



## Has Science eliminated God?

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### Introduction

It is a great pleasure to be able to speak to you this evening on the fascinating topic of the way in which the atheism of Richard Dawkins is grounded in his understanding of the natural sciences. I first came across Richard Dawkins' work back in 1977, when I read his first major book, *The Selfish Gene*. I was completing my doctoral research in Oxford University's department of biochemistry, under the genial supervision of Professor Sir George Radda, who went on to become Chief Executive of the Medical Research Council. I was trying to figure out how biological membranes are able to work so successfully, developing new physical methods of studying their behaviour.

*The Selfish Gene* was a wonderful book, considered as a piece of popular scientific writing. Yet Dawkins' treatment of religion - especially his thoughts on the 'god-meme' - were unsatisfying. He offered a few muddled attempts to make sense of the idea of 'faith', without establishing a proper analytical and evidential basis for his reflections. I found myself puzzled by this, and made a mental note to pen a few words in response sometime. Twenty-five years later, I got round to penning those words, and you will find them in *Dawkins' God: Genes, Memes and the Meaning of Life*.<sup>[1]</sup>

In the meanwhile, Dawkins went on to produce a series of brilliant and provocative books, each of which I devoured with interest and admiration. Dawkins followed *The Selfish Gene* with *The Extended Phenotype* (1981), *The Blind Watchmaker* (1986), *River out of Eden* (1995),

*Climbing Mount Improbable* (1996), *Unweaving the Rainbow* (1998), the collection of essays *A Devil's Chaplain* (2003), and most recently *The Ancestor's Tale* (2004). Yet the tone and focus of his writing changed. As philosopher Michael Ruse pointed out in a review of *The Devil's Chaplain*, Dawkins' 'attention has swung from writing about science for a popular audience to waging an all-out attack on Christianity.'<sup>[2]</sup> The brilliant scientific populariser became a savage anti-religious polemicist, preaching rather than arguing (or so it seemed to me) his case. Yet I remained puzzled. Let me explain.

Dawkins writes with erudition and sophistication on issues of evolutionary biology, clearly having mastered the intricacies of his field and its vast research literature. Yet when he comes to deal with anything to do with God, we seem to enter into a different world. Careful evidence-based reasoning seems to be left behind, and be displaced by rather heated, enthusiastic overstatements, spiced up with some striking oversimplifications and more than an occasional misrepresentation (accidental, I can only assume) to make some superficially plausible points. Most fundamentally, Dawkins fails to demonstrate the scientific necessity of atheism. Paradoxically, atheism itself emerges as a faith, possessed of a remarkable degree of conceptual isomorphism to theism.

The approach I shall adopt in this lecture is simple: I want to challenge the intellectual link between the natural sciences and atheism that saturates Dawkins's writings. Dawkins proceeds from a Darwinian theory of evolution to a confident atheistic worldview, which he preaches with what often seems to be messianic zeal and unassailable certainty. But is that link secure? Let me stress that it is not my intention to criticize Dawkins' science; that, after all, is the responsibility of the scientific community as a whole. Rather, my aim is to explore the deeply problematic link that Dawkins at times presupposes, and at other times defends, between the scientific method and atheism.

Since this lecture represents something of a critical engagement with Dawkins, I think it is important to begin by making clear that I have respect, even admiration, for him in some areas. First, he is an outstanding communicator. When I

first read his book *The Selfish Gene* back in 1977, I realized that it was obviously a marvellous book. I admired Dawkins' wonderful way with words, and his ability to explain crucial - yet often difficult - scientific ideas so clearly. It was popular scientific writing at its best. No surprise, then, that the *New York Times* commented that it was 'the sort of popular science writing that makes the reader feel like a genius'. And although every Homer nods occasionally, that same eloquence and clarity has generally remained a feature of his writing ever since.

Second, I admire his concern to promote evidence-based argumentation. Throughout his writings, we find the constant demand to justify statements. Assertions must be based on evidence, not prejudice, tradition or ignorance. It is his belief that people who believe in God do so in the face of the evidence that gives such passion and energy to his atheism. Throughout Dawkins' writings, religious folk are demonized as dishonest, liars, fools and knaves, incapable of responding honestly to the real world, and preferring to invent a false, pernicious and delusionary world into which to entice the unwary, the young and the naive. Douglas Adams recalls Dawkins once remarking: 'I really don't think I'm arrogant, but I do get impatient with people who don't share with me the same humility in front of the facts.'<sup>[3]</sup> Perhaps we may wince at the pomposity, which will remind Christian readers of the legendary self-righteousness of the Pharisees. Yet an important insight lies embedded in that sentence - the need to argue on the basis of evidence.

## Dawkins' Criticisms of Religion

To begin with, let's lay out the basic reasons why Dawkins is so critical of religion. These criticisms are dispersed throughout his writings, and it will be helpful to bring them together to give a coherent view of his concerns.

§ A Darwinian worldview makes belief in God unnecessary or impossible. Although hinted at in *The Selfish Gene*, this idea is developed in detail in *The Blind Watchmaker*.

§ Religion makes assertions which are grounded in faith, which represents a retreat from a rigorous, evidence-based concern for truth. For Dawkins, truth is grounded in explicit proof; any form of obscurantism or mysticism grounded in

faith is to be opposed vigorously.

§ Religion offers an impoverished and attenuated vision of the world. 'The universe presented by organized religion is a poky little medieval universe, and extremely limited'.<sup>[4]</sup> In contrast, science offers a bold and brilliant vision of the universe as grand, beautiful, and awe-inspiring. This aesthetic critique of religion is developed especially in his 1998 work *Unweaving the Rainbow*.

§ Religion leads to evil. It is like a malignant virus, infecting human minds. This is not strictly a scientific judgement, in that, as Dawkins often points out, the sciences cannot determine what is good or evil. 'Science has no methods for deciding what is ethical.'<sup>[5]</sup> It is, however, a profoundly moral objection to religion, deeply rooted within western culture and history,<sup>[6]</sup> which must be taken with the greatest seriousness.

In this lecture, I am going to engage with five areas of Dawkins' polemic against belief in God, identify the trajectory of his argument, and raise concerns about its evidential foundations. While at times I will draw on some insights from Christian theology - and then mostly to correct Dawkins' misunderstandings - it will be clear that most of the points I shall be making are grounded in the rather different discipline of the history and philosophy of the natural sciences. The five areas we shall explore are the following, which I shall summarise briefly, before offering a fuller exposition and criticism in what follows.

§ Dawkins asserts that Darwinism has made God redundant or an intellectual impossibility. To accept a Darwinian worldview entails atheism. Although this theme permeates Dawkins' writings, it is explored in particular detail in *The Blind Watchmaker*.

§ Dawkins asserts that religious faith 'means blind trust, in the absence of evidence, even in the teeth of evidence,'<sup>[7]</sup> which is totally inconsistent with the scientific method.

§ The reason that belief in God remains widespread is due to the effectiveness of its means of propagation, not the coherence of its arguments. This propagator is variously referred to as a 'meme' or a 'virus', which infects otherwise healthy and sane minds.

§ Religion presupposes and propagates a miserable, limited and deficient view of the universe, in contrast to the bold, brilliant and

beautiful vision of the natural sciences.

§ Religion leads to violence, lies and deceit, and its elimination can therefore only be a good thing for the human race.

Let's proceed immediately to the first of these points.

## Darwinism and the Elimination of God?

Before Darwin, Dawkins argues, it was possible to see the world as something designed by God; after Darwin, we can speak only of the 'illusion of design.' A Darwinian world has no purpose, and we delude ourselves if we think otherwise. If the universe cannot be described as 'good', at least it cannot be described as 'evil' either. 'The universe we observe had 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.' [8]

Yet some insist that there does indeed seem to be a 'purpose' to things, and cite the apparent design of things in support. Surely, such critics argue, the intricate structure of the human eye points to something that cannot be explained by natural forces, and which obliges us to invoke a divine creator by way of explanation? How otherwise may we explain the vast and complex structures that we observe in nature? [9]

Dawkins' answer is set out primarily in two works: *The Blind Watchmaker* and *Climbing Mount Improbable*. The fundamental argument common to both is that complex things evolve from simple beginnings, over long periods of time. [10]

Living things are too improbable and too beautifully 'designed' to have come into existence by chance. How, then, did they come into existence? The answer, Darwin's answer, is by gradual, step-by-step transformations from simple beginnings, from primordial entities sufficiently simple to have come into existence by chance. Each successful change in the gradual evolutionary process was simple enough, *relative to its predecessor*, to have arisen by chance. But the whole sequence of cumulative steps constitutes anything but a chance process.

What might seem to be a highly improbable development needs to be set against the

backdrop of the huge periods of time envisaged by the evolutionary process. Dawkins explores this point using the image of a metaphorical 'Mount Improbable'. Seen from one angle, its 'towering, vertical cliffs' seem impossible to climb. Yet seen from another angle, the mountain turns out to have 'gently inclined grassy meadows, graded steadily and easily towards the distant uplands.' [11]

The 'illusion of design,' Dawkins argues, arises because we intuitively regard structures as being too complex to have arisen by chance. An excellent example is provided by the human eye, cited by some advocates of the divine design and direct special creation of the world as a surefire proof of God's existence. In one of the most detailed and argumentative chapters of *Climbing Mount Improbable*, Dawkins shows how, given enough time, even such a complex organ could have evolved from something much simpler. [12]

It's all standard Darwinism. What's new is the lucidity of the presentation, and the detailed illustration and defence of these ideas through judiciously selected case studies and carefully crafted analogies. In that Dawkins sees Darwinism as a worldview, rather than a biological theory, he has no hesitation in taking his arguments far beyond the bounds of the purely biological. The word 'God' is absent from the index of *The Blind Watchmaker* precisely because he is absent from the Darwinian world that Dawkins inhabits and commends. [13] The evolutionary process leaves no conceptual space for God. What an earlier generation explained by an appeal to a divine creator can be accommodated within a Darwinian framework. There is no need to believe in God after Darwin.

If Dawkins is right, it follows that there is no need to believe in God to offer a scientific explanation of the world. Some might draw the conclusion that Darwinism encourages agnosticism, while leaving the door wide open for a Christian or atheist reading of things - in other words, permitting them, but not necessitating them. But Dawkins is not going to leave things there: for Dawkins, Darwin impels us to atheism. And it is here that things begin to get problematic. Dawkins has certainly demonstrated that a purely natural *description* may be offered of what is currently known of the history and present state of living

organisms. But *why* does this lead to the conclusion that there is no God? A host of unstated and unchallenged assumptions underlie his argument.[14]

We shall explore one of them: the fundamental point that the scientific method is incapable of adjudicating the God-hypothesis, either positively or negatively. The scientific method is incapable of delivering a decisive adjudication of the God question. Those who believe that it proves or disproves the existence of God press that method beyond its legitimate limits, and run the risk of abusing or discrediting it. Some distinguished biologists (such as Francis S. Collins, director of the Human Genome Project) argue that the natural sciences create a positive presumption of faith:[15] others (such as the evolutionary biologist Stephen Jay Gould) that they have negative implications for theistic belief. But they *provenothing*, either way. If the God-question is to be settled, it must be settled on other grounds.

This is not a new idea. Indeed, the recognition of the religious limits of the scientific method was well understood around the time of Darwin himself. As none other than 'Darwin's Bulldog', T.H. Huxley, wrote in 1880:[16]

Some twenty years ago, or thereabouts, I invented the word 'Agnostic' to denote people who, like myself, confess themselves to be hopelessly ignorant concerning a variety of matters, about which metaphysicians and theologians, both orthodox and heterodox, dogmatise with utmost confidence.

Fed up with both theists and atheists making hopelessly dogmatic statements on the basis of inadequate empirical evidence, Huxley declared that the God-question could not be settled on the basis of the scientific method.

Agnosticism is of the essence of science, whether ancient or modern. It simply means that a man shall not say he knows or believes that which he has no scientific grounds for professing to know or believe... Consequently Agnosticism puts aside not only the greater part of popular theology, but also the greater part of anti-theology.

Huxley's arguments are as valid today as they were in the late nineteenth century, despite the

protestations of those on both sides of the great debate about God.

In a 1992 critique of an anti-evolutionary work which posited that Darwinism was *necessarily* atheistic,[17] Stephen Jay Gould invoked the memory of Mrs McInerney, his third grade teacher, who was in the habit of rapping young knuckles when their owners said or did particularly stupid things:

To say it for all my colleagues and for the umpteenth million time (from college bull sessions to learned treatises): science simply cannot (by its legitimate methods) adjudicate the issue of God's possible superintendence of nature. We neither affirm nor deny it; we simply can't comment on it as scientists. If some of our crowd have made untoward statements claiming that Darwinism disproves God, then I will find Mrs. McInerney and have their knuckles rapped for it (as long as she can equally treat those members of our crowd who have argued that Darwinism must be God's method of action).

Gould rightly insists that science can work only with naturalistic explanations; it can neither affirm nor deny the existence of God. The bottom line for Gould is that Darwinism actually has no bearing on the existence or nature of God. For Gould, it is an observable fact that evolutionary biologists are both atheist and theist - he cites examples such as the humanist agnostic G.G. Simpson and the Russian Orthodox Christian Theodosius Dobzhansky. This leads him to conclude:

Either half my colleagues are enormously stupid, or else the science of Darwinism is fully compatible with conventional religious beliefs - and equally compatible with atheism.

If Darwinians choose to dogmatize on matters of religion, they stray beyond the straight and narrow way of the scientific method, and end up in the philosophical badlands. Either a conclusion cannot be reached at all on such matters, or it is to be reached on other grounds.

Dawkins presents Darwinism as an intellectual superhighway to atheism. In reality, the intellectual trajectory mapped out by Dawkins seems to get stuck in a rut at agnosticism. And

having stalled, it stays there. There is a substantial logical gap between Darwinism and atheism, which Dawkins seems to prefer to bridge by rhetoric, rather than evidence. If firm conclusions are to be reached, they must be reached on other grounds. And those who earnestly tell us otherwise have some explaining to do.

## Faith and Evidence

Dawkins' emphasis on evidence-based reasoning leads him to adopt a strongly critical attitude towards any beliefs that are inadequately grounded in the observable. 'As a lover of truth, I am suspicious of strongly held beliefs that are unsupported by evidence.'<sup>[18]</sup> One of his core beliefs, repeated endlessly in his writings, is that religious faith is 'blind trust, in the absence of evidence, even in the teeth of evidence.'<sup>[19]</sup> Faith, Dawkins argues, is 'a kind of mental illness,'<sup>[20]</sup> one of the 'world's great evils, comparable to the smallpox virus but harder to eradicate.' This is to be contrasted with the natural sciences, which offer an evidence-based approach to the world. And quite rightly so. But I wonder if his own strongly held atheist views are quite as supported by the evidence as he seems to think?

Dawkins here opens up the whole question of the place of proof, evidence, and faith in both science and religion. It is a fascinating topic. But is it really quite as simple as Dawkins suggests? I certainly thought so during my atheist phase, which ended towards the end of 1971, and would then have regarded Dawkins' arguments as decisive. But not now.

Let's begin by looking at that definition of faith, and ask where it comes from. Faith 'means blind trust, in the absence of evidence, even in the teeth of evidence.' But why should anyone accept this ludicrous definition? What is the evidence that this is how religious people define faith? Dawkins is coy at this point, and adduces no religious writer to substantiate this highly implausible definition, which appears to have been conceived with the deliberate intention of making religious faith seem a piece of intellectual buffoonery. I don't accept this idea of faith, and I have yet to meet a theologian who takes it seriously.<sup>[21]</sup> It cannot be defended from any official declaration

of faith from any Christian denomination. It is Dawkins' own definition, constructed with his own agenda in mind, being represented as if it were characteristic of those he wishes to criticise.

What is really worrying is that Dawkins genuinely seems to believe that faith actually is 'blind trust', despite the fact that no major Christian writer adopts such a definition. This is a core belief for Dawkins, which determines more or less every aspect of his attitude to religion and religious people. Yet core beliefs often need to be challenged. For, as Dawkins once remarked of Paley's ideas on design, this belief is 'gloriously and utterly wrong'.

Faith, Dawkins tells us, 'means blind trust, in the absence of evidence, even in the teeth of evidence.' This may be what Dawkins thinks; it is not what Christians think. Let me provide a definition of faith offered by W.H. Griffith-Thomas (1861-1924), a noted Anglican theologian who was one of my predecessors as Principal of Wycliffe Hall, Oxford. The definition of faith that he offers is typical of any Christian writer.<sup>[22]</sup>

[Faith] affects the whole of man's nature. It commences with the conviction of the mind based on adequate evidence; it continues in the confidence of the heart or emotions based on conviction, and it is crowned in the consent of the will, by means of which the conviction and confidence are expressed in conduct.

It's a good and reliable definition, synthesising the core elements of the characteristic Christian understanding of faith. And this faith 'commences with the conviction of the mind based on adequate evidence.' I see no point in wearying readers with other quotations from Christian writers down the ages in support of this point. In any case, it is Dawkins' responsibility to demonstrate that his skewed and nonsensical definition of 'faith' is characteristic of Christianity through evidence-based argument.

Having set up his straw man, Dawkins knocks it down. It is not an unduly difficult or demanding intellectual feat. Faith is infantile, we are told - just fine for cramming into the minds of impressionable young children, but outrageously immoral and intellectually risible in the case of adults. We've grown up now, and need to move

on. Why should we believe things that can't be scientifically proved? Faith in God, Dawkins argues, is just like believing in Santa Claus and the Tooth Fairy. When you grow up, you grow out of it.

This is a schoolboy argument that has accidentally found its way into a grown-up discussion. It is as amateurish as it is unconvincing. There is no serious empirical evidence that people regard God, Santa Clause and the Tooth Fairy as being in the same category. I stopped believing in Santa Claus and the Tooth Fairy when I was about six years old. After being an atheist for some years, I discovered God when I was eighteen, and have never regarded this as some kind of infantile regression. As I noticed while researching *The Twilight of Atheism*, a large number of people come to believe in God in later life - when they are 'grown up'. I have yet to meet anyone who came to believe in Santa Claus or the Tooth Fairy late in life.

If Dawkins' rather simplistic argument has any plausibility, it requires a real analogy between God and Santa Claus to exist - which it clearly does not. Everyone knows that people do not regard belief in God as belonging to the same category as these childish beliefs. Dawkins, of course, argues that they both represent belief in non-existent entities. But this represents a very elementary confusion over which is the conclusion and which the presupposition of an argument.

The highly simplistic model proposed by Dawkins seems to recognize only two options: 0% probability (blind faith) and 100% probability (belief caused by overwhelming evidence). Yet the vast majority of scientific information needs to be discussed in terms of the probability of conclusions reached on the basis of the available evidence. Some have argued for assessing the reliability of probability of a hypothesis on the basis of Bayes' theorem.[23] Such approaches are widely used in evolutionary biology. For example, Elliott Sober proposed the notion of 'modus Darwin' for arguing for common Darwinian ancestry on the basis of present similarities between species.[24] The approach can only work on the basis of probability, leading to probabilistic judgements. But there's no problem

here. It's an attempt to quantify the reliability of inferences.

One of the most striking things about Dawkins' atheism is the confidence with which he asserts its inevitability. It is a curious confidence, which seems curiously out of place - perhaps even out of order - to those familiar with the philosophy of science. As Richard Feynman (1918-88), who won the Nobel Prize for physics in 1965 for his work of quantum electrodynamics, often pointed out, scientific knowledge is a body of statements of varying degree of certainty - some most unsure, some nearly sure, but none absolutely certain.[25] Yet Dawkins seems to deduce atheism from the 'book of nature' as if it were a pure matter of logic. Atheism is asserted as if it was the only conclusion possible from a series of axioms. Yet given that the natural sciences proceed by inference from observational data, how can Dawkins be so sure about atheism? At times, he speaks with the conviction of a believer about the certainties of a godless world. It is as if atheism was the secure and inevitable result of a seamless logical argument. But how can he achieve such certainty, when the natural sciences are not deductive in their methods? Others have examined the same evidence, and come to quite different conclusions. As will be clear from what has been said thus far, Dawkins' insistence that atheism is the only legitimate worldview for a natural scientist is an unsafe and unreliable judgement.

Yet my anxiety is not limited to the flawed intellectual case that Dawkins' makes for his convictions; I am troubled by the ferocity with which he asserts his atheism. One obvious potential answer is that the grounds of Dawkins' atheism lie elsewhere than his science, so that there is perhaps a strongly emotive aspect to his beliefs at this point. Yet I have not come across anything that forces me to this conclusion. The answer has to lie elsewhere.

I began to find an answer to my question while reading a careful analysis of the distinctive style of reasoning that we find in Dawkins' writings. In an important comparative study, Timothy Shanahan pointed out that Stephen Jay Gould's approach to the question of evolutionary progress was determined by an inductivist approach, based primarily on empirical data.[26] Dawkins, he

noted, 'proceeded by elaborating the logic of 'adaptationist philosophy' for Darwinian reasoning.' This being the case, Dawkins' conclusions are determined by a set of logical premises, which are ultimately - yet indirectly - grounded in the empirical data. 'The very nature of a valid deductive argument is such that, given certain premises, a given conclusion follows of logical necessity quite irrespective of whether the premises used are true.' In effect, Dawkins uses an essentially inductive approach to defend a Darwinian worldview - yet then extracts from this worldview a set of premises from which secure conclusions may be deduced.

Although Shanahan limits his analysis to exploring how Gould and Dawkins arrive at such antithetically opposed conclusions on the issue of evolutionary progress, his analysis is clearly capable of extension to his religious views. Having inferred that Darwinism is the best explanation of observation, Dawkins proceeds to transmute a provisional theory into a certain worldview. Atheism is thus presented as the logical conclusion of a series of axiomatic premises, having the certainty of a deduced belief, even though its ultimate basis is actually inferential.

## Is God a meme? Or a virus?

Since faith in God, for Dawkins, is utterly irrational, it remains to be explained why so many people share such a faith. The answer lies in the 'meme', which Dawkins defines as an intellectual replicator. People do not believe in God because the intellectual case for such belief is compelling. They do so because their minds have been infested with a highly contagious and highly adapted 'God-meme'.<sup>[27]</sup> They are the innocent, unsuspecting victims of a malignant 'g'virus of the mind'.

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 by a process which, in the broad sense of the term, can be called imitation.

This view is first set forth in *The Selfish Gene* 1976, although in later writings Dawkins prefers to speak of God as a 'virus of the mind'. The notion

of an invasive replicator is retained; the biological analogue is, however, reworked.

There is no doubt that Dawkins' greatest impact on popular culture has been through his concept of the 'meme'. Although the notion of a cultural replicator was far from new, Dawkins has done much to popularise the concept, and make it accessible to a wider audience through his simple terminology and illustrations. As Dawkins immediately applied the idea of the 'meme' to issues of religious belief, it is clearly important to explore this concept in this lecture.

In what follows, I shall explore Dawkins' concept of the 'meme'. There are four critical difficulties that confront this specific idea, as follows.<sup>[28]</sup>

§ There is no reason to suppose that cultural evolution is Darwinian, or indeed that evolutionary biology has any particular value in accounting for the development of ideas.

§ There is no direct observational evidence for the existence of 'memes' themselves.

§ The existence of the 'meme' itself rests on an analogy with the gene itself, which proves incapable of bearing the weight that is placed upon it.

§ Quite unlike the gene, there is no necessary reason to propose the existence of a 'meme'. The observational data can be accounted for perfectly well by other models and mechanisms.

In view of Dawkins' emphasis on evidence-based reasoning, the second of these two concerns is of especially pressing importance in this lecture. Dawkins is aware that his thesis is seriously underdetermined by the evidence. Quite simply, there is no observational evidence that demands the meme hypothesis. In his preface to Susan Blackmore's *Meme Machine* (1999), Dawkins points out the problems that the 'meme' faces if it is to be taken seriously within the scientific community:<sup>[29]</sup>

Another objection is that we don't know what memes are made of, or where they reside. Memes have not yet found their Watson and Crick; they even lack their Mendel. Whereas genes are to be found in precise locations on chromosomes, memes presumably exist in brains, and we have even less chance of seeing one than of seeing a gene (though the neurobiologist Juan Delius has pictured his

conjecture of what a meme might look like).

Dawkins talking about memes is like believers talking about God - an invisible, unverifiable postulate, which helps explain some things about experience, but ultimately lies beyond empirical investigation.

And just what are we to make of the point that 'the neurobiologist Juan Delius has pictured his conjecture of what a meme might look like'? I've seen countless pictures of God in many visits to art galleries - such as William Blake's famous watercolour known as *The Ancient of Days* (1794). So being able to picture the meme verifies the concept? Or makes it scientifically plausible? Delius' proposal that a meme will have a single locatable and observable structure as 'a constellation of activated neuronal synapses' is purely conjectural, and has yet to be subjected to rigorous empirical investigation.[30] It's one thing to speculate about what something might look like; the real question is whether it is there at all.

The glaring contrast with the gene will be obvious. Genes can be 'seen', and their transmission patterns studied under rigorous empirical conditions. What started off as hypothetical constructs inferred from systematic experiment and observation ended up being observed themselves. The gene was initially seen as a theoretical necessity, in that no other mechanism could explain the relevant observations, before being accepted as a real entity on account of the sheer weight of evidence. But what about memes? The simple fact is that they are, in the first place, *hypothetical constructs*, inferred from observation rather than observed in themselves; in the second place, *unobservable*; and in the third place, more or less *useless* at the explanatory level. This makes their rigorous investigation intensely problematic, and their fruitful application somewhat improbable.

And what about the mechanism by which memes are allegedly transmitted? One of the most important implications of the work of Crick and Watson on the structure of DNA was that it opened the way to an understanding of the mechanism of replication. So what physical mechanism is proposed in the case of the meme? How does a meme cause a memetic effect? Or, to put the question in a more pointed way: How

could we even begin to set up experiments to identify and establish the structure of memes, let alone to explore their relation to alleged memetic effects?

Undeterred, Dawkins went on to develop his meme-concept in another direction - a virus of the mind. 'Memes', Dawkins tells us, can be transmitted 'like viruses in an epidemic.'[31] The idea of God is thus to be thought of as a malignant, invasive infection, which infests otherwise healthy minds. Again, Dawkins' key point is that belief in God does not arise on rational or evidential grounds: it is the result of being infected by an infective, invasive virus, comparable to those which cause chaos to computer networks. As with the meme, the key to the 'God as virus' hypothesis is *replication*. For a virus to be effective, it must possess two qualities: the ability to replicate information accurately, and to obey the instructions which are encoded in the information replicated in this way.[32] Once more, belief in God was proposed as a malignant infection contaminating otherwise pure minds. And again, the whole idea founders on the rocks of the absence of experimental evidence.

Not only is there a total absence of any observational evidence that ideas are like viruses, or spread like viruses - a decisive consideration that Dawkins glosses over with alarming ease. It is meaningless to talk about one kind of virus being 'good' and another 'evil'. In the case of the host-parasite relationship, this is simply an example of Darwinian evolution at work. It's neither good nor bad. It's just the way things are. If ideas are to be compared to viruses, then they simply cannot be described as 'good' or 'bad' - or even 'right' or 'wrong'. This would lead to the conclusion that all ideas are to be evaluated totally on the basis of the success of their replication and diffusion - in other words, their success in spreading, and their rates of survival.

And again, if all ideas are viruses, it proves impossible to differentiate on scientific grounds between atheism and belief in God. The mechanism proposed for their transfer does not allow their intellectual or moral merits to be assessed. Neither theism nor atheism are demanded by the evidence, although both may be accommodated to it. The merits of such ideas are to be determined on other grounds, where

necessary going beyond the limits of the scientific method to reach such conclusions.

But what is the experimental evidence for these hypothetical 'viruses of the mind'? In the real world, viruses are not known solely by their symptoms; they can be detected, subjected to rigorous empirical investigation, and their genetic structure characterised minutely. In contrast, the 'virus of the mind' is hypothetical; posited by a questionable analogical argument, not direct observation; and is totally unwarranted conceptually on the basis of the behaviour that Dawkins proposes for it. Can we observe these viruses? What is their structure? Their 'genetic code'? Their location within the human body? And, most importantly of all, given Dawkins' interest in their spread, what is their mode of transmission?

We could summarise the problems under three broad headings.

§ Real viruses can be seen - for example, using cryo-electron microscopy. Dawkins' cultural or religious viruses are simply hypotheses. There is no observational evidence for their existence.

§ There is no experimental evidence that ideas are viruses. Ideas may seem to 'behave' in certain respects as *if* they are viruses. But there is a massive gap between analogy and identity - and, as the history of science illustrates only too painfully, most false trails in science are about analogies which were mistakenly assumed to be identities.

§ The 'God as virus' slogan is shorthand for something like 'the patterns of diffusion of religious ideas seem to be analogous to those of the spread of certain diseases.' Unfortunately, Dawkins does not give any evidence-based arguments for this, and prefers merely to conjecture as to the impact of such a hypothetical virus on the human mind.

The 'thought contagion' metaphor has been developed most thoroughly by Aaron Lynch,[33] who makes the crucially important point that the way in which ideas spread has no necessary relation to their validity or 'goodness'. As Lynch puts it:[34]

The term 'thought contagion' is neutral with respect to truth or falsity, as well as good or bad. False beliefs can spread as thought contagions,

but so too can true beliefs. Similarly, harmful ideas can spread as thought contagions, but so too can beneficial ideas.... Thought contagion analysis concerns itself primarily with the mechanism by which ideas spread through a population. Whether an idea is true, false, helpful or harmful are considered mainly for the effects they have on transmission rates.

Neither Dawkins' concept of the 'meme' or the 'virus of the mind' helps us validate or negate ideas, or understand or explain patterns of cultural development. As most working in the area of cultural development have concluded, it is perfectly possible to postulate and study cultural evolution while remaining agnostic to its mechanism. Stephen Shennan, who once thought that memes might play a critically important role in understanding cultural evolution, but has since changed his mind, commented thus on this superfluous and evidentially underdetermined notion: 'All we need to do is recognize that cultural inheritance exists, and that its routes are different from the genetic ones.'[35] And that seems to be where the debate rests at present.[36]

## Religion impoverishes our view of the universe

One of Dawkins' persistent complaints about religion is that it is aesthetically deficient. Its view of the universe is limited, impoverished and unworthy of the wonderful reality known by the sciences.[37]

The universe is genuinely mysterious, grand, beautiful, awe-inspiring. The kinds of views of the universe which religious people have traditionally embraced have been puny, pathetic, and measly in comparison to the way the universe actually is. The universe presented by organized religions is a poky little medieval universe, and extremely limited.

The logic of this bold assertion is rather hard to follow, and its factual basis astonishingly slight. The 'medieval' view of the universe may indeed have been more limited and restricted than modern conceptions. Yet this has nothing to do with religion, either as cause or effect. It reflected the science of the day, largely based upon Aristotle's treatise *de caelo* ('on heaven'). If the universe of religious people in the Middle Ages

was indeed 'poky', it was because they were naive enough to assume that what their science textbooks told them was right. Precisely that trust in science and scientists which Dawkins commends so uncritically led them to weave their theology around someone else's view of the universe. They didn't know about such things as 'radical theory change in science', which causes twenty-first people to be cautious about investing too heavily in the latest scientific theories, and much more critical of those who base worldviews upon them.

The implication of Dawkins' unsubstantiated criticism is that a religious view of reality is deficient and impoverished in comparison with his own. There is no doubt that this consideration is an important factor in generating and maintaining his atheism. Yet his analysis of this issue is disappointingly thin and unpersuasive.

A Christian approach to nature identifies three ways in which a sense of awe comes about in response to what we observe.

§ An immediate sense of wonder at the beauty of nature. This is evoked *immediately*. This 'leap of the heart' that William Wordsworth described on seeing a rainbow in the sky occurs *before* any conscious theoretical reflection on what it might imply. To use psychological categories, this is about *perception*, rather than *cognition*. I can see no good reason for suggesting that believing in God diminishes this sense of wonder. Dawkins' argument at this point is so underdetermined by evidence and so utterly implausible that I fear I must have misunderstood it.

§ A derived sense of wonder at the mathematical or theoretical representation of reality which arises from this. Dawkins also knows and approves of this second source of 'awed wonder', but seems to imply that religious people 'revel in mystery and feel cheated when it is explained'.<sup>[38]</sup> They don't; a new sense of wonder emerges, which I will explain in a moment.

§ A further derived sense of wonder at what the natural world points to. One of the central themes of Christian theology is that the creation bears witness to its creator, 'The heavens declare the glory of the Lord!' (Psalm 19:1). For Christians, to experience the beauty of creation is a sign or pointer to the glory of God, and is to be particularly cherished for this reason. Dawkins

excludes any such transcendent reference from within the natural world.

Dawkins suggests that a religious approach to the world misses out on something.<sup>[39]</sup> Having read *Unweaving the Rainbow*, I still haven't worked out what this is. A Christian reading of the world denies nothing of what the natural sciences tell us, except the naturalist dogma that reality is limited to what may be known through the natural sciences. If anything, a Christian engagement with the natural world adds a richness which I find quite absent from Dawkins' account of things, offering a new motivation for the study of nature. After all, John Calvin (1509-64) commented on how much he envied those who studied physiology and astronomy, which allowed a direct engagement with the wonders of God's creation. The invisible and intangible God, he pointed out, could be appreciated through studying the wonders of nature.

Dawkins' most reflective account of 'mystery' is found in *Unweaving the Rainbow*, which explores the place of wonder in an understanding of the sciences. While maintaining Dawkins' core hostility to religion, the work acknowledges the importance of a sense of awe and wonder in driving people to want to understand reality. Dawkins singles out the poet William Blake as an obscure mystic, who illustrates why religious approaches to mystery are pointless and sterile. Dawkins locates Blake's many failings in an understandable - but misdirected - longing to delight in a mystery:<sup>[40]</sup>

The impulses to awe, reverence and wonder which led Blake to mysticism ... are precisely those that lead others of us to science. Our interpretation is different but what excites us is the same. The mystic is content to bask in the wonder and revel in a mystery that we were not 'meant' to understand. The scientist feels the same wonder, but is restless, not content; recognizes the mystery as profound, then adds, 'But we're working on it.'

So there isn't actually a problem with the word or the category of 'mystery'. The question is whether we choose to wrestle with it, or take the lazy and complacent view that this is conveniently off-limits.

Traditionally, Christian theology has been well

aware of its limits, and has sought to avoid excessively confident affirmations in the face of mystery. Yet at the same time, Christian theology has never seen itself as totally reduced to silence in the face of divine mysteries. Nor has it prohibited intellectual wrestling with 'mysteries' as destructive or detrimental to faith. As the nineteenth-century Anglican theologian Charles Gore rightly insisted:[41]

Human language never can express adequately divine realities. A constant tendency to apologize for human speech, a great element of agnosticism, an awful sense of unfathomed depths beyond the little that is made known, is always present to the mind of theologians who know what they are about, in conceiving or expressing God. 'We see', says St Paul, 'in a mirror, in terms of a riddle;' 'we know in part.' 'We are compelled,' complains St Hilary, 'to attempt what is unattainable, to climb where we cannot reach, to speak what we cannot utter; instead of the mere adoration of faith, we are compelled to entrust the deep things of religion to the perils of human expression'.

A perfectly good definition of Christian theology is 'taking rational trouble over a mystery' - recognising that there may be limits to what can be achieved, but believing that this intellectual grappling is both worthwhile and necessary. It just means being confronted with something so great that we cannot fully comprehend it, and so must do the best that we can with the analytical and descriptive tools at our disposal. Come to think of it, that's what the natural sciences aim to do as well. Perhaps it's no wonder that there is such a growing interest in the dialogue between science and religion.

## Religion is a bad thing

Finally, I turn to a core belief that saturates Dawkins' writings - that religion is a bad thing. It is clear that this is both an intellectual and moral judgement. In part, Dawkins regards religion as evil because it is based on faith, which evades any human obligation to think. We've already seen that this is a highly questionable viewpoint, which cannot be sustained in the face of the evidence.

The moral point is, of course, much more serious.

Everyone would agree that some religious people do some very disturbing things. But the introduction of that little word 'some' to Dawkins' argument immediately dilutes its impact. For it forces a series of critical questions. How many? Under what circumstances? How often? It also forces a comparative question: how many people with *antireligious* views also do some very disturbing things? And once we start to ask that question, we move away from cheap and easy sniping at our intellectual opponents, and have to confront some dark and troubling aspects of human nature. Let's explore this one.

I used to be antireligious. In my teens, I was quite convinced that religion was the enemy of humanity, for reasons very similar to those that Dawkins sets out in his popular writings. But not now. And one of the reasons is my dreadful discovery of the dark side of atheism. Let me explain. In my innocence, I assumed that atheism would spread through the sheer genius of its ideas, the compelling nature of its arguments, its liberation from the oppression of religion, and the dazzling brilliance of the world it commended. Who needed to be coerced into such beliefs, when they were so obviously right?

Now, things seem very different. Atheism is not 'proved' in any sense by any science, evolutionary biology included. Dawkins thinks it is, but offers arguments which are far from compelling. And yes, atheism liberated from religious oppression, especially in France in the 1780s. But when atheism ceased to be a private matter, and became a state ideology, things suddenly became rather different. The liberator turned oppressor. Unsurprisingly, these developments tend to be airbrushed out of Dawkins' rather selective reading of history. But they need to be taken with immense seriousness if the full story is to be told.

The final opening of the Soviet archives in the 1990s led to revelations that ended any notion that atheism was quite as gracious, gentle and generous a worldview as some of its more idealistic supporters believed. *The Black Book of Communism*, based on those archives,[42] created a sensation when first published in France in 1997, not least because it implied that French communism - still a potent force in national life - was irreducibly tainted with the

crimes and excesses of Lenin and Stalin. Where, many of its irate readers asked, were the 'Nuremberg Trials of Communism'? Communism was a 'tragedy of planetary dimensions' with a grand total of victims variously estimated by contributors to the volume at between 85 million and 100 million - far in excess of those committed under Nazism.

Now one must be cautious about such statistics, and equally cautious about rushing to quick and easy conclusions on their basis. Yet the basic point cannot really be overlooked. One of the greatest ironies of the twentieth century is that many of the most deplorable acts of murder, intolerance and repression of the twentieth century were carried out by those who thought that religion was murderous, intolerant and repressive - and thus sought to remove it from the face of the planet as a humanitarian act.

Even his most uncritical readers should be left wondering why Dawkins has curiously failed to mention, let alone engage with, the blood-spattered trail of atheism in the twentieth century - one of the reasons, incidentally, that I eventually concluded that I could no longer be an atheist. Or one of the greatest charlatans of the twentieth century: Madalyn Murray O'Hair, founder of American Atheists Inc.[43] Its omission is deeply revealing.

Now I could draw the conclusion, based on a few choice stories and a highly selective reading of history, that atheists are all totally corrupt, violent and depraved. Yet I cannot and will not, simply because the facts do not permit it. The truth, evident to anyone working in the field, is that some atheists are indeed very strange people - but that most are totally ordinary people, just wanting to get on with their lives, and not wanting to oppress, coerce or murder anyone. Both religion and anti-religion are capable of inspiring great acts of goodness on the part of some, and acts of violence on the part of others.

The real issue - as Friedrich Nietzsche pointed out over a century ago - is that there seems to be something about human nature which makes our belief systems capable of inspiring both great acts of goodness and great acts of depravity. Dawkins, of course, insists on portraying the pathological as the normal. He has to. Otherwise, the argument

doesn't work.

Pretending that religion is the only problem in the world, or the base of all its pain and suffering, is simply no longer a real option for thinking people. It's just rhetoric, masking a difficult problem we all need to address - namely, how human beings can coexist and limit their passions. There is a very serious problem here, which needs to be discussed openly and frankly by atheists and Christians alike - namely, how some of those who are inspired and uplifted by a great vision of reality end up doing such dreadful things. This is a truth about human nature itself. It can easily be accommodated with a specifically Christian understanding of human nature, which affirms that we bear the 'image of God' while being fallen on account of sin.[44] To put it very simplistically, the lingering remnant of divine likeness impels us to goodness; the powerful presence of sin drags us down into a moral quagmire, from which we can never entirely escape.

But there is another issue here which we need to note. Dawkins is quite clear that science cannot determine what is right and what is wrong. What about evidence that religion is bad for you? And what criteria might one use to determine what was 'bad'? Dawkins himself is quite clear: 'science has no methods for deciding what is ethical.'[45]

Dawkins' discussion of what religion does do people is littered with flagrantly biased anecdotes and hopelessly unsubstantiated generalizations. Rhetoric displaces careful observation and analysis. Yet there is a large and growing body of evidence-based literature dealing with the impact of religion - whether considered generically, or as a specific form of faith - upon individuals and communities.[46] Although it was once fashionable to suggest that religion was some kind of pathology,[47] this view is now retreating in face of mounting empirical evidence that suggests (but not conclusively) that many forms of religion might actually be good for you.[48] Sure, some forms of religion can be pathological and destructive. Others, however, seem to be rather good for you. Of course, this evidence does not allow us to infer that God exists. But it does undermine a central pillar of Dawkins' atheistic crusade - the core belief that religion is bad for you.

A 2001 survey of 100 evidence-based studies to systematically examine the relationship between religion and human wellbeing disclosed the following:[49]

§ 79 reported at least one positive correlation between religious involvement and wellbeing;

§ 13 found no meaningful association between religion and wellbeing;

§ 7 found mixed or complex associations between religion and wellbeing;

§ 1 found a negative association between religion and wellbeing.

Dawkins' entire worldview depends upon precisely this negative association between religion and human wellbeing which only 1% of the experimental results unequivocally affirm, and 79% equally unequivocally reject. The results make at least one thing abundantly clear: we need to approach this subject in the light of the scientific evidence, not personal prejudice. I would not dream of suggesting that this evidence proves that faith is good for you. But I need to make it clear that it is seriously embarrassing for Dawkins, whose world seems to be shaped by the core assumption that faith is bad for you - a view which is unsustainable in the light of the evidence.

For Dawkins, the issue is simple: the question is 'whether you value health or truth.'[50] As religion is false - one of the unassailable core beliefs which recurs throughout his writings - it would be immoral to believe, whatever benefits it might bring. Yet Dawkins' arguments that belief in God is false just don't add up. That's probably why he supplements them with the additional argument that religion is bad for you. The growing body of evidence that religion actually promotes human wellbeing is highly awkward for him here. Not only does it subvert a critical functional argument for atheism; it begins to raise some very troubling questions about its truth as well.

## Conclusion

This lecture has barely scratched the surface of a series of fascinating questions raised by the writings of Richard Dawkins. Some of these are directly, others indirectly, religious in nature. I am conscious that I have failed to deal with any of them in the detail that they rightly demand. I have opened up some questions for further discussion,

and have not settled anything - except that the issues raised here are important and interesting. Dawkins asks all the right questions, and gives some interesting answers. They're not particularly reliable answers, admittedly, unless you happen to believe that religious people are science-hating fools who are into 'blind faith' and other unmentionable things in a big way.

It's time to move the discussion on, and draw a line under the unreliable account of the relation of science and religion that Dawkins offers. An evidence-based approach to the question is much more complex than Dawkins' 'path of simplicity and straight thinking'.

The question of whether there is a God, and what that God might be like, has not - despite the predictions of overconfident Darwinians - gone away since Darwin, and remains of major intellectual and personal importance. Some minds may be closed; the evidence and the debate, however, are not. Scientists and theologians have so much to learn from each other. Listening to each other, we might hear the galaxies sing.[51] Or even the heavens declaring the glory of the Lord (Psalm 19:1).

Thank you for listening!

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[11] Richard Dawkins, *Climbing Mount Improbable*. London: Viking, 1996, 64.

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[13] The index, of course, is not exhaustive: see, for example, the brief (and somewhat puzzling) discussion of God found at *The Blind Watchmaker*, 141. But the omission is interesting.

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