THE DAWKINS DELUSION

Why We Should Believe in God

By

David Sinclair

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Introduction

Over the last couple of years there have been a remarkable number of what one might call "Anti-God" books published by prominent atheists, such as:
Against all Gods by A C Grayling an atheist philosopher
God Is Not Great by Christopher Hitchens an atheist journalist
The End of Faith and *Letter to a Christian Nation* by Sam Harris another atheistic journalist

But by far the most well known and I believe the most widely read is *The God Delusion* by Richard Dawkins – which has sold over 1.5 million copies and been translated into more than 30 languages. This is, of course, the book that inspired the title for this talk.

In general terms today I'm going to counter the points made by Dawkins and the other atheistic authors, more than that I'm going to argue that they are completely wrong and that in fact there is a strong positive case for why we should believe in God.

Firstly, Dawkins generally gets his science right – as you might expect – at least if you limit that comment to what Dawkins actually says, but, and it's a big but, he fails to deal with or even to mention numbers of extremely difficult issues which really do need to be addressed. Thus he presents the material he does discuss in a misleading way. Furthermore, when it comes to philosophy or theology his book is extremely superficial and often plainly wrong. Perhaps we should not be surprised as Dawkins is neither a theologian nor a philosopher. However, he roundly criticises theologians and other supporters of Christianity who get their science wrong, so he should be prepared to accept this reverse criticism.

Dawkins selects soft targets to attack often (I believe deliberately) taking Biblical passages out of context or (again I believe deliberately) distorting conventional theological interpretation. It is also interesting to note that Christianity bears by far the greatest brunt of his attacks, although the title of the book implies that all world religions should be under equal attack. Perhaps this is because his problem is not so much with God as with Christianity – or maybe he is afraid of arousing the wrath of the Islamic fundamentalists. Dawkins also derides Christian morality, but as we shall see later the Darwinism that Dawkins promotes offers no basis for higher moral and ethical standards. I shall also argue that high moral standards are actually undermined by his favourite theory – natural selection – and are largely apparent in and have mainly been driven by countries with a Judeo-Christian heritage and culture.

An Outline of the God Delusion

He starts with a chapter entitled "A deeply religious non-believer". I'm not too sure what the object of this chapter is, other than to make the point that some scientists who might have been thought to be religious – such as Einstein – were at the most deists and not at all religious in the sense that most people would use that term. Dawkins also attacks the notion of religious freedom, which he sees as abusive, apparently because some religious groups have used this freedom to attack other minority groups such as homosexuals. Perhaps he

would prefer that books such as his should be banned because they vehemently attack religious minorities? Surely a high degree of freedom of speech is a basic democratic right.

His second chapter is entitled "the God hypothesis". After taking a few cheap sideswipes at the Judeo Christian God – although interestingly enough not at the god of Islam or indeed any other god – Dawkins defines what he calls the god hypothesis. This is stated as – "there exists a superhuman, supernatural intelligence who deliberately designed and created the universe and everything in it, including us." He then puts forward his own alternative view "any creative intelligence, of sufficient complexity to design everything, comes into existence only as the end product of an extended process of gradual evolution." I wouldn't take too much issue with Dawkins God hypothesis, but his own statement is nothing more than a bald completely unverifiable assertion for which he does not even attempt to offer a justification.

I believe that his argument is based on an unstated premise of materialism – the idea that the ultimate objects in our universe are the elementary particles of which matter is composed. If that were true then perhaps a being within our universe who knew enough to design the universe would be improbable. However, I am not prepared to concede Dawkins unspoken premise – which he is either unaware of, or is seeking to conceal so that he doesn't have to defend it. Additionally, and more importantly, he is seeking to adopt both materialistic criteria and also human standards - both of which are necessarily derived from the finite physical universe in which we exist - and to apply them to an eternal, infinite God.

The Christian God and any god who could have designed and created the universe must be a God who stands outside our universe and indeed outside of space-time and of whom we can know nothing other than that which has been revealed to us. However, I believe the fact that we can potentially know something is important – we shall return to that issue later. Dawkins totally fails to differentiate between an imminent God who is active in our universe and a totally passive god who remains aloof from it.

In chapter three, Dawkins outlines some of the tired old arguments for the existence of God that have been around for centuries and largely discredited for almost as long. I tend to agree with Dawkins that we cannot prove God's existence using only logic and reason, but that is far from saying that we cannot prove the existence of God at all. As I shall attempt to show today, I believe that good evidence for, although not a proof of, the existence of God is provided by a proper study of the created universe.

In this chapter Dawkins also attacks the historical credibility of scripture – indeed he describes the Gospels as fiction. As those of you who attended my training day on "An Overview of the Bible" will know I consider that there is every reason to believe in (a) the reliability of the bible texts that have been handed down to us and (b) the historical reliability of the events that these texts recount. I'm not proposing to cover all that ground again today, but those of you who are interested can find the text of that talk on my website.

Dawkins also discusses the so-called Pascal's Wager. The French mathematician Blaise Pascal is famous for saying that you had better believe in God, because if he exists then you will go to heaven, but if he does not exist then you have lost nothing by believing in him. However, if you do not believe in him and he does exist then you will go to hell. However, Pascal's Wager is hardly a serious reason for believing in God – it's certainly not an argument that I advocate – and may have been intended as a joke anyway.

Finally, Dawkins discusses a recent attempt by a theologian to calculate the probability that God exists along Bayesian lines – but any such an attempt is only as good as the choice of criteria that are held to be relevant and the values assigned to the inputs for those criteria, both of which are necessarily entirely subjective and totally arbitrary. I largely agree with Dawkins criticism of this nonsense,

In chapter four, entitled: Why there almost certainly is no God, Dawkins arrives at the real meat of his book. Here we learn that Dawkins does in fact believe in a God and its name is Darwinian natural selection! Dawkins is completely enamoured of the concept of evolution through natural selection and clearly believes that it can usefully be applied everywhere.

As regards life on earth Dawkins asserts that natural selection is a powerful creative force which should be assumed as the mechanism for the origin and development of life rather that an invisible creator God. He admits early in this chapter (p119/120) that creationists are correct when they say that it is just too improbable that the operation of random chance could be responsible for the origin of life, but argues that natural selection provides a credible mechanism. However, he later partly backs away from this admission when he asserts that the possibility of trillions of planets suitable for the development of life overcomes the problem of chance (p138). Unfortunately for this Dawkins argument, as we shall see later, the improbability of a chance origin of life is so great that the possible existence of trillions of suitable planets (even supposing they exist) makes no significant dent in the odds against.

Dawkins also argues that if we assume a God we have to address the question of who created the creator. I reject that objection because I contend that God is eternal and not created. Dawkins doesn't even mention this issue despite the fact that the eternal nature of God is a basic tenet of Christianity. Scientists can hardly say that that is eternal existence is a "cop-out" because they avidly subscribed to the idea of an eternal unchanging universe to avoid the problem of how the universe was created – the idea was called the steady state theory – until that theory was proven by observation to be incorrect in the mid 1960's. Ever since then science has been struggling to cope with the means by which the universe could have come into existence in the precise form it has some 13.7 billion years ago.

Because they are so important, both in Dawkins thought, and for the positive case for a creator designer, we are going to take a more detailed look at theories of natural selection as they apply to life in a little while. For the moment suffice it to say that I do believe that Darwinism (and important conceptual modifications of his original theory) can and do explain some of the development of living organisms that we observe. However, I do not believe that these theories are adequate to explain ALL such development and I emphatically do not accept that they have any place whatsoever in explaining the origins of life from non-living materials. As I said we're going to return to that issue.

Dawkins then moves on to consider the problems involved in explaining the origin of the universe. He admits that there are serious issues regarding the "fine tuning" of the laws that govern our universe (p141). I covered a lot of that ground in a previous talk entitled "The Scientific Evidence for God" which again is available on my website for those who might be interested and I'm not going to cover all of that material again today. But because the issue is so important I'm just going to touch on one or two examples of how the laws of our universe have been exquisitely finely tuned so as to make life in this universe possible.

Firstly, the rate of expansion of the universe after the big bang is extremely critical. If it had been too low, the universe would have re-collapsed to a point long before life could have formed. If it had been too high then matter wouldn't have been able to clump together to from galaxies and stars. Stephen Hawking and other cosmologists have computed that that value was critical to one part in a hundred thousand million million.

Secondly, the conversion of hydrogen to helium inside stars – an issue governed by the strength of the strong nuclear force – was and is critical. If slightly less matter were converted to energy in this reaction then no heavy elements would exist at all (and life would be impossible). On the other hand if slightly more energy was released then all the matter in stars would have been burnt up long ago and again life would be impossible. Hoyle and other scientists have computed that this value is critical to at least one part in a million.

Thirdly, in the fractions of a second after its initial formation the universe had to have slight ripples of a very uniform nature within its structure. If these had not existed then galaxies and stars would not have formed and we would not be here today. This property called Q by cosmologists has to have a value of around 1/100,000 for the universe to have the kind of structure it has. Given that Q could have had virtually any value, the chances of it having the right value were some 10 trillion trillion trillion to one against.

Fourthly, the strength of the force of gravity is extremely critical to the structure of the universe. If we represent all the possible values it could have had as points on a ruler 100,000 km long – that's most of the way from here to the sun – and we moved the value of the force of gravity by the thickness of a single human hair on that ruler, then life in our universe would no longer be possible.

Fifthly, Roger Penrose has calculated that in order to produce a universe compatible with the second law of thermodynamics (which ours is) and otherwise compatible with observed features of our universe, the phase space volume required had to be accurate to within one part in 10 raised to the power 10 raised to the power 123. That's a number so big that even if we wrote one digit of it one every proton neutron or electron in the entire universe then there would not be enough particles for us to write it down on.

I could go on and on. There are many of these constants and initial conditions which are extremely critical to the existence of life in our universe, but I think I've said enough to demonstrate that it is vanishingly, almost impossibly unlikely that all or indeed almost any one of these could just have happened to have just the right values to make life possible by pure chance. Some people want to just dismiss this point, but that view is incorrect. We can't just dismiss this point, there is a real issue here. Even the most rabid atheists such as Dawkins believe and acknowledge that – that's why he devotes a significant amount of chapter four to dealing with this issue.

Dawkins attempts to deal with this problem by resorting to the so-called "multiverse theory" originally proposed by Linde and Guth (two cosmologists) for much the same reasons as Dawkins resorts to it. Linde and Guth theorised that there was a kind of universe generating machine which has produced trillions of trillions of trillions of universes – you can see why so many are needed because the improbability of having the right initial conditions and physical constants is so great. Dawkins suggests as an alternative, that perhaps the universe might have expanded and collapsed back to a point and then re-expanded many times – trillions of times – with different values for constants and laws each time, and we just happen

to live in a version with the appropriate laws. Unfortunately for Dawkins, Stephen Hawking has recently shown this oscillation process to be theoretically impossible and in any event the observational evidence is that out universe is probably expanding too fast to ever collapse again.

Lee Smolin has put forward a different kind of theory in which he speculates that black holes might give birth to baby universes each slightly different from its parent universe. The idea is that a process of "evolution " could lead to a universe like ours which can support life. As you can imagine Dawkins loves that idea because it uses his favourite concept – natural selection. However, what might drive such evolutionary selection is difficult to imagine. The universes would hardly be in competition with each other, indeed they would be totally isolated from each other. Dawkins totally fails to address this issue and indeed does not even mention it.

In my view the idea of the universe generator creates as many problems as it solves. Apart from the fact that it has no general explanatory power – it merely addresses the issue of how our universe can have such an unlikely set of rules and initial conditions – it totally begs the question of how such a universe generating machine might come into existence and ignores the problem that both it and these supposed other universes remain permanently outside any possibility of observation or verification by ourselves. As Robin Collins states: all things being equal, we should prefer hypotheses that are natural extrapolations from what we already know about the causal power of various kinds of entities[1]. Further for the universe generator hypothesis to work it needs to produce, or at least be able to produce, an infinite number of universes to be sure that one with the correct properties will arise. Yet neither of the current theories which permit a multi-universe scenario – Everett's quantum mechanical model or Linde's inflationary cosmology – justifies such an assumption. Both these models predict a finite and non-random set of universes[2]. Indeed the Everett model only predicts a set of parallel universes each of which has the same physical laws as our own. Clearly this model is of no help at all. Linde's model does generate universes with different laws, but not an exhaustively random set of such conditions.

As Clifford Longley says, adopting the multiverse model as opposed to the intelligent design hypothesis is like assuming that Shakespeare was not written by a man but by a billion monkeys typing randomly.

John Polkinghorne called the multiverse hypothesis a "pseudo scientific metaphorical guess". Compare this inelegant hypothesis with the much more elegant hypothesis of a highly intelligent and powerful creator and designer – a hypothesis which also has explanatory power in other areas such as the origin of life as we shall see later.

Dawkins admits that his arguments in chapter four are key to his whole book (p157). He summarises them in six numbered arguments (which I now paraphrase):

1. One of the greatest challenges to human intellect has been to explain the appearance of design in the universe.

2. It's tempting to attribute the appearance of design to actual design.

[1] Robert Collins, *Reason for Hope Within*, Grand Rapids p61
[2] W Craig, *Origins & Design 20, no 2*, p24

3. The temptation noted in 2. is erroneous as regards the universe, because we have the problem of who designed the designer. We need a mechanism whereby something simple can become complex without a designer creator.

4. The best such mechanism so far developed is Darwinian natural selection as regards living things.

5. We don't yet have an equivalent method for physics – but perhaps the multiverse theory might do the job.

6. We should not give up hope of developing a better mechanism/explanation for physics.

Much of what Dawkins had to say in his first three chapters especially perhaps his rantings against God and his condemnation of agnosticism, depended entirely on his ability to prove in chapter four that God was simply too improbable. Dawkins based his entire credibility on this chapter, but the only proof he delivered was a baldly stated, unargued, rhetorical hypothesis – that God was simply too improbable. Even at the simplest level, what justification is there for saying that God is more complex and unlikely than a universe generating machine – both of them are outside our universe with properties we cannot accurately determine. Dawkins also says that what is complex [God] must be created or explained by something of equal complexity – again he offers no justification for this assertion. As one philosopher commented, he may be appealing to the principle that 'like can only be caused by like' but that axiom is a relic of an old and long defunct understanding of physics.

In any event, I think the key point is that God is infinite and eternal and thus probability concepts, and indeed other concepts, which apply to our finite universe are not applicable. In particular we do not need to deal with the issue of the creation of God, as He is eternal. Also the possibility that we may be able to come to know of God's existence and something of His nature in an objective as opposed to a subjective sense – which must remain a real possibility if God is indeed imminent in our universe – must in itself make the God hypothesis preferable to that of a universe generating machine which will be forever unobservable and unknowable. Furthermore, as we have already noted, the God hypothesis has explanatory power in other areas – the origin of life – which the universe generating machine does not.

The remaining chapters of Dawkins book deal mainly with what he sees as the origins of religion and religious morality. Chapter five is entitled the roots of religion. Here Dawkins acknowledges that religion may protect its adherents from stress related diseases, but says that does not in any way justify it – that it is similar to medical treatment with a placebo. However, given that he believes he has shown that God is almost impossibly unlikely and also given that religion has been a feature of all human cultures since the dawn of history, Dawkins feels he needs to produce an explanation for this. Of course, given Dawkins obsession with natural selection he bases his attempted explanations on this. He says that his view is that religion is a by-product of something else (p172) – an accidental by-product, a mis-firing of something useful. He goes on to say that the details of this theory are various, complicated and disputable (p188). Indeed they are, they are nothing more than pure unsupported conjecture on Dawkins part. Following lots of conjecture Dawkins then tries to

invoke his theory of memes (units of cultural inheritance which he theorises could behave like genes (hence the name)) that he claims govern the spread of ideas through a culture. However, as far as I can detect Dawkins offers no credible explanation as to how this theory explains the ubiquitous presence of religion in all human cultures if there is indeed no God and therefore religion is both untrue and useless.

Chapter Six deals with the roots of morality and is essentially an argument that moral values can be derived by natural selection. I think this is one of Dawkins better chapters and I would agree with much of what he says, although purely altruistic sacrifice to benefit groups outside one's genetic heritage – of which we have plenty of examples – must surely be a misfiring of any Darwinian mechanism.

We also need to remember two important things. Firstly Darwinism or natural selection does not and cannot by its very nature prescribe or promote any particular set of moral codes or values or indeed ascribe any particular value to any given set of moral codes or values. Codes and behaviours do not have value because they are in any sense "good". From this point of view, only those things which have survival value are to be preferred. Thus we should not be surprised that things we might ordinarily deem morally reprehensible such as infanticide and rape have been defended in the name of Darwinism. Secondly, religion and Christianity in particular has been responsible for many things which are good and beneficial such as the abolition of slavery, the establishment of hospitals for the poor and bringing soviet communism to an end. We shall be looking at these issues in more detail later when we deal with Darwinism and natural selection.

Chapter Seven deals mainly with the Bible and to a small extent with other religious books. This is perhaps the weakest chapter in the entire book. Dawkins primary intention is to show that people in general do not get their morals from the Bible (I already told you that Christianity rather than God was Dawkins main target) – including practising Christians. Dawkins selects the most difficult parts of the Bible he can find and those which have some of the most challenging theological questions attached to them. However, he does not approach his subject in a manner of sensible intellectual debate. He catalogues what he sees as the evidence that the God of the Bible is a vindictive, angry, people hating, self aggrandising, sadistic etc etc being. His argument is that even Christians don't get their morals from the Bible because they don't believe that Christians should be angry, vindictive etc etc.

Dawkins approach completely ignores any scholarship on Biblical hermeneutics, modern scholarship of the theological issues involved or any consideration of the text in its historical and cultural context. Given his obvious attitude and the intellectual paucity of his writing it seems doubtful if he is aware of any such. Certainly he is clearly unaware that Old Testament Law does not apply *as Law* to Christians to day. We are instead under the rules of the new covenant inaugurated by Christ.

Dawkins then turns to respond to the allegation made by some that atheism has produced its own evil. He specifically discusses Hitler and Stalin (along with some others), but interestingly not Chairman Mao – who would certainly have been on my list. Apart from the rather pathetic argument that Hitler was not an atheist (perhaps his religion was National Socialism or self worship!) his defence really seems to come down to the rather pathetic allegation that those who perpetrated evil in the name of atheism weren't really working on atheistic principles; they were operating on some other agenda. Yet, when Christians claim

that those who have done evil in the name of God or Christianity were not practising true Christianity, Dawkins will have none of it. A complete double standard, and a rejection of his own argument in addition.

In Chapter Eight Dawkins seeks to deal with the charge often laid against him that he is an atheist fundamentalist, every bit as reprehensible as religious fundamentalists. He starts by saying that he does not thrive on confrontation – although he later says that to be hostile towards religion is appropriate – and that his approach is passionate rather than hostile. His first defence is that his attacks are limited to words – unlike many religious fundamentalists. He then continues with his passion argument – which seems to reduce to 'it's appropriate to call religious persons fundamentalists because they are wrong whereas he [Dawkins] knows he is right because the evidence backs him up.' He again attacks soft targets such as those who believe in six day creationism or that the earth was created six thousand years ago.

He is on better ground when he moves on to attack fundamentalist thinking. It is often dangerous, arrogant, abusive, manipulative, ignorant and all the other bad things Dawkins calls it. Yes faith can be dangerous, but not all faith is. I believe that the kind of Christianity we teach in this church and indeed such as is taught in most Christian churches in Europe is not dangerous or fundamentalist, but rather an enormous force for good.

Chapter Nine deals with the issue of Childhood Abuse and Religion. There is no doubt that Dawkins is correct in saying that a great deal of child abuse (not only physical but intellectual as well) has gone on and still goes on in the name of religion. However, I would point out that there is plenty of child abuse (of both kinds) in the homes of non-religious parents as well – and I know of no evidence that it is more prevalent amongst Christians. I would assert that it is perfectly possible for a Christian to bring up children without raising them as unthinking fundamentalists. Dawkins again presents a totally one-sided picture without any evidence to justify his position.

In his final chapter Dawkins asks whether or not humans need God as a psychological or emotional "gap filler" for inspiration or consolation. I imagine you will not be surprised to hear that his answer is a resounding no. He believes that science is all that is needed because it provides all the inspiration and consolation needed by humans. I certainly reject that statement. When I was studying science it certainly afforded plenty of inspiration, but I believe it offers precious little consolation. Dawkins says that some Christians are happy and some atheists are happy and that on the other hand some of both are unhappy, so he concludes that an argument from emotional need is pointless. At least I can agree with Dawkins there. I am a Christian because I believe our faith is based on truth. I wouldn't want to be consoled by a religious fantasy. I can join Nicky Gumbel in saying that my faith makes me realise that there is so much more to life than I previously thought. It doesn't close my thinking, in fact it makes me more interested in finding out about the world. It gave me a new love for people and a new desire to do something about the needs of the world around us.

Science and Religion

Dawkins seems to be firmly of the belief that science and religion are arch-enemies by necessity. However, this was not always so, nor do I believe that it need be so today. Colin Russell says in his recent book that the idea of a war between science and religion is a relatively recent invention. Indeed, as I shall argue, I believe that the Judeo-Christian world-

view was an essential element of the development of our modern scientific world. Westerners often unconsciously assume a doctrine of inexorable progress, as though the mere passage of time automatically and inexorably leads to increased knowledge. Yet, any archaeologist will tell us that numbers of great civilisations have arisen and disappeared without ever developing science or even the philosophical background to science. Cultures in antiquity, such as the Chinese and the Arabs, produced a higher level of learning and technology than medieval Europe did. Yet it was medieval Europe and not these cultures which gave birth to science.

Loren Eisley a science writer concludes that science is not natural to mankind at all. Inquisitiveness about the world is natural, but science is much more than that. Eisley says, it has rules which have to be learned and practices and techniques which have to be transmitted from generation to generation by formal education. Even more it demands certain assumptions about the nature of the world in which we live – a particular mind set.

Scientific investigation depends upon certain assumptions about the world, and science is impossible until those assumptions are in place. As Whitehead puts it faith in the possibility of science came antecedently to the development of scientific theory. Whitehead says that this rested on certain habits of thought such as the lawfulness of nature – which came from the Christian doctrine of the world as a divine creation. In this period the whole of Europe was saturated with a Christian world-view. Christianity teaches that the world is real. That may seem obvious, but Hinduism and Buddhism teach that the world is an illusion. Christianity also teaches that the world is of great value, and thus a worthy object of study. The Greeks taught that the material world was evil. Christianity also teaches that although nature is good it is not a god, it is merely the creation of a god. God is not a part of creation he is separate from it.

To become an object of study, the world must be regarded as a place where events occur in an orderly, reliable predictable fashion. This too is the teaching of Christianity. Instead of a plethora of different gods we have a single unified deity in sole charge of a coherent universe. Also unlike most pagan gods who were capricious, the Christian god was and is trustworthy and unchanging. Finally, and perhaps most importantly, Christianity teaches that since we are made in the image of god, the universe which he created should logically be intelligible to us.

Thus the work of Copernicus was to search out a cosmology which would "uphold the regularity, uniformity and symmetry that befitted the work of God." The phrase 'the laws of nature' is so familiar to us today that we easily forget that it is unique to modern Western culture.

Another distinctive aspect of modern science is the application of mathematical formulas to the world. This can also be traced back to Christian roots. The Christian God created the universe *ex nihilo* and hence has absolute control over it. He is completely in charge of His materials and the structure of the universe is precisely what God wants it to be. This idea is alien to the ancient world where gods started creation with a pre-existing substance with its own inherent nature. In such a world the creator god does not have complete control over the nature of the universe. For example, in Greek philosophy, the creator god merely injected reason into reasonless matter – and even this was accomplished imperfectly due to the imperfection of matter. Thus in these ancient models, nature is fuzzy around the edges and not subject to mathematical concepts and laws.

An example of the effective application of such differences can be found in the work of Kepler who struggled for years over a difference of 8 minutes between observation and calculation for the orbit of Mars. Eventually he was driven to abandon the idea of circular planetary orbits and opt for elliptical orbits. However, if he had merely felt nature was an imprecise representation of the circular ideal, there would have been no incentive to struggle with the difference.

Historically, science stemmed from three acts of faith (i) that the universe possessed order, (ii) that this order was universal, and (iii) that this order could be interpreted by the rational faculties of human minds. A cross cultural comparison can help clarify the importance of this point. Joseph Needham a scholar of Chinese culture asks in his book *The Grand Titration* why the Chinese never developed science. He says that the reason is that the Chinese had no belief either in an intelligible order in nature, nor in the human ability to decode it. By contrast, in Europe, Christianity did provide a guarantee of these propositions. The theory of knowledge developing in Medieval Europe and under girded by Christianity was that God, having placed man on earth, could not have been so wasteful or so ironic as to blind him to the truth.

Christians became troubled by the old Aristotelian concept of Forms. They felt that this limited God's creative activity as Forms were inherent in the properties of matter. Thus in 1277 the Bishop of Paris, Etienne Tempier, condemned the ideas that God could not allow any form of planetary motion other than circular, that He could not permit a vacuum and many more. Natural Law came to be regarded as imposed from without nature and not inherent within Forms within it. This kind of philosophy helped to inspire an experimental methodology. For if God created freely, then we cannot attain knowledge by logical deduction, but only by observation. Certainly this kind of thinking inspired Copernicus to reject the Aristotelian notion that the earth must be the geometric centre of the cosmos.

This kind of thinking did not mean that the universe was supposed to be chaotic or disorganised. God in His creation was bound by His own nature – which is rational, logical and orderly. But, we are not able to say what particular rational pattern the created universe should follow. Instead we must observe how nature operates. We must observe and experiment. For Christians, Genesis gives divine justification – perhaps even the duty – to study, analyse and master the natural world.

Many modern historians such as R K Merton and P M Rattansi now accept that modern science owes much to Christianity. Rattansi states that the Christian religion provided "a powerful motive" for engaging in experimental science.

Christian doctrine also provided a basis for assuming that suffering human beings could be lifted up as "children of God". This revolutionary idea that the human estate could be improved – rather than determined by a fatalistic or deterministic view of nature – was revolutionary.

The idea that Christianity was opposed to the development of science has been exaggerated and distorted. For example Aristotelian cosmology placed the earth at the centre of the universe, but the displacement by the Copernican worldview was not opposed by the reformed churches. Perhaps the textbook case of supposed religious persecution of science was Galileo. Actually, according to the leading historical account of the affair by Martin

Rudwick[3] the major part of the church intellectuals were on the side of Galileo and the main opposition came from secular ideas, particularly the other leading scientific figures of the day. In fact the main opposition to Galileo derived from his attack on Aristotelian philosophy, which at the time was regarded as essential to the formation of moral and religious laws. Also the heliocentric idea had no intellectual framework to support it at the time. This was not to be forthcoming until Newton gave it a physical mechanism.

In fact at the time of its initial pronouncement, the Copernican world-view had little to commend it. It reduced the number of epicycles required to explain the motions of the planets from more than 80 to 34 – significant, but not decisive. Also objections to heliocentric views were largely on the basis of their being bundled with a neo-platonic philosophy – early adherents, including Copernicus, ascribed quasi-divine qualities to the sun[4]. Also the positive evidence for the theory at the time it was initially advanced was nil – apart from the slight mathematical simplification.

In spite of all this Galileo probably never repudiated his faith. His behaviour cannot really be understood unless we accept his own claim that he was a believer. As Rudwick writes, only Galileo's determination to remain within his religious tradition seems an adequate explanation of why he tried so hard to persuade everyone from the Pope downwards, and why he declined all chances to escape to the safety of the Venetian Republic[5].

Many of the early scientists hoped to use science to bolster religious belief. Newton wanted his work used for apologetics. Mersenne and Descartes were actively concerned to defend religion. To omit or dismiss these religious motivations is to misunderstand the true history of science.

It was not until the nineteenth century that science began to develop a positivist element that led to a divorce from religious belief. This was largely driven by mechanistic world-views based on over simplified mathematical models and a materialistic view of creation.

Yet alien Pythagorean elements were at work, which eventually elevated mathematics into an idol. Inevitably that idol fell, and today mathematics is no longer regarded as a means of discovering truth about the world. At best it is able to model certain aspects of already formulated world-views. Christians can help to rebalance this view of mathematics – it does give a truth, but a contingent, open truth, rather than a closed, autonomous truth – and *redeem* it by restoring its proper dignity.

Thus the popular idea today of a 'war' between science and religion is a relatively recent invention (probably nurtured by those who hope the victor will be science). However, all reasons for such a war have now disappeared, because scientific developments such as chaos theory and quantum mechanics have forced scientists to abandon the simplistic mechanistic view of the universe of a materialist philosophy. But, what will now happen to science as largely separated from its religious and philosophical roots? As Hume has demonstrated, pure empiricism gives no grounds for belief, even in such fundamental principles as cause and effect. As a result I contend that scientists today maintain a kind of "scientific faith" in the order of nature and the principles of cause and effect, whilst lacking any rational basis for

[3] Martin Rudwick, *The Sciences and Theology in the Twetieth Century*, University of Notre Dame Press, p242
[4] Burtt, *Metaphysical Foundations*, pp 36, 52-53
[5] Rudwick, pp256-257

such faith[6]. Indeed I would contend along with Whitehead, that any detachment of science from Christianity is dangerous for *science*. Without a trustworthy rational God science has no philosophical ground for its most basic assumption – an ordered, rational, lawful universe.

However, Christians must also be careful how we embrace this new physics. Christian philosophers such as Gordon Clark rejoices that scientists today are "more willing to admit that science does not discover absolute truth, more willing to recognise that science does not utter pronouncements about ultimate reality.". Yet Christians need to stand back from the more radical, subjectivist even mystical interpretations of quantum phenomena advocated by some New Age physicists. Order is not absolute, but I believe it is real.

Finally I would say that, whilst science cannot prove the existence of our Christian God, developments in science over the last 25 years (particularly in the fields of evolutionary biology and cosmology) provide compelling evidence for the existence of a creator designer god. I shall endeavour to make the case for that view in my talk today. In many ways that takes us full circle, back to the point where the Christian concept of such a God generated the idea of science.

Towards the end of his book Dawkins endorses a certain limited scepticism. He theorises that since, according to his belief, we have been cobbled together by (unguided) evolution it is unlikely that our view of the world is accurate. Natural selection is interested in adaptive behaviour, not true belief. However, Dawkins fails to explore the real philosophical implications of this viewpoint. One has to agree with his view as stated above – given his assumption. But, the principle goes much deeper. On this basis why assume that our cognitive facilities are reliable? If not how can we form correct beliefs and achieve true knowledge. If that is correct why believe that Dawkins belief that we are a product of natural selection is correct? At bottom the belief that our cognitive faculties are reliable can only find a solid basis in the religious belief that we are created in God's image. I would contend that the conflict which Dawkins believes arises between science and theism is actually a conflict between science and the kind of unbridled naturalism which Dawkins propounds.

Evolution by Natural Selection and Darwinism

<u>What is Darwin's Theory of Natural Selection</u>

Earlier I said that we would look at the issue of natural selection and Darwinism, because this whole area is so important to Dawkins thinking and to my positive case for a creator designer god – so lets move on to do that.

Darwin postulated that all evolution of living organisms had come about by the interaction of two basic processes, random mutation and natural selection. Random mutation produces differences between different generations of individuals - which are as likely to be deleterious as beneficial - but natural selection acts on those variations to preserve the beneficial and eliminate the deleterious. This is solving by trial and error on a grand scale and leads to the claim that all apparent design in the biosphere is ultimately the outcome of weeding out from a blind random process – a giant lottery.

[6] Whitehead, *Science and the Modern World*, p4

Darwin drew back from claiming that his theory could explain the origin of life, but the implication was clearly there. I believe that it is impossible for natural selection to explain the origin of life – an issue we shall return to later.

Darwin's theory broke man's link with God in an important area, with the implication that this breakdown might well be extended. This set us adrift in the cosmos without purpose or end and its impact was fundamental.

The Philosophical, Social and Moral Background

The modern origins of the philosophical materialism, which began to be exhibited by science in the nineteenth century, are Darwinism, although this philosophy had its intellectual roots in the Greek philosopher Epicurus. As the Epicurean poet Lucretius wrote, living things were brought about by "the purposeless congregation and coalescence of atoms." This is philosophically very similar to the Darwinian thesis. Epicurus had mapped out a complete worldview based on materialism: that matter is all that exists and we must be empiricists; that knowledge is limited to what we know through the senses; and that morality must therefore be based on the senses also.

Epicurean ideas were rejected by classical philosophers such as Plato and Aristotle who argued that if the world did really consist of chance configurations of atoms then knowledge would be impossible and the order that we see in the universe, especially in living things, could not have arisen. In modern times Kant sought to resurrect the idea of a naturalistic origin of the universe, but his ideas had no foundation until Darwin offered an apparently plausible mechanism. That's why Richard Dawkins says in another book *The Blind Watchmaker*, "Darwin made it possible to be an intellectually fulfilled atheist."[7]

Darwin reopened the door to Epicurean atomism in science by proposing a naturalistic filtering method – natural selection – which he claimed, could produce the order we observe. This reopened the door to Epicurean materialism in philosophy. In modern versions of this philosophy there are no eternal ideals of Goodness, Truth or Beauty. Morality is merely something which arises over time by a naturalistic process and there is no ideal human nature.

Initially Christians were not assertive enough in proposing an alternative world-view to Darwinism – although admittedly solid scientific evidence for that supportable alternative worldview (Intelligent Design) has only been emerging over the last 25 years. Darwinism more than anything else has barred consideration of Christianity as a serious world-view. Dawkins friend Daniel Dennett has described Darwinism as a "universal acid"[8] which has dissolved our traditional world-views.

Debate over teaching of Darwinism in schools has generated more public interest than any other topic (e.g. when Ohio debated the issue in 2002 the Department of Education received more public response than on any previous topic). The public senses instinctively that more is at stake than science. The naturalistic world-view of science is being promoted far beyond the bounds of science. This is the age of universal Darwinism with metaphysical as well as scientific implications.

[7] Richard Dawkins, *The Blind Watchmaker* at p6
[8] Daniel Dennett, *Darwin's Dangerous Idea* at p63

Christians had previously retreated to a "two tier" view where Darwinian evolution ruled at a scientific real world level – Philosophical Naturalism – and Christianity was relegated to a spiritual/personal/moral level – Philosophical Idealism – which was somehow disconnected from the real objective world.

This model is not supportable, as the pragmatic philosophers such as Dewey and James saw. Apart from the damaging effect (from the traditional Christian viewpoint) of a system of belief which explains life without need for God, then, as Darwin himself foresaw, if his theory is accepted as fact, then it must also apply to human behaviour as well as physical evolution. Darwin said, "infanticide, especially of females, has been thought to be good for the tribe." More than a century ago, he saw where his logic must lead. Darwinism is an alternative worldview with important religious and philosophical implications as well as a scientific theory.

As Ernst Mayr wrote in an article on evolution and God, "The Darwinian revolution was not merely the replacement of one scientific theory by another, but rather the replacement of a world-view …. by a new worldview in which there was no room for supernatural forces"[9] and as E O Wilson and Michael Ruse write in their book on religion and natural sciences "The basis of ethics does not lie in God's will" ethics is "an illusion fobbed off on us by our genes to get us to co-operate." Humans "function better if they are deceived by their genes into thinking there is a disinterested objective morality binding upon them, which all should obey."[10]

This has resulted in a completely amoral view of behaviour. Rape and infanticide are not reprehensible because (in the Darwinian view) they have come about solely as a result of evolution. There are books on the subject such as *The Natural History of Rape: Biological Bases of Sexual Coercion* which calls rape "a natural biological phenomenon that is a product of the human evolutionary heritage."[11] Once Darwinism is accepted it cannot be otherwise, because ***all*** forms of behaviour, which survive, must ipso facto have survival value – but try telling that to a rape victim.

Now we have books and academic topics such as:

Darwinian Politics: The Evolutionary Origin of Freedom
Economics as an Evolutionary Science
Evolutionary Jurisprudence
The Evolution of Law
Evolution and Literary Theory
Evolutionary Medicine
The New Science of Darwinian Medicine
Darwinian Psychiatry
The Evolution of Desire: Strategies of Human Mating

Interestingly enough this popular acceptance of Darwinistic consequences does not extend into the financial realm – at least at a Governmental level. Certain European countries, mainly France and Germany, have been complaining loudly of the Darwinistic consequences of what they describe as "harmful tax competition". What they mean is that their economies

[9] Ernst Mayr, in an article "Evolution and God" *Nature 22 March 1974*
[10] E O Wilson and Michael Ruse, *Religion and the Natural Sciences: The Range of Engagement* Orlando: Harcourt & Brace 1991
[11] Randy Thornhill and Craig Palmer, MIT Press 2000

will be seriously damaged unless they reduce rates of tax especially in the sensitive areas of direct taxes on labour and corporation tax. Yet that will mean painful cutting back on social programmes – and the political will for that does not yet exist. The pain is not yet great enough.

Returning to the ethics of social Darwinism, Evolutionary biologist William Provine travels the lecture circuit telling students that the Darwinian revolution is still incomplete because we have not yet embraced all its moral and religious implications. He says "There is no ultimate foundation for ethics, no ultimate meaning in life and no freewill."

Clearly, this kind of philosophy has contributed enormously to the breakdown of traditional social values and law and order.

Darwinism is in fact a complete reversal of classical philosophical ideas. Mind is not transcendent *over and above* matter, rather it is produced *by* matter. So I believe that Dawkins allegations that religion is responsible for a lack of morality and undesirable behaviour is a charge that is much more applicable to social Darwinism unbridled and unrestrained by the kind of rules based ethics which are derived from religion.

Yet geneticist H Allen Orr writes that all these ideas of social Darwinism are based on thought experiments, pure hypothesis – we have no objective data to support them. There is no objective evidence that morality in humans did or did not evolve by natural selection.[12]

BUT if we accept the theoretical basis – Darwinism – whilst allowing it to undermine faith in God, then we have no basis to resist

A Critical Look at the Theory of Evolution by Natural Selection

We need to critically address Darwinism at a scientific level in order to resist it at a philosophical level. If we do not, then not only Christianity, but also all other rules based systems of morals and ethics must eventually crumble.

However, the good news is that as a scientific theory Darwinism is relatively weak.

As a first problem, the fossil record simply does not support Darwinism; we do not find evidence of the numerous intermediate forms of life predicted by Darwin. Instead, new species emerge in the twinkling of an eye, with no evidence of intermediate developmental forms. Darwin himself knew this problem was serious. In the *Origin* he said it was "probably the gravest and most obvious of all the many objections which may be urged against my views." The gaps still exist today – Stephen J Gould called it "the trade secret of palaeontology"[13].

The overall character of the fossil record as it stands today was superbly summarised in an article by G G Simpson – a leading palaeontologist who was invited to address the Darwin centenary symposium and whose testimony to the gaps in the fossil record has considerable force. As he points out it is one of the most striking features of the fossil record that most

[12] H Allen Orr, *Boston Review* Summer 1996
[13] Eldredge N and Gould S J, *Models in Paleobiology*, Schopf, Freeman, Cooper and Co p181

new kinds of organisms appear abruptly and not gradually as Darwin's theory would have predicted. He says:
"They [new organisms] are not as a rule, led up to by a sequence of almost imperceptibly changing forerunners such as Darwin believed should be usual in evolution. A great many sequences of two or a few temporally inter-grading species are known, but even at this level most species appear without known immediate ancestors, and really long, perfectly complete sequences of numerous species are exceedingly rare."

In effect, Simpson is admitting that the fossils provide none of the crucial transformational forms predicted by Darwin.

Basically, three explanations have been put forward to explain the gaps in the fossil record: (i) insufficient search, (ii) imperfection of the record, and (iii) punctuated evolution (i.e. that the gaps are real and evolution has proceeded in a series of jumps). The hope of uncovering missing links in unexplored rocks is not completely dead, but it has greatly diminished. As Norman Newell past curator of historical geology at the American Museum of Natural History puts it:
"… experience shows that the gaps which separate the highest categories may never be bridged in the fossil record. Many of the discontinuities tend to be more and more emphasised with increased collecting."

It is particularly difficult to accept insufficient search as an explanation for the gaps between the major invertebrate phyla. There is a mystifying almost total absence of transitional forms in the pre-Cambrian rocks.

Imperfection of the record has always been the most popular explanation for the gaps. It was Darwin's explanation. Certainly there is some imperfection, but G G Simpson recently estimated the percentage of living species recovered as fossils in one region of North America and concluded that at least for larger terrestrial forms, the record was almost complete[14]. According to an article by Wyatt Durham in the *Journal of Palaeontology* it is probable that as many as 2% of all marine invertebrate species with hard skeletal components which have ever lived are known as fossils. Most professional palaeontologists have always been sceptical about imperfection as a means of explaining away the absence of transitional forms.

The fundamental problem in explaining the gaps in terms of insufficient search or in terms of imperfection of the record is the systematic character of the gaps – there are fewer known transitional species between the major divisions than between the minor. Thus, between Eohippus and the modern horse (a minor division) we have dozens of transitional species, while between early land mammals and whales (a major division) we have none. This rule applies fairly universally.

Punctuated evolution – the supposition that new types of organisms arise suddenly – partly solves the problem of the lack of transitional forms. Darwin was opposed to this idea because he was aware of the improbability of evolution by macromutation – an issue we shall deal with in a moment. In 1954 Ernst Mayr initially proposed[15] (at least in its modern form) an idea later elaborated by Niles Eldredge and Stephen Jay Gould[16] that the gaps in the fossil

[14] Simpson G G, *The Evolution of Life*, University of Chicago Press, Table 8
[15] Ernst Mayr, *Change of Genetic Environment and Evolution*, pp157-180
[16] Eldredge N and Gould S J, *Models in Paleobiology*, Schopf, Freeman, Cooper and Co pp82-115.

record should be viewed as real and propose a model of evolution as an episodic process occurring in fits and starts interspaced with long periods of stasis – the punctuated equilibrium. In their model new species arise rapidly in isolated populations. In an isolated population a new species emerges after which it spreads widely and afterwards undergoes little change. Clearly given the small numbers of individuals involved in the transition the chances of finding fossil evidence are remote.

There is considerable evidence from recent genetic studies of isolated populations that this is indeed how new species arise. However, whilst this model is a perfectly reasonable explanation of the gaps between closely related species it is doubtful if it can be extended to explain the larger systematic gaps such as the gap between primitive terrestrial mammals and whales for example. This would require hundreds, probably thousands, of transitional species. Unless we believe in miracles (I do but only when God intervenes), such gaps could not have been crossed in geologically short periods of time with all the transitional forms all contained in isolated areas. Many of the transitional species would surely have spread widely – but no evidence of their existence has been found. Furthermore, unless some of these transitional forms did spread, the chances of further mutation amongst a suitable sub-group would be negligible. Let's be clear on the magnitude of the problem being face here. The fossil evidence shows that the move from a small land mammal to a whale, or from a small land mammal to a bat, occupied little more that 10 million years – a very short time indeed for the magnitude of change involved.

As a second problem with Darwin's theory, there are numbers of species, which have existed for millions of years with little or no evolutionary change – the so-called "living fossils". One example of these is bowfin fishes. No more than two species of bowfin fishes have existed at any one time. In their history of more than 100 million years, bowfin fishes have displayed virtually no evolution at all. Lungfishes are another example. They evolved quite rapidly at the beginning of their history some 300 million years ago, but since then have again hardly evolved at all for hundreds of millions of years. Other examples are sturgeon fishes, alligators, tapirs and aardvarks. These are difficult, if not impossible, to account for on a strict Darwinistic view. It is, of course, precisely what we would expect on the punctuated equilibrium model. This is one of the reasons why I think the punctuated equilibrium model is probably correct, but we must remember that this does not in any way solve the problem of the larger systematic gaps we just discussed.

A third problem with Darwin's theory is the extremely rapid development of huge numbers of new species, indeed numbers of whole new phyla, during the early Cambrian period – the so called Cambrian Explosion. This explosive development cannot be accounted for by a gradualistic evolutionary model and indeed can only be accounted for with great difficulty (if at all) by the punctuated equilibrium model. Within less than 50 million years we see the sudden appearance of all the known animal phyla. A similar and parallel problem exists in the sudden appearance of flowering plants, which Darwin sought to explain away by proposing the existence of an unknown continent in the Southern Hemisphere.

A fourth problem with Darwin's theory is that neither this theory, nor other evolutionary models such as the punctuated equilibrium, have any answer for "irreducibly complex" biological systems (primarily the mechanisms within the cell). Whatever Dawkins says about transitional wing forms advantaging land based animals for example, there is no factual basis for his assertions and they do not satisfactorily address mechanisms like the bacterial flagellum or the human immune system. He makes an analogy with solving a combination

lock which gradually gives out hints. But, like a well designed combination lock, the universe doesn't give out hints. Unless partial constructs are useful, there is no reason why they should be retained. And that's the whole point of irreducible complexity – it's very difficult to see how any intermediate forms could be useful. It's for proponents of evolution as a theory to come up with the answer to this problem. Dawkins doesn't deal with it except to baldly state that he is sure that there are gradualistic mechanisms which can develop these systems. That's not an answer unless you take evolution by natural selection as a given – which Dawkins obviously does. Irreducibly complex biological systems can have no function at all until they are complete and thus cannot have been produced by gradualistic means. Equally, to imagine they could be produced in a single bound of macromutation, strains our credulity given the enormous improbability involved.

Thus, I think you can see that the scientific evidence simply does not support Darwin's theory in its classic form of slow gradualistic change. I consider that this theory should be firmly rejected. If Darwinism were not so intellectually satisfying in philosophical terms to so many scientists (because it eliminates the need for God), it is doubtful if it would have survived to this day. Stanley M Stevens, professor of paleobiology at John Hopkins University, says "In fact, the fossil record does not convincingly document a single transition from one species to another"[17]. He also says " … gradual modification of existing species cannot even account for the origins of most new genera.[18]" And "What happens if we attempt, hypothetically, to form each new genus by gradual modification along one of the well recognised evolutionary pathways? What happens is that we are stymied![19]" Now I should emphasise that Stanley Stevens is no friend of Christians or creationists – he roundly attacks these groups later in the book from which I quoted. So you see just how deficient classical Darwinian theory is.

Here, I should say that I do consider that the punctuated equilibrium model of evolution we discussed a few moments ago has limited validity and does explain some of the development of life as we know it. However, I do not believe it is a complete explanation for all such development because of the problems of rapid major transitions we have looked at and the irreducibly complex systems issue. In my view, the Intelligent Design hypothesis is a better explanation of the evidence and this is even more strongly supported in the area of the origin of life, which is our next topic.

At this point, I think it is worth saying that even what we have seen so far means that the moral issues attached to Darwinism we discussed earlier should no longer be a problem issue. Evolution, such as it is, is now a matter not of slow careful developmental change resulting in the optimum forms, but a matter of survival of the better examples of greatly changed forms produced by random mutations. Selecting amongst the lottery results. In my view, the failure of Darwinism in its primary role as an evolutionary model destroys its already limited credibility as a theory underlying such diverse matters as the development of human behaviour.

Finally, whatever its merits in explaining the development of life, I contend that neither Darwinism nor the punctuated equilibrium theory can offer any explanation whatsoever for the *origin* of life. In brief summary my argument is that evolution can only take place by selection amongst naturally self-replicating entities. Until life exists, self-replicating entities do not exist and therefore evolution cannot occur.

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[17] Stanley M Stevens, *The New Evolutionary Timetable*, Harper & Row Ltd p95
[18] Ibid at p97
[19] Ibid at p99

It is true that in his book, Darwin himself made no claim that his model of evolution could be extended to explain the origin of life, but the implication was there and was soon taken up by his contemporaries like Thomas Huxley. Today the idea that selection amongst beneficial mutations was responsible for the origin of life is firmly held by most evolutionary biologists.

Now we used to think that life started about 700-800 million years ago, but recently an Australian group has discovered the remains of a simple algae in rocks at least 3,500 million years old. The earth's surface didn't even become solid until 3,900 million years ago, so that leaves at most 400 million years for inorganic compounds to somehow be transformed into living cells.

The formation of life by random processes seems unlikely to the point of impossibility – especially within such a relatively short space of time. Even if earth's primitive seas were (somehow) full of all the right building blocks of life – the right amino acids – (and believe me that in itself is very unlikely), the chances of even the simplest protein self assembling are less than the chances of randomly selecting a designated atom from all the atoms in the solar system. Here I need to emphasise that proteins are absolutely essential to the existence of living cells. The origins of life's information library – DNA – are even more problematic.

Proteins are each made up of long strings of between 200 to more than 1,000 amino acids. Each amino acid has to be in exactly the right place in the string forming the protein, or the protein won't function – rather like computer code or putting together letters to form a (very long) word. And let me emphasise here that there is absolutely no significant chemical or other similar principle determining the ordering of amino acids in a protein. There are some minor affinities between amino acids, but actual functional proteins tend not to follow that ordering in any event. It is likely that the human body contains more than 1 million different proteins and the simplest functional cell of which we can conceive would contain at least 100 proteins..

Let's assume that earth's primitive ocean somehow had all the right amino acids existing in close proximity to each other within it. Even then the chances of making a complex protein such as collagen (which has 1,055 amino acids) would effectively be nil. The chances of 1,055 amino acids assembling themselves in the right order is 1 in 10^{260}. That's far less than the probability of selecting one particular atom at random from amongst all the atoms of the universe. Furthermore, it's unlikely that all the right amino acids could have been produced by chance from the inorganic chemicals which existed on the early earth.

Haemoglobin is one of the simplest proteins, it contains just 146 amino acids, but even here the chance of it constructing itself by random combinations of amino acids is around 1 in 10^{190}. As Fred Hoyle said, the chances of even one protein being constructed by random combinations of amino acids is less than the chance of a whirlwind passing through a junkyard and leaving behind a fully assembled jumbo jet.

Also, let's not forget that we have been talking about just one protein. As we have already said, we need at least 100 proteins to make a very simple living cell.

And it only gets more complex and unlikely. A protein is not only distinguished by the exact sequence of amino acids which comprise it, but by its shape – the way it is folded. Even then

a single protein, or even a million proteins, are of no use unless they are able to be replicated or to replicate themselves. No protein can do that by itself, DNA is required in addition.

Immediately we come to another paradox. Proteins can have no use (even if they somehow came into existence) without DNA, but DNA has no function or purpose without proteins, so how could it ever arise? We shall be returning to the subject of DNA a little later.

Those who deny a creator God argue that proteins somehow partially assembled in shorter chains and that such chains somehow developed increasing complexity. However, it is difficult if not impossible to see what functionality such short chains could have had to cause them to be created in the large numbers that would have been necessary for there to be any reasonable chance of further, more complex, development. I believe it is for those advancing such arguments to provide a convincing mechanism. For the moment a designer creator God is, in my view, the only reasonable hypothesis.

It is true that simpler proteins involving fewer amino acids can exist, but such simpler proteins lack the folding structure which is necessary to their function in living organisms until they have at least 75 amino acids. This is still far too many to permit any realistic possibility of a chance origin.

As I've already said I do not believe scientists can validly look towards evolution, Darwinian or otherwise, in seeking a suitable mechanism. Natural selection requires self-replication, but as mathematician Von Neumann has shown[20] any system capable of self replication would need to contain systems or sub-systems that were functionally equivalent to the systems we find in living cells. To put it another way natural selection cannot operate until the level of complexity we find in living cells has been reached, but that level of complexity cannot be arrived at by random fluctuations – chance – because the odds are so immensely against. Thus, pre-biological natural selection is a contradiction in terms. Hence, we can't invoke evolutionary type mechanisms to explain the origins of proteins and DNA.

Nevertheless, both Richard Dawkins and Bernd-Olaf Kuppers have attempted to revive the concept of pre-biotic natural selection. Both use a computer model to try and demonstrate the efficiency such selection could have. They select a target sequence of letters to represent a desired functional polymer. After creating a crop of randomly constructed sequences and generating variations amongst them at random, their computers select those sequences that match the target sequence most closely. The computers then amplify the production of these sequences (to simulate differential reproduction) and repeat the process. As Kuppers puts it "Every mutant sequence that agrees one bit better with the meaningful or reference sequence … will be allowed to reproduce more rapidly." After only 35 generations his computer model succeeded in spelling the target sequence "NATURAL SELECTION". However, there is an obvious flaw in this experiment. Chemical molecules in a pre-biotic ocean do not have a target compound "in mind". Their different arrangements will not differentially reproduce until they arrive at a functionally advantageous arrangement. The results of both Kuppers and Dawkins simulations show early generations full of non-functional gibberish. In Dawkins model, not a single functional word appears until after the tenth generation – and this is with the benefit of the foresight or foreknowledge built into the model. Where would this foreknowledge come from in an unaided material world.

[20] J von Neumann, *Theory of Self-Reproducing Automata*, University of Illinois Press

It is precisely the difficulty in arriving at a naturalistic, non-deistic, mechanism that has led some scientists to assume that life developed away from earth, and that earth was later somehow seeded with life. But, of course, that just displaces the problem elsewhere, just pushes it back one stage. Given the extreme improbabilities involved the probabilistic resources of the entire universe are exceeded. To put it another way it's so unlikely that even if it were happening all over the universe there is no reasonable probability of its happening by chance. In any event, how could any life which was formed, reach us across thousands of millions or even billions of light years of distance. Thus, the approach of moving origins elsewhere solves nothing.

So far, we've just looked at the origin of life in terms of its basic chemical components, especially proteins. Most complex life is built up of cells which contain proteins (up to 20,000 different ones in a typical human cell) and many other things as well. For living things to function the proteins within their cells must be able to reproduce. In order to do that they need the information contained in a complex chemical compound called DNA. That's a pretty common term today and I'm sure you will all have heard of it – in fact it's an absolutely amazing substance.

DNA is life's computer programme – its Windows Vista as it were – but much better put together! DNA is the repository of a digital code, a library of information, telling the cell's machinery how to build specific proteins. This code is written in a four value code (rather than the two value binary code used by computers). These four values are represented by four chemical compounds called bases. These are A (adenine), T (thymine), C (cytosine) and G (guanine). Without this code, without DNA, proteins are unable to reproduce. Thus without DNA living cells cannot function at all. But, where did this digital code, this information contained in DNA, come from. I believe it is best explained on the basis of an intelligent designer and creator.

As I just said, DNA stores information in a four character digital code rather than the two character digital code that computers use. Properly arranged these four characters, or "bases" as they are usually called, instruct cells to build different sequences of amino acids which, as we've already seen, are the building blocks of proteins. To build even one protein the information expressed by between 1,200 and 2,000 bases, that's 1,200 to 2,000 letters in this code, is typically required. This means that there is rather a lot of DNA in the human body. You have more than 2 metres of it, if it were straightened out, squashed into every cell and this 2 metres of DNA contains over 3 billion letters of coding. Altogether within your body you may have as much as 20 million kilometres of DNA – enough to stretch to the moon 50 times over.

DNA is essential to life, but it is not itself alive, indeed it is particularly chemically inert. DNA is like a library of information which is absolutely necessary to the functioning and replication of a cell. But, without the cell, or at least without proteins, the information has no function or purpose – so how could it have originated? Information theorists hold that the creation of new information is generally associated with conscious activity by a thinking being.

Jay Roth, professor of cell and molecular biology at the University of Connecticut, said, "Even reduced to its barest essentials the original template for life must have been very complex indeed. For this template and this template alone, it appears reasonable at present to suggest the possibility of a creator."

Some scientists have advanced various hypotheses supposing that chemical attractions may have caused DNA's alphabet to self assemble or that natural affinities between amino acids caused them to link up in a particular order. Given the failure of models involving pre-biotic natural selection this seemed to be the only explanation not involving the need for a creator designer. Rather than invoking chance, these theories invoked necessity. Scientists in the late 1960's suggested that the chemicals involved might possess self-ordering properties capable of organising the constituent parts of proteins, and also DNA and RNA into the specific arrangements they now possess[21]. Kenyon and Steinman developed the idea that affinities between different amino acids might account for the sequences of amino acids we find in proteins in a book called *Biochemical Predestination* in 1969. They argued that life might have been biochemically predestined by the properties of attraction that exist between different amino acids in proteins.

In 1977 Prigogine and Nicolis proposed another self organisational theory based on the idea that systems driven far away from equilibrium often display self-ordering tendencies. For example gravitational energy will produce highly ordered vortices in a draining bathtub or hot air above a radiator will generate distinctive convection currents. They suggested that something similar might apply to the biochemical building blocks of life.

For many current origin of life scientists, self-organisational models now seem to offer the best approach to explaining the origin of life. Nevertheless there are critics and problems. For example, an early advocate of self-organisation, Dean Kenyon, has now explicitly repudiated such theories as both incompatible with empirical findings and incorrect. Firstly, empirical studies have shown that some differential affinities do exist between various amino acids – that is certain amino acids do form linkages more easily with some other specific amino acids rather than other amino acids. However, it has also been shown that these affinities do not correlate to the ordering of amino acids we find in actual proteins. In short, chemical affinities do not explain the sequential arrangement of amino acids in actual proteins.

In relation to DNA, the point can be made even more strongly. The structure of DNA does, of course, depend on chemical bonds. However, there are no chemical bonds between the bases arranged along the helix structure of the DNA molecule. These are attached to the helix but not to each other. Further, just as you could attach magnetic letters anywhere on your refrigerator, similarly each of the four bases of the digital code (A, T, G and C) can attach anywhere on the backbone of the DNA helix with equal facility. Thus all possible sequences of bases are equally probably (or improbable). Indeed there are no significant differential affinities between any of the four bases and the binding sites on the DNA helix – exactly the same kind of chemical bond attaches each of them. All four bases are acceptable; none is preferred. As Kuppers put it "the properties of nucleic acids indicate that all the combinatorially possible nucleotide patterns of DNA are from a chemical point of view equivalent."[22] Thus it is quite clear that self organising bonding affinities cannot explain the specific sequential arrangement of nucleotide bases in DNA because (i) there are no bonds between the bases themselves and (ii) there are no different kinds of bonds and no differential affinities between the backbone of the DNA helix and the bases which bond to it.

[21] H J Morowitz, *Energy Flow in Biology*, New York Academic Press, pp5-12
[22] B Kuppers, *The Prior Probability of the Existence of Life*, Cambridge MIT Press pp355-369

Some scientists have tried to argue that life began in an RNA world rather than a DNA world, but that is not helpful to their case here as the same kind of bonding rules apply to RNA molecules as well.

Some scientists are also unwilling to abandon 'inevitable ordering' arguments, in spite of the evidence against that we have just briefly summarised. De Duve says "the processes which generated life were highly deterministic, making life as we know it inevitable given the conditions that existed on the prebiotic earth." Yet if we imagine the most favourable conditions possible – a pool full of all four DNA bases and all the other components of the DNA molecule – it is clear it is unlikely that any functional protein or gene would ever arise. To say otherwise is like claiming that the structure of Buckingham Palace is inevitable given the properties of the bricks and stones used to construct it. Bricks don't care how they are arranged and nor we have discovered do the information carrying bases in DNA.

In fact there is a good reason why this should be so. Information theorists have shown that chemically based ordering would not yield information of a sufficiently complex nature to enable the DNA code to contain the specifications for all the varied components of life. At a simple level this is easy to understand. Suppose there were bonds and affinities such that every time base A occurred it attracted T to follow it and that every time base C occurred, G would likely follow it. As a result, DNA would be full of repetitive sequences AT and CG – rather like the structure of a crystal. In a crystal chemical attractions do determine to a very large extent the arrangement of its molecules. Thus, a crystal is highly structured and regular – ordered and repetitive with little information content. The forces of chemical necessity reduce the capacity to convey novel information. As chemist Michael Polyani notes:
" … Whatever may be the origin of the DNA configuration, it can function as a code only if its order is not due to the forces of potential energy. It must be as physically indeterminate as the sequence of words on the printed page."[23]

Chemical affinities do not generate complex sequences. Information is both 'complex' and 'specific'. Thus, chemical affinities cannot be invoked to explain information content. As Yockey says, the accumulation of structural or chemical order does not explain the origin of biological complexity or genetic information[24]. He concedes that energy flowing through a system may produce highly ordered patterns, but the information content of DNA is not regularly ordered.

In the face of these difficulties, some, such as Manfred Eigen, have claimed that we must await the discovery of new natural laws to explain the origin of biological information. In my view, this displays confusion on two counts. Firstly, scientific laws do not generally cause or even explain natural phenomena – they describe them. For example, Newton's law of gravity described but did not explain the attraction between planetary bodies. Secondly, laws describe highly deterministic inherently predictable relationships. Laws describe patterns in which an event becomes inevitable given previous circumstances. Yet, information increases as improbability increases. Thus to say that a scientific law can provide complex information is effectively a contradiction in terms.

Let me just summarise in a couple of sentences what we've learnt about the structure of DNA. DNA provides the information that enables the replication of proteins within living

[23] M Polyani, *Life's Irreducible Structure, Science 160,* pp1308-12
[24] H P Yockey, *Self Organisation, Origin of Life Scenarios and Information Theory*, Journal of Theoretical Biology 91

cells. This information is represented by the bases attached to the DNA helix. These bases do not interact chemically with each other in DNA. Any base can attach at any point along the DNA helix backbone with equal facility – they are totally interchangeable. That means that chemical affinities could not possibly have produced the ordering we observe. Information requires irregularity of sequencing that bonding affinities between the bases in DNA (which are the information carriers) would not produce. Even if there were any relevant chemical affinities, to hold that they could have produced complex information of the kind we find in DNA is analogous to arguing that a pile of paper and a bottle of ink somehow organised themselves to generate this talk.

If neither chance nor the principles of physical-chemical necessity, nor the two acting in combination, can explain the origin of the information content of DNA, what does. Do we know of anything that has the causal powers to create large amounts of information content. We do. As Henry Quastler, an early pioneer in the application of information theory to molecular biology recognised, the "creation of new information is habitually associated with conscious activity"[25].

Everyday experience confirms that specified complexity or information content only arises from the activity of intelligent minds. Think of computer code or a newspaper article – these have a mental not a material cause. This holds for specified complexity not only in languages or codes, but other things as well. Think of the carvings of American presidents on Mount Rushmore in the USA – no one would think of suggesting that these had originated by weathering patterns or any activity other than that of an intelligent creator designer.

Indeed we normally hold to this principle so strongly that we make suitable inferences even when the causes themselves cannot be directly observed. Archaeologists assume a mind produced the carvings on the Rosetta stone. Anthropologists argue for the intelligence of early pre-human hominids on the basis of chipped flints which they discover. NASA searches for possible extra-terrestrial intelligence on the basis of searching for patterns (such as the prime number sequence) embedded on electromagnetic signals from space. In all these cases we are unable to observe an intelligent mind at work, but on the basis of what we do observe (or hope to observe) we do not hesitate to infer the existence and operation of such a mind.

We have now observed the information content of DNA. I contend that this information content is by itself an extremely strong argument for the existence of a creator designer God. We know of no other cause besides intelligence that produces complex information. Even the rabid atheist Professor Flew from Cambridge University (who had written more than 25 anti-Christian books) converted to Deism (although not Christianity) a few years ago on the basis of the DNA evidence.

This argument from evidence to design is not an argument from ignorance. Some scientists have said that because we do not yet know how specified complexity in physics and biology could have arisen we are invoking this mysterious and unscientific notion of intelligent design and this is not a scientific explanation but a kind of place holder for ignorance. Yet, as I've just argued, we often infer the activity of intelligent agents as the best explanation for certain events or phenomena. As Dembski has shown[26] we do so rationally according to clear

[25] H Quastler, *The Emergence of Biological Organisation*, Yale University Press, p7
[26] W Dembski, *The Design Inference: Eliminating Chance through Small Probabilities*, Cambridge University Press pp36-66

theoretical criteria. Intelligent agents have unique causal powers that nature and natural forces do not. When we observe effects that we know from experience only intelligent agents can produce, we rightly infer the antecedent presence of a prior intelligence even if we did not observe the action of the particular intelligent agent responsible[27]. When these criteria are present, as they are in living systems, design constitutes a better explanation than either chance and/or deterministic natural processes.

Yet others have objected that we cannot infer the existence of an intelligent designer for life because we have no knowledge that such a being exists. However, well accepted design inferences elsewhere, do not depend on a prior knowledge of a designing intelligence. Take for example the SETI research by NASA already mentioned. We do not know that any extra terrestrial intelligence exists, but the researchers (in my view rightly) assume that the existence of large amounts of specified complexity in any radiation they might detect would establish the existence of such an intelligence. Closer to home anthropologists have, as we already noted, inferred the intelligence or proto-humans by examination of artefacts these beings produced.

Yes say the objectors but the examples you have given only require intelligence at the human level. The creation of life would require a much greater intelligence than any that we know exists – a superintellect to use Fred Hoyle's words. This is an attempted application of the *vera causa* principle which asserts that we should only postulate (or prefer in our considerations) only causes which are sufficient to produce the effect in question and that are known to exist by their observation in the present[28]. Darwin himself marshalled this argument as a reason for preferring his theory of natural selection over special creation. Scientists, he argued, can observe natural selection whereas they cannot observe God creating new species. Even so, Darwin admitted that he could not observe natural selection creating the kind of large-scale change that his theory required. For this reason, he had to extrapolate beyond the known powers of natural selection to explain the large-scale change during the history of life. But, he knew that natural selection was capable of producing small-scale changes, so he reasoned that this could reasonably be extrapolated to explain large-scale changes over longer times. Historical scientists have long regarded such extrapolations as reasonable and fully in accord with the *vera causa* principle. Consequently the *vera causa* principle cannot reasonably be employed to exclude arguments from intelligent design – it is a reasonable extrapolation to the effect of a greater intellect – God – from the effects of lesser known intellects.

Finally, others have argued that the intelligent design hypothesis is not science – because it is not naturalistic. If by this, we mean that only materialistic causes can be considered then the intelligent design hypothesis is not scientific on that definition. But what is the rationale for this criteria of materialism? Surely, science should be considering whatever explanations are more probable, not artificially restricting the choices of the kinds of explanations which can be considered. We should be asking what is the most adequate explanation, not choosing from amongst a range of artificially restricted options.

In any event, mainstream physics has for many years accepted that we cannot restrict ourselves to the purely materialistic, mechanical view of nature. Quantum theory requires a mysterious interaction between the observer and the observed. This is an almost mystical

[27] Ibid, *pp1-35, 36-66*
[28] V Kavalovski, *The Vera Causa Principle: A Historico-Philosophical Study of a Meta theoretical Concept from Newton through Darwin*, University of Chicago p104

phenomenon for which we have no material explanation – we just observe the reality. But, what would have happened before there was any life in the universe to constitute an observer? Perhaps the observer was God!

Of course, the argument to design we have reviewed does not constitute a proof – nothing based upon empirical observation can – but it most emphatically does not amount to an argument from ignorance. Rather it is an inference to best explanation. Causes that can produce the evidence in question are clearly better explanations than those that cannot. We have clearly shown that chance and the blind operation of natural law (or the two in combination) cannot produce life, but we know that an intelligent designer could.

Darwin's Theory and Natural Selection – A Conclusion

I think we have demonstrated several things quite convincingly in this part of our day. Firstly we have established that classical Darwinism is effectively a dead outdated theory. Secondly, we have established that alternative theories, such as the punctuated equilibrium, explain some of the development of life following its origins However, it is doubtful that they offer a complete explanation of such development, as there are too many problems with rapid transitions to highly divergent forms of life (e.g. land mammals to whales). Thirdly, we have established quite convincingly that neither chance nor the operation of chemical affinities or indeed other natural laws – or even the operation of all of these combined, can explain the origins of life from non-living materials. Finally, we have shown that intelligent design is not an argument from ignorance and that there are no other intellectual grounds for rejecting it. On the basis of this part of our talk alone we have made a very strong case for the existence of a creator/designer of such power that we might as well call him god – although not necessarily the Christian God of course.

Overall Conclusion

When we combine the argument from the evidence about the fine tuning of the universe with our long look at Darwinism and the origins of life, then I believe we have an absolutely overwhelming case for the existence of a creator designer god. This explanation has now been shown to have explanatory power in not just one area of science but in two diverse disciplines – cosmology and evolutionary biology. This vastly increases the power of the hypothesis and I contend that it means that we should unreservedly accept it. Furthermore we need to remember the case for the inherent unreliability of purely naturalistic arguments about our evolution advanced in our look at science and religion.

Thus in conclusion I contend that Dawkins book doesn't even give the slightest reason for thinking that belief in God is mistaken let alone a delusion. The naturalism that Dawkins espouses, in addition to its intrinsic unappealing nature and its dispiriting conclusions about humanity and our place in the cosmos, is in deep intellectual deficit. There is no reason to believe it and excellent reason to reject it. As I said earlier Dawkins does worship by faith at the altar of natural selection – and faith it is. As we saw in the review of chapter four of his book, even Dawkins acknowledges that neither natural selection or any other known naturalistic mechanism has any answer to the problem of fine tuning of the universe. It is not Christians who are deluded in relation to the existence of God but Richard Dawkins.

Taking all the arguments together, and having have seen the strength of the scientific evidence for a creator designer, Christians must be convinced that we have a winning case

and go back "on the attack", firmly asserting Intelligent Design theories as an intellectually supportable, and indeed preferable, basis for explaining the origins of the universe and the world of biological life we observe.

This means that Christians must rediscover a strong and robust intellectual tradition and cease to emphasise the Christian life and experience *only* in terms of personal metaphysical experience – a felt thing – and reassert its objective reality.

There is the case of a (now) well-known Christian writer, who, shortly after his conversion, asked his pastor about the nature of the Trinity. The reply was "just believe Jesus is God and don't worry about the details." That kind of attitude is not going to carry the day in our cynical post-modern world.

Science has stepped beyond its original boundaries and is moving to take over the areas of religion and morality. As Michael Ruse says "Evolution came into being as a kind of secular ideology an explicit substitute for Christianity." Even today, it "is promulgated as an ideology, a secular religion – a full fledged alternative to Christianity, with meaning and morality."[29] However, science does not have the background to do this, and its basis for so doing – Darwinism – leads directly to amorality and devaluation of humanity.

As I've already said, if we stand by and do nothing, the consequences will probably be very serious. There have already been blatant calls for social engineering of humankind – to "produce quality human beings by means of such consciously engineered processes as society's best minds can blueprint."[30] Worse we now have the capacity to genetically engineer humanity. As embryologist Brian Goodwin says, "life becomes a set of parts, commodities that can be shifted around."[31]

Having been decisively defeated by early Christian apologists, Epicurean materialism modified by Darwinism and modern pragmatism has again reared its head after two thousand years to challenge not only Christianity, but ***all*** traditional moral and classical philosophical views. We have seen that this leads logically and inevitably to the elimination of ***all*** moral values as having any ethical authority and to the devaluation of humanity to the status of experimental animals.

We must take action and give a strong moral lead before the fabric of our society and indeed humanity itself are destroyed. You may think I'm putting the case too strongly, but I leave you with this thought – GM foods today and GM humans next year. I don't think we have the intelligence or the knowledge to play god today or next year – what do you think?

Finally, I hope I've done something today to increase your faith in God and to show that it's not only possible but reasonable, indeed more reasonable than not, to believe in a designer and creator God. The God hypothesis is the simplest and most consistent we have and all other theories fall short.

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[29] Michael Ruse, *Mystery of Mysteries: Is Evolution a Social Construction?* Harvard University Press 1999
[30] Mary Calderone, director of US Sexuality Information and Education Council, cited in *Bible Science Newsletter* May 1990
[31] Brian Goodwin cited by Nancy Pearcey *World magazine* 24 February 2001

However, we mustn't push our evidence too far. We have demonstrated evidence for an enormously powerful creator and designer God who is clearly favourably disposed towards life, even towards human life. We can know this because he has clearly manipulated the whole of creation to permit it. But, what we have not done is to demonstrate a case for our Christian God – although the designer and creator we have revealed certainly has some of his characteristics and is perfectly consistent with Him. To make the case for a Christian God we need to turn to other revelations – the revelation of scripture and His personal revelation in our lives.

Cenezoic		now 65 m years ago	
Mesozoic	Cretaceous	65m 146 m years ago	dinosaurs extinct
	Jurassic	146 m years ago 208 m years ago	
	Triassic	208 m years ago 248 m years ago	
Paleozoic	Permian	248 m years ago 290 m years ago	
	Devonian	354 m years ago 417 m years ago	
	Silurian	417 m years ago 443 m years ago	
	Ordovician	443 m years ago 490 m years ago	
	Cambrian	490 m years ago 543 m years ago	all animal phyla formed

Species
Genus
Family
Order
Class
Phylum
Kingdom
Domain