by natural selection. Originally there was no purpose in the universe. For 3000 million years, life forms grew on this planet dripping with designoid elegance and reeking with apparent purpose. Then, came along one species that was given, natural selection, not digging claws like a mole or streamlining like dolphin, but a powerful and flexible on - board computer. This computer is our brain and the nature and potential of our brain is the difference between us and every other living thing. It is our sense of purpose. [CL5]

But, of course, a 'sense of purpose' is not the same as a 'purpose'. sense of purpose can be wholly illusory. In the first of the Christmas Lectures, Dawkins refers to

Faraday's reply to Sir Robert Peel's question, 'what is the use of science?'

'What is the use of a baby?' . . . it's also possible that what Faraday meant was there's no point in bringing a baby into the world if all that it's going to do is work to go on living and work to go living again. If that's all the point of life, what are we here for? There's got to be more to it than that [CL 1]

But if Dawkins' assertion that 'propagating DNA... is every living object's sole reason for living' [CLSG, p. 21], then all one is left with are the wistful echoes of his own words, 'There's got to be

Reply to Michael Poole
Professor Richard Dawkins

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The following comments are in response to an article by Michael Poole entitled 'A critique of aspects of the philosophy and theology of Richard Dawkins', Science and Christian Belief (1994) 69 41 - 59.

I am grateful to the Editor for inviting me to reply to Michael Poole's interesting article. Authors' replies to criticism predictably rely upon the 'I have been misquoted ... misunderstood ... misinterpreted - - .' formula. Poole's collation of my ideas is so thorough, and his representation of them so fair, that I have almost no complaints along these lines. On the contrary, when I see my own views so comprehensively expounded by so fairminded a critic, I find myself agreeing with them as strongly as ever!

I can fault his scholarship in only one detail, but it is a diverting one. He misattributes 'nothing - buttery' to the religious scientist Donald McKay in 1974. It is a mild irony that in fact the witticism was originally used against a theologian, Teilhard de Chardin, and as early as 1961. Sir Peter Medawar, the Nobel - prizewinning scientist and polymath, coined it in his brilliantly savage review (perhaps the most devastating book review ever written) of *The Phenomenon of Man*:

There is much else in the literary idiom of nature - philosophy: nothing buttery, for example, always part of the minor symptomatology of the bogus . . . 'the Christogenesis of St Paul and St John is nothing else and nothing less than the extension ... of that noogenesis in which cosmogenesis ... culminates.' It would have been a great disappointment to me if *Vibration* did not somewhere make itself felt, for all scientific mystics either vibrate in person or find themselves resonant with cosmic vibrations; but I am happy to say that on page 266 Teilhard will be found to do so.

Forgive me, I could not resist running the quotation on. As Medawar himself remarks, with Teilhard, to expound is to expose. Scientists will be incredulous that anyone could get such pretentious obscurantism published. New Age Travellers, of course, will love Teilhard for his vacuous imitation of profundity, but what about theologians - do they find Teilhard par for the course? Is this the kind of thing the Starbridge lecturer will be paid to teach? I hope that doesn't sound like a cheap jibe. It is not intended to be, but is there to make a serious point which is relevant to Poole's article. If the defence is made that Teilhard is bad theology and good theology is not like that, my reply would be this. By what standards are we to judge good theology from bad? We know how to judge bad science. Bad science is done from time to time and it is weeded out by publicly knowable procedures. But bad theology? How are we to detect that 'Love in all its subtleties is nothing more, and nothing less, than the more or less direct trace marked on the heart of the element by the Psychical convergence of the universe upon itself . . .' (Teilhard again) is different from good theology? What would good theology look like? Let's be charitable and assume that it would not look like the article that the Editors of this journal saw fit to publish immediately before Poole's in 'Science and Christian Belief':

'Ironically, the god of the process theologians is very abstract, and in that regard, very much the product of theoretical 'masculine' thought. One of the faults of process theology is that in order to accommodate contemporary scientific cosmology and academic language, it 'depersonalifies' and 'dedivinizes' Christ. Ruether's struggle to find a culturally comfortable divinity by adding feminine identity to the generalities of the physics - oriented philosophers strikes an odd contrast to Gadon's goddess who, as a projection of artistic feminine psyche, is busy dancing through western culture in a flashy costume.'

This passage's reference to the struggle to find a culturally comfortable divinity is a good example

of what may be called the 'Argument from Personal Comfort' and I'll return to Poole's usage of the Argument in his concluding remarks. Here, my purpose is to ask whether a piece of theological writing such as this, or the marginally more sensible quotations from Teilhard above, could ever be testable by any standards of evidence: standards that might be respected by scientists or by lawyers or by historians or by common sense? If so, well and good, but would it then be theology at all? Poole appears to be at best equivocal on the role of evidence in evaluating theological truth.

He is right that I pay religions the compliment of regarding them as scientific theories and that I see God as a competing explanation for facts about the universe and life. This is certainly how God has been seen by most theologians of past centuries and by most ordinary religious people today. But Poole is trying to have it both ways. On the one hand he is denying that religions provide explanations in the same sense as science, and trying to shield them from the critical rigours that scientific theories must endure. On the other hand, he tries to rescue the argument from design by suggesting, in the words of the elder Archbishop Temple, that evolution touches

... not the evidence of design but the mode in which the design was executed ... In the one case the Creator made the animals at once such as they now are; in the other case He impressed on certain particles of matter... such inherent powers that in the ordinary course of time living creatures such as the present were developed... He did not make the things, we may say; no, but He made them make themselves.

Now, if God set the Universe in motion and then sat back to watch evolution happen, a scientist should hope that there might be traces of His involvement in the shape of functioning of the universe. Some physicists, for example, have suggested that the fundamental constants of the universe are 'too good': that the laws of physics look as if they have been designed to make carbon chemistry and hence the evolution of life possible. Here we have an interesting argument and one which I should like to see spelled out and dissected thoroughly. But this will not happen if it is ruled out of bounds to critical argument. It must not be allowed to claim a kind of spurious diplomatic immunity by flashing its religious safeconduct at us.

If, on the other hand, there are no traces of God's involvement in the universe; if God did indeed set things up so that life would evolve, but covered His tracks so brilliantly that no clues remain; if He made the universe look exactly as it would be expected to look if He did not exist, then what we have is not an argument from design at all. There can be no argument from design if the universe is expertly designed to look undesigned. All we are left with, in this case, is the feeble, though strictly valid, argument that just because we can't find any evidence for a God, this doesn't prove that there isn't one. Of course we can't prove that there isn't a God, but, as has been said sufficiently often before, exactly the same can be said of fairies and Father Christmas.

Once again, this is not intended as cheap mockery but is making a point. If God really has a more solid basis than fairies, then let us hear it. If evidence is not forthcoming, then how can you answer a Fairy - worshipper who claims that his religion is as securely founded as yours? Not just a fairy - worshipper, note, for we could substitute an infinite variety of strictly undisprovable godlings and hobgodlings. Either admit that God is a scientific hypothesis and let him submit to the same judgement as any other scientific hypothesis. Or admit that his status is no higher than that of fairies and river sprites.

We now arrive at what, in various shapes and forms, amounts to the central disagreement that Poole has with me. He quotes me:

Any god worthy of the name must have been a being of colossal intelligence, a supermind, an entity of enormous sophistication and complexity. In other words, an entity of extremely low statistical probability - a very improbable being.

I must apologise for the repetitive style (this is not from a written source but is a verbatim transcript of a dialogue with the Archbishop of York) but I stand by the sentiment.

Parenthetically, Poole is confused about probability. He rightly says that probability is the ratio of the number of ways in which something happens to the number of ways in which something could happen. He wrongly goes on to say that this definition is not applicable to amazing, spooky coincidences because these are unique events. Yes, if a letter to a newspaper reports that the writer dreamed of an old friend and then woke up to discover that the friend had died in the night, this is, in a trivial sense, a unique event. But there is nothing to stop us estimating frequencies of relevant classes of events. How many readers of our newspapers are there; in other words what is the catchment area of the coincidence from the point of view of our hearing about it? How many of them dream and how often? How many friends do they typically have and what is the likelihood of one of their friends' dying per unit time? When this kind of calculation has been done, the conclusion is startling. There are likely to be hundreds of people experiencing coincidences at least as eerie as this one every day. You can't do the calculation as precisely as you can when cards or Coloured balls are involved. But everybody does an intuitive calculation of this kind in order to recognize a spooky coincidence in the first place. My point was that they usually are not trained to calculate it properly, and therefore conclude that the coincidence is more spooky than it is. The same kind of intuitive calculation lies behind the claim that the vertebrate eye is too improbable to have arisen by chance (in how many ways could the bits of an eye have been arranged, and how many of them would see?) and it lies behind my similar claim about God.

Poole, in his reply to that claim, appears to think that he has hoist me with my own petard:

Dawkins' constant assumption, echoing the popular demand, 'who made God?' is that since our common experience indicates that material objects have beginnings, God would also have had to have had an originator... His assumption is a particularly interesting one from the point of view of consistency of argument, since it is precisely this kind of analogical argument that he so vehemently rejects if applied to the world having a designer by comparison with everyday artefacts having designers.

There are three ways in which statistically improbable entities can come into being. First, luck. This is, for practical purposes, ruled out if the improbability is sufficiently high. Second, deliberate design which is, of course, how cars and buildings come into being. Third, evolution by gradual, cumulative degrees, guided by natural selection of random variation. This third theory is a genuine alternative to the designer theory, and Poole would not deny that it works for all the living things on this planet. Now, my argument with respect to God goes like this. We first note that a God capable of designing a universe (and incidentally capable of forgiving sins, impregnating virgins etc.) would have to be very sophisticated and complex. This rules out chance as an explanation, in exactly the same kind of way as chance is ruled out as an explanation for the eye. Right then, we are left with either a (meta) designer or gradual, cumulative evolution. I jumped straight to the familiar rhetorical question - 'But who designed God?' - because no theologian, to my knowledge, has ever proposed that God evolved to his awesome complexity by slow, gradual degrees (it would have to be a population of randomly varying Gods, by the way, if natural selection was the driving force). If any such suggestion were made, I should be intrigued and would give the hypothesis my best attention. But I am not optimistic that the hypothesis has much satisfaction to offer the religious. Evolution takes time and it needs a universe in which to operate. There is, therefore, to say the least, going to be a problem with any attempt to postulate an evolved God as the fons et origo of the universe. The theory that there might have been a natural selection among randomly varying universes is another matter and is very interesting, but I have no space to deal with it. It is not a religious theory.

The argument that an eye, say, or a backbone is too complicated to have arisen by chance is a good argument because 'arisen by chance' is a synonym for 'sprang spontaneously and instantaneously into existence.' The irony is that the argument against chance is conventionally used by creationists against evolution. In fact it is the most powerful argument against creation, because creation really does amount to something complicated springing spontaneously into existence. Evolution by natural selection offers the only ultimate solution so far suggested to the riddle of how complicated objects can exist, anywhere in the universe. Poole claims to accept the

importance of Darwinism, but he fails to do justice to the colossal intellectual work that Darwinism is doing for us. Darwinism not only renders God unnecessary as an explanatory device. Most sophisticated theologians would admit this. God is also shown to be very very improbable indeed, for exactly the same reason as the spontaneous arising of the vertebrate eye is improbable. In the days before we understood how eyes could exist, God had a certain plausibility (illusory as Hume showed it to be). But by explaining eyes, and all other complex objects, Darwin has pulled the rug from under God's feet.

Poole's concluding remarks are puzzling. Unless I have misunderstood them, they amount to intellectual cowardice. 'But if Dawkins' assertion that "propagating DNA ... is every living object's sole reason for living", then all one is left with are the wistful echoes of his own words, "There's got to be more to it than that." ' Why has there got to be more to it than that? Not because of evidence or logic. No, the reason there has got to be more to it than that is simply that the universe would be a kinder and more comfortable place to live in if there were more to it than that! It is the Argument from Personal Comfort yet again. It amounts to saying: 'If X were so, the universe would be an intolerably bleak and meaningless place. Therefore X cannot be so.' More succinctly, it is equivalent to 'Nature abhors the Intolerable.' Would that it did.

Finally, it is not part of his main article but there is an innuendo in the Abstract which I cannot let pass. Poole fears that undue weight may be attached to scientists' views 'on matters outside of their own fields of expertise. This possibility seemed to be particularly acute during Richard Dawkins' 1991 Royal Institution Christmas Lectures, both on account of the number of anti - religious assertions and of the youth of the audience.'

'Matters outside their own fields of expertise' implies that the matters concerned are within somebody's field of expertise. When the matters concerned are the ultimate questions of existence and purpose, forgive me for hollow laughter at the pretensions of anybody to expertise in such a field. If the expertise suggested is 'theology' I am on record as doubting whether it is a subject at all. But the specific innuendo that I must counter lurks in the reference to the youth of the Christmas Lectures television audience. Though not spelled out, the implication rings out loud and clear that I abused a position of trust as an invited lecturer to young and vulnerable minds.

I'd have more sympathy with this accusation, were it not for the overwhelming preponderance of broadcast propaganda in the other direction. After my Christmas Lectures I received letters from the pious saying that they would have no objection if only I had qualified my remarks by saying: 'But I should warn you that many well - informed people think differently . . .' When did you last hear a priest - in the pulpit, on radio, on television, in infants' Sunday School - qualify his statement with 'But I should warn you that many well - informed people don't think God exists at all . . .'?

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XX

Response to Richard Dawkins' Reply
Michael Poole

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The following comments are in response to a reply from Richard Dawkins about an article by Michael Poole entitled 'A critique of aspects of the philosophy and theology of Richard Dawkins', Science and Christian Belief (1994) 69 41 - 59.

I am pleased that Richard Dawkins judges my critique of his views as fair. I shall endeavour to keep these additional remarks the same. However, I now wish to press home my points a little harder, for I see no way that my paper can encourage Dawkins to hold his views 'as strongly as ever', if he has taken the full force of the criticisms on board. I shall respond to his main points.
What constitutes a scientific theory?

Although Dawkins sees our 'central disagreement' as being over his idea of the probability of God, there is a more far - reaching point of disagreement. This concerns Dawkins' key thesis, his puzzling claim that 'religion is a scientific theory' which obliterates the philosophical distinction between science and metaphysics. Furthermore, he uses the phrase, 'not a religious theory', of one particular speculation about the origin of the universe. But, while using the terms 'scientific theory', 'religion' and 'religious theory', he offers no explication of, or demarcation criteria for, scientific or religious theories, which would enable us to evaluate his assertions.

There is a vast body of literature on the philosophy of science. On a realist view of science, scientific theories attempt to explain the physical properties of the world. Consequently a scientific journal is not dedicated to the publication of poetry, music, novels, art or history, because they are not considered to be science, even though each may take science as their subject material. The price of constructing a body of reliable scientific knowledge is a restriction on the types of questions which are addressed, although none of these other aspects of human experience are thereby discounted.

There is also an extensive philosophical literature concerned with identifying the universe of discourse of religion. One fairly standard approach is to say that the universe of discourse of religion is constituted by the concept of God, understood as 'transcendent conscious agency', coupled with explanations of those three terms. The approach is not entirely adequate since it does not embrace non - theistic religions; but it goes some way towards clarifying a dominant view.

The common demand, 'Prove to me scientifically that God exists', misunderstands both the nature of science and the nature of religion. Science is an inappropriate tool for adjudicating upon the existence of God. At the risk of over - simplifying, science is concerned with studying the natural world, the world of nature. Questions about God's existence are about whether there is anything other than nature to which nature owes its existence; and it is no use going to science, the study of nature, to determine whether there is anything other than nature.

Dawkins' alternatives, 'Either admit that God is a scientific hypothesis ... Or admit that his status is no higher than that of fairies and river sprites' both caricature a serious matter and coerce into an unnecessary either/or. It is perfectly possible both to reject the notion that 'God is a scientific hypothesis' and to reject the claim that God's 'status is no higher than that of fairies and river sprites'. I find it difficult to conceive how a serious or even a superficial reading of, say, the New Testament gospels could lead to equate their value with stories about fairies and river sprites!

If we are to find Dawkins' key thesis persuasive, he must spell out his criteria for judging theories as 'scientific'. If religion is admitted as a scientific theory, are aesthetics or history allowed in? If not, on what grounds are they excluded? We need to be provided with demarcation criteria for judging what are not scientific theories, criteria for differentiating between science and non - science. Furthermore, his statement that (natural selection among randomly varying universes ... is not a religious theory', presupposes he has demarcation criteria in mind for distinguishing between religious and non - religious theories. These, too, need explicating if we are to evaluate his key thesis.

The meaning of God as creator in Christian theology

God is not portrayed by Christian theology as a created being, something which Dawkins still has not taken on board. In responding to my observation that he appears to have moved by an analogical argument from immaterial objects have beginnings' to the assumption that God had a beginnings type of argument he has rightly eschewed about design Dawkins again asks 'who designed God?' He follows this with a lengthy passage on 'three ways in which statistically improbable entities can come into being.' But this passage does not contribute to the discussion, because it is predicated upon a 'when - did - you - stop - beating - your - wife' assumption about God. No one is pretending the idea that God is eternal is easy for time - dependent creatures like ourselves to grasp, any more than the allied one, presented by modern physics, that time itself comes into being with the universe. But it still has to be taken into account.

Dawkins also says, 'if God set the Universe in motion and then sat back to watch evolution happen, a scientist should hope that there might be traces evidence of His involvement in the shape or functioning of the universe.' Again, here are ideas which betray how deeply entrenched is Dawkins' misunderstanding of the orthodox Christian concept of God:

First, the idea of a God who creates and then sits back is not the God of biblical theism; it is the Cosmic Clockmaker of eighteenth century deism - the Retired Architect, the Absentee Landlord. Biblical theism presents a God who is immanent as well as transcendent, actively at work moment by moment in his world. That is one reason why it is ironic that evolutionary theory which, on one interpretation, reemphasised God's continuing activity after deism had lost sight of it, should be regarded as atheistic!

Second, there is the idea that the universe should contain 'traces - evidence of His involvement'. Dawkins questions whether the apparent 'fine - tuning' of the universe for life is one of those 'traces'. He also asks what it would be like 'if God did indeed set things up so that life would evolve, but covered His tracks so brilliantly that no clues remain; if He made the universe look exactly as it would be expected to look if He did not exist'. But Christian theology does not envisage the universe as being different from what it might have been if God did not exist, rather that there would be no universe. It is the whole universe that is the 'traces', not some little piece tacked on by way of a signature. To think otherwise bears certain similarities to searching the components of a jet engine for traces of Frank Whittle. The search is in vain; it is the whole engine which owes its being to Whittle's creativity, rather than any individual part bearing his signature. Furthermore, to expect the existence of God to be open to scientific tests is like trying to treat the existence of whittle as an engineering question!

Dawkins' statement, 'Darwinism ... renders God unnecessary as an explanatory device' makes me think I have not explained myself very well in my paper; for I have already given qualified

agreement with this view. God is no more necessary in a scientific explanation of the world than Whittle is in a scientific explanation of the jet engine. But that does not justify denying the existence of God or Whittle! How could scientific explanations of the mechanisms of a creation conceivably offer any kind of competition to the existence of a creator? It would be nonsense, in a situation having a similar logical structure to regard the creator, Whittle, as a competing explanation to the mechanisms of the jet engine.

Creation, according to Dawkins in his reply, 'really does amount to something complicated springing spontaneously into existence'. In saying this I believe he is falling into the same mistake as some 'creationists', who think that to assert 'creation' necessitates holding the view that everything sprang into existence 'ready - made'. 'Creation', expresses God's relationship to the world, asserting that everything depends upon God for its existence. Creation, in its theological usage, is 'bringing - into - being - by - God' and is independent of any particular physical processes. To try to contrast the act of creation with the processes of, say, evolution by natural selection is to commit some kind of category mistake. 'Good theology' or 'bad theology'?

Dawkins' comments about Teilhard, whose views I am not concerned to defend, lead him to ask 'By what standards are we to judge good theology from bad?' Two criteria for judging good (Christian) theology are that it takes adequate account of (i) biblical material and (ii) extra - biblical material, such as evidence drawn from secular history. One of the criticisms I expressed in my paper concerned Dawkins' misinterpretation of what Christian theology says about God, miracles and faith. While no - one claims to be an expert on 'life, the universe and everything' the misconceptions to which I have referred are very basic ones about Christian theology, which even a cursory reading of the source documents could have avoided.

I am not clear why Dawkins says I appear 'to be at best equivocal on the role of evidence in evaluating theological truth.' I should have thought my quotation of Bruce made it abundantly clear that I count evidence as of fundamental importance, evidence which to use Dawkins' own words, 'might be respected by scientists or by lawyers or by historians'. His 'common sense' requirement is more contentious. It is the central thesis of a recent book by Prof. Lewis Wolpert that science has only developed in so far as it has departed from the dictates of common sense. Common sense is based on precedent and may therefore be an inadequate guide to something entirely novel, such as that central claim of Christianity, the resurrection of Jesus Christ.

In bad theology, people have cited selected parts of the 'Book of Nature' as if they were evidence for a creator's design, leaving the rest of the natural order in an implied state of 'non - created ambiguity'. This is rather like treating an author as the creator of one part of a book more than another. However, my comments on design were not, as Dawkins thinks, an attempt 'to rescue the argument from design'. His use of the definite article suggests that Paley's argument was the only form in which design could be envisaged, which it is not. I was simply concerned to spell out reasons for rejecting Dawkins' frequent assertions that chance plus selection rules out any idea of design in the universe and justifies coining a new 'deny - word', designoid. Furthermore, it is necessary to differentiate the scientific use of 'chance', which has no metaphysical overtones, from its popular use to assert the absence of purpose or plan. I am surprised that Dawkins, with his apparent antipathy towards metaphysics, should assign metaphysical meanings to the concept 'chance' as used in science.

To say, 'If God has a more solid basis than fairies, then let us hear it' conveys the impression that nobody has yet thought or written about Christian evidences! Dawkins has ready access to the whole theological collection of the University of Oxford if he wishes to avail himself of its resources. But evidence for God is not the same as watching intently at the bottom of the garden on a summer's night!

Grand theories, be they metaphysical ones like theism or atheism, or physical ones like stellar and organic evolution, can be judged against such criteria as

- (i) comprehensiveness - taking into account all known data, deemed relevant;
 - (ii) consistency - freedom from internal contradictions;
 - (iii) coherence - holding together as a whole;
 - (iv) congruence - corresponding, coinciding with experience.
- Probability

I suspect that part of our disagreement about probability arises over what constitutes a unique event. Dawkins considers someone dreaming that a friend has died, and finding they have, as a unique event. He then argues about the frequency of such dreams and the probability of deaths per unit time. But once there are other examples of such events, so that talk of frequencies becomes meaningful, the events cease to be unique. Indeed, the event, 'a person dreams that a friend dies when they do', is arguably unlikely to be unique in history. What is unique is that Sue Smith dreams that Bill Bloggs dies when he does.

Although I stand by my statement, 'There is no way of assigning mathematical probabilities to unique events', I agree with Dawkins that 'there is nothing to stop us estimating frequencies of relevant classes of events', even 'spooky events' reported in newspapers, provided there can be some kind of agreement about what constitutes the class of 'spooky events'. However, I was criticising Dawkins' use of the concept of probability in the precise calculus of coin - tossing to argue for the meaninglessness of what he calls 'uncanny, spooky, telepathic, experiences', which I assumed, and which he has not denied, would include claims about answered prayer. To say, 'when people write into the papers with uncanny experiences, it's just like that ... and it means absolutely nothing', is a non sequitur. Dawkins would have to have some privileged insight into the world in order to know that all reported uncanny experiences meant 'absolutely nothing'. Suppose for the sake of argument that there is a God who answers prayers and that these answers give rise to what Dawkins calls uncanny experiences. The occurrence of these experiences owes nothing whatever to the calculus of coin - tossing but occurs if and only if there is a God who answers prayer.

No 'Argument from Personal Comfort'

Dawkins' puzzlement over my closing remarks is quickly resolved. I am afraid he is right about misunderstanding them. I am not making any 'Argument from Personal Comfort'. I am simply quoting him. The words, 'There's got to be more to it than that', are Dawkins' words, not mine. I have watched the relevant section from the first Christmas lecture several times since reading Dawkins' reply, to check whether he was simply representing Faraday's views, which he had just commented on. But he speaks with great warmth about the idea that there has got to be more to life than just 'to work to go on living' and certainly does not introduce any notion that this might be seen as an 'Argument from Personal Comfort'. Any possible doubts as to whether Dawkins himself holds that 'There's got to be more to it [life] than that' are dispelled by his next words: 'Some of life must be devoted to living itself; some of life must be devoted to doing something worthwhile with one's life, not just to perpetuating it!' So my criticism of inconsistency remains, for this stands in complete contradiction to his other assertion that 'propagating DNA ... is every living object's sole reason for living'. If he stands by his latter claim, then as I concluded my article, Dawkins' own words, 'There's got to be more to it than that', have a wistful ring about them.

Education and Propaganda

Dawkins rightly discerned my innuendo in the Abstract about the impropriety of promoting an atheistic world - view in the name of science in his 1991 Christmas lectures. He has often gone on record as saying that the persistence of religion owes much to the gullibility of young people who will believe anything they are told in their early years. If young people are as easily taken in as he thinks, then the persistence of atheism could also owe much to the gullibility of young people.

My concern about these lectures was that they were intended to be educational ones about science, within which atheistic dogmatism was inappropriate. Dawkins disparagingly refers to 'the pious' who wrote afterwards to say that his remarks should have been qualified. But it was a valid objection. It is no defence for him to say that others have not qualified their remarks. That is only an argument for saying that they should have done so too! His example of 'priests' does not serve his cause, for belief in God is [generally!] an assumption of their position, which those who choose to listen to them take for granted.

Similarly, someone who chooses to go to a meeting of the British Humanist Association should not be surprised to hear criticisms of religion and would not expect to be reminded that some people do believe in God. But the school - children who went to the Christmas Lectures went to hear a series on science, which was used as a vehicle for promoting a personal world - view, that science pushed one into atheism. But this is not a necessary consequence of science and the view is one with which many scientists disagree. However, no indication was given that an opposite view could coherently and rationally be held - which amounts to propaganda.

Conclusion

In case it should appear otherwise from this critique, let me add that no personal animosity is intended or felt. I like Richard Dawkins' relaxed and clear lecturing style, enjoyed most of the Christmas lectures, and found the sequence about the baby to which I referred, delightfully sensitive. However, in my original paper and here, I have criticised the quality of many of the arguments which Dawkins has so vigorously sought to employ against Christianity 'in the name of science', through his books, lectures, newspaper articles, letters, and television appearances over many years.

One class of arguments starts from the assumptions of (i) God as a created being (ii) miracles as nothing other than 'more - or - less improbable natural events' and (iii) faith as unevidenced belief. But such assumptions form no part of traditional Christian theology. Consequently, arguments based on these assumptions do not actually engage with the intended target. They are directed against a 'straw' version of Christianity, one which the orthodox would not wish to defend.

A second class of arguments includes (i) meme theory (ii) the metaphor of religion as a 'mental virus' and (iii) the supposed readiness of the young to believe anything they are told. But these have no anti - Christian mileage in them whatsoever. They are simply theories about the ways in which ideas spread - any ideas. They have nothing to say about the truth or falsity of the beliefs themselves; they are equally applicable to the spread of atheism. To use them is to wield a two - edged sword which can wound the assailant as much as the intended victim.

Much of Dawkins' world - view depends on his central thesis that 'religion is a scientific theory', including his view of 'God as a competing explanation [to science] for facts about the universe and life'. I know of no professional philosopher who makes such a claim. But, conspicuous by its absence, is any attempt to justify such a contentious claim. However, the task has now become an urgent one for, unless Dawkins is able to mount a tightly argued justification of his central claim, much of his position remains poised precariously on insecure foundations.

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