The Design Argument

Introduction

Many great minds, throughout history, have pondered the appearance of design in the world, wondering whether there is a mind behind the order and beauty we see around us. These questions have not been limited to theologians. They have also occupied, among others, philosophers and scientists. Einstein wrote that the most incomprehensible thing about the universe is that it's so comprehensible. This is exactly the insight which the design argument relies upon. Since the rise of Darwinism, however, this argument has fallen upon hard times. But recently new information from the sciences has breathed new life into the design argument.

Many new statements of the argument appeal to either biochemistry, or cosmology. The former raises questions about the origin of life (among other things) while the latter raises questions about what is now called 'fine tuning'. These arguments are, I think, on the right track. However, relatively little work has gone into the question of why these features of the world (may) support the theistic hypothesis ... it has often been simply assumed. The first part of this paper is, therefore, spent unpacking the concept of 'specified complexity'. The idea being that that which exhibits specified complexity requires a special kind of explanation. I then launch into the details, attempting to show that the arguments from biochemical complexity and cosmological 'fine-tuning' fit this pattern: specified complexity being found in both areas. This however, does not complete the design argument and numerous further inferences must be made. The rest of the paper is spent briefly looking into these further moves and a few of the traditional objections to them. The main focus, however, is the issue of specified complexity. The central aim of the paper can therefore be said to be to rebut the objection to the design argument which says the order of the universe requires no explanation.

The Argument

The classic statement of the argument is found in Hume's *Dialogues Concerning Natural Religion*, where his character Cleanthes says ....

> Look around the world, contemplate the whole and every part of it: you will find it to be nothing but one great machine, subdivided into an infinite number of lesser machines, which again admit of subdivisions to a degree beyond what human senses and faculties can trace and explain. All these various machines, even in their most minute parts, are adjusted to each other with an accuracy which ravishes into admiration all men who have ever contemplated them. The curious adapting of means to ends, throughout all nature, resembles exactly, though it much exceeds, the productions of human contrivance - of human design, thought, wisdom, and intelligence. Since therefore the effects resemble each other, we are led to infer, by all the rules of analogy, that the causes also resemble, and that the Author of nature is somewhat similar to the mind of man, though possessed of much larger faculties, proportioned to the grandeur of the work which he executed. By this argument *a posteriori* ... do we prove at once the existence of a Deity and his similarity to human mind and intelligence.[1]

[1]David Hume, *Dialogues of Natural Religion* [6], pg. 17.

This argument has a certain obvious appeal to it. But it is vulnerable on several counts. Firstly it assumes that the world is correctly regarded as an 'effect'. In other words it is assumed from the start that the world was caused. Also, though it is clear that two effects being similar gives *some* weight to the conclusion that their causes are also similar, there may be other considerations to be weighed. In particular the argument doesn't mention that there may be alternative explanations of the order around us. These explanations may not satisfy this 'similarity constraint', but they may be good explanations nonetheless. Other problems include - infinite regress objections, objections from the universe's uniqueness, objections from imperfections in nature, and more besides.

Each of these objections has some weight, but due to limitations of space (and of knowledge) I only want to *properly* address one. The objection I want to consider is the 'no explanation objection'. Someone making this objection holds that the universe's order has and needs no substantive explanation. As I said in the introduction, I want to argue that this is untenable. The structure of the design argument that I would give is, therefore, as follows.

(1) The world, and its parts, exhibit specified complexity.
(2) It is highly improbable that anything should do this without a substantive explanation.
(3) Therefore, it is highly probable that it does have a substantive explanation. [From (1) and (2)][2]
(4) If the specified complexity of something has a substantive explanation then that explanation is in terms of either (a) the thing itself, or (b) some other thing.
(5) If something brings about its own specified complexity then it is 'self-ordering'
(6) The world is not 'self-ordering'.
(7) Therefore, if the specified complexity of the world has a substantive explanation, then that explanation involves something beyond the world. [From (4), (5) and (6)]
(8) If the specified complexity of *X* is explained in terms of *Y*, then *Y* either exhibits specified complexity or is capable of spontaneously generating specified complexity.
(9) Not everything which exhibits specified complexity has an explanation in terms of something else which exhibits it.
(10) Therefore, it is highly probable that there exists something beyond the world which is either 'self-ordering' or is otherwise capable of spontaneously generating specified complexity. (Call it 'other ordering'.) [From (3), (7), (8) and (9).]
(11) In our experience the only things which are (even candidates for being) spontaneously 'self-ordering' or 'other ordering' are minds.

[2]This reasoning may be thought suspect. This is because it is tempting to read (2) as saying that the probability of the world (or its parts) exhibiting specified complexity given that the world (or those parts) have no substantive explanation, is low. If this were how (2) was intended then the inference from (1) and (2) to (3) would not be deductive. (It would rather be based upon some kind of inductive 'Bayesian' inference.) But (2) should rather be read as saying that given that the world (or its parts) exhibit specified complexity we can only endorse two theories. Premise two states that the 'no explanation' theory is improbable, and it clearly follows that the 'explanation' theory is probable. It should be noted however that the reasoning behind the second premise has a form very much like the one that it is tempting to read into the argument as stated above.

(12) Therefore, the being referred to in (10) probably resembles a mind. [From (10) and (11).]
(13) Therefore, it is likely that there exists something beyond the world which resembles a mind and which is ultimately responsible for the world's specified complexity. [From (10) and (13).]
(14) Such a being is appropriately called 'God'.
(15) Therefore, it is likely that God exists.

For now just read *order* for *specified complexity*. The defence of the second premise will immediately make this an improvement on the Humean version of the argument. It will not simply be assumed that the order of the world has a substantive explanation. Premise four is quite crucial, but is trivially true. This means that the other premises of importance are six, eight, nine and eleven. Each of these premises will be given a brief defence. The reason that these premises are important is that if they can be defended then the other major objections to the argument will also fail.

When Things Need Explaining: Specified Complexity

It should always be remembered that the teleological argument is not the cosmological argument. By this I mean that the teleological argument doesn't say that anything other than God requires a cause. Rather it says that any ordered existence, other than God, requires a cause. Now it may be thought that since these principles are very similar, for any objection we find to the cosmological argument there will be a similar one against to teleological argument. This is, I think, true. What does not follow from this, however, is that since the objections are parallel that they are therefore equally conclusive (or equally inconclusive). The argument must be taken on its own terms. One of the cosmological arguments chief problems is showing that the everyday things around us all need a cause. The parallel step is a little easier in the case of the design argument. For it is clear that certain everyday objects need causes. The computer that I am typing at for instance. Computers don't just pop into existence. Nor would a computer's current existence be adequately explained by saying that it has always existed. Such an ordered thing as a computer must have come from an ordering cause. But how do we know this? Indeed how do we generally know that things have 'ordering causes'?

Improbability

A natural first attempt at saying when something needs further explanation is to say that it needs explanation if it is improbable. So an event or a certain configuration of things needs explanation if that event or configuration is improbable. This seems to capture our intuitions. Unfortunately our intuitions are misleading us here. Consider the two following sequences, both (allegedly) produced by tossing a coin twenty times. Let H represent the coin coming up heads, and T it coming up tails.

(a) TTHHTHTTTHTHHTHTTTHH
(b) HHHHHHHHHHHHHHHHHHHH

It is tempting to say that sequence (b) is less probable than sequence (a). However, this is not true. Both sequences have the same chance of occurring, namely 1 chance in 2^{20}. But we would be suspicious of a coin that gave us sequence (b), in a way that we wouldn't be of a coin that gave us sequence (a). We would suspect that the occurrence of a sequence like (b) has an explanation in a way that sequence (a) does not. But it is not because (b) is less probable. Why, then, is it?

Those familiar with mathematics might be tempted to say that it is because (a) contains roughly equal numbers of heads and tails whereas (b) does not. Indeed, I find this thought tempting. Why is it tempting? Basically because there is only one way of getting a series of twenty heads, whereas there are thousands of ways of getting roughly equal numbers of heads and tails. But again our intuitions are misleading us here. Consider, for example the following, hypothetical, sequence.

(c) HHHHHTTTTTHHHHHTTTTT

Here we have a sequence consisting of equal numbers of heads and tails. But it doesn't seem to be a sequence that requires no extra explanation. In fact there seems to be a sense in which it requires *more* explanation than even (b) does. (b) is an odd sequence to have occurred, but (c) isn't just odd, it seems, as it were, to be odd in an odd way. This is because we can easily envision an explanation for sequence (b), namely that the coin is biased. But the coin simply having a bias couldn't explain sequence (c). There are many sequences like (c) which contain equal or roughly equal numbers of heads and tails while still requiring some extra explanation.

The observant reader will notice that what is being talked about here is the nature of randomness. (a) seems to pass the intuitive test for randomness but neither (b) nor (c) do. Now it should be clear that the results of a truly random sequence can have no substantive explanation. But how then do we tell that some sequence is random, or non-random? Let me give two ways of approaching this issue. The first is not particularly precise, but that needn't hinder us.

Approaching Randomness 1

I will continue to use the example of coin tossing. Randomness has never been 'defined' by the mathematicians.[3] It is fairly easy to see why: it would seem to be part of its nature that it is indefinable. But we can give randomness 'tests'. These tests would provide us with an 'operational' definition of randomness. Consider the following set of tests.

To be random a sequence should contain roughly equal numbers of ....

(i) H's and T's
(ii) HH's, HT's, TH's, and TT's
(iii) HHH's, HHT's, HTH's, HTT's, THH's, THT's, TTH's and TTT's
(iv) HHHH's, HHHT's, ...
(v) HHHHH's, ...

Clearly this list of tests will be infinite. Not only this but it isn't obvious how these tests ought to be applied. This is because when we are dealing with finite sequences we won't be able to use all the tests. If the sequence consists of only

[3]For more on this see H. R. Pagels' *The Cosmic Code* [12], chapter 6.

twenty terms then rule twenty will trivially be broken - there will be one instance of one permutation of heads and tails and none of the others. We might want to say that if the sequence consists of N terms then we can only use tests 1 to Log_2 N. (This restriction needn't be seen as arbitrary, to the mathematically astute it should soon become clear that it isn't - but there may be other, better restrictions.) This would seem reasonable. If a sequence then passed all the applicable tests then we would be able to say that it is random. Or would we? I think not, for reasons that will become clear. However, we can say that a sequence which doesn't pass these tests is non-random, or not completely random.

These tests do seem at least partly right. Sequence (b) clearly fails at the first hurdle. Sequence (c) clears the first but fails at the second. Something that is important to notice about these tests is that if a sequence fails test N then it will also fail test N+1. Why is this? Well, it would seem that breaking rule N+1 is just the way in which one breaks rule N. Consider the first two rules.

To be random a sequence should contain roughly equal numbers of ....
(i) H's and T's
(ii) HH's, HT's, TH's, and TT's

Now any sequence will contain roughly equal numbers of HT pairs and TH pairs. This is because if a sequence begins with H and ends with H, then every time there is a HT there must follow at least one more TH. Alternatively if it starts with H and ends with T then there can only be a difference of one between the numbers of these pairs. The same obviously applies to sequences starting with T. But HT and TH pairs contain the same number of heads and tails, therefore if rule one is broken there must be an imbalance between the number of HH pairs and the number of TT pairs. Thus to break the first rule the second must also be broken. I presume that something similar can also be said of the remaining rules.

So sequences (b) and (c) are non-random and as such require explanation. Furthermore, we can say why (c) seems to need more of an explanation than sequence (b) does. It is because it starts to break the rules 'further down the list'. Consider the following set of sequences that I have designed to pass the randomness tests.

(d) HTTH - repeated keeps (i) and (ii).
(e) HHTTTHTH - repeated keeps (i) to (iii).
(f) HHHTTTTHHTHTTHTH - repeated keeps (i) to (iv).
(g) HHHHTTTTTHHHTHHTHTHTTTHTTHHTTHTH - repeated keeps (i) to (v).

In each case if the sub-sequence is repeated enough times the resulting sequence keeps the specified rules. But none of these sequences would be random. Just as (c) requires a 'bigger' explanation than (b) does, so too does (e) require more of an explanation than (d), (f) than (e), and (g) than (f). The reason for this is that each of the sequences produced are highly specified, there is a rule which produces them, but that they are increasingly complex. Thus as we break the rules further and further down the list we get higher and higher amounts of what I will call *specified complexity*.[4] This is the key term in my version of the design argument.

[4]The term originates from L. Orgel, in his *The Origins of Life* [11], pg. 187-197.

The second approach to randomness is similar to the first, though it is probably superior.

Approaching Randomness 2

The second approach I'd like to look at will give us similar results to the first. Just as in the first approach a random sequence turns out to be complex but unspecified the same is true of the second approach. This second approach is known as the complexity approach to randomness.[5] The idea is that if we take the two sequences

(a) TTHHTHTTTHTHHTHTTTHH
(b) HHHHHHHHHHHHHHHHHHHH

then because (a) is random we can't produce an algorythm to produce it that would be shorter than the sequence itself. The simplest 'program' for producing the sequence actually seems to be

Prog (a): Copy 'TTHHTHTTTHTHHTHTTTHH'

Whereas we could produce (b) with the simple progam

Prog (b): Repeat 'H' twenty times

Similar things will go for the other sequences mentioned above. The more complex the sequence the longer the program that produces (or replicates) that sequence must be. But there is clearly a sense in which Prog (a) doesn't do any work for us. This is true for all programs that replicate truly random sequences. But a sequence like (g), where the sub-sequence given is repeated over and over, is somewhere between (a) and (b). The program that produces it needn't be as long as the sequence itself, and yet it does need to be rather long. It might be

Prog (g): Repeat 'HHHHTTTTTHHHTHHTHTHTTTHTTHHTTHTH' twenty times.

Again we have a way of seeing when a series requires a 'big' explanation. A sequence needs a 'big' explanation if the shortest program that produces that sequence is (a) shorter than the sequence itself, but (b) nevertheless quite long. Such sequences can be labelled as exhibiting *specified complexity*.

Actually, to show that something exhibits specified complexity is to show more than that it requires explanation. Things need explanation if they are merely specified. Recall sequence (b). The occurrence of such a sequence does need explaining. It is the unspecified that needs no explanation. But what is specified but not complex can easily be explained in terms of a law of nature. There may just be a simple bias in nature. Such a bias is exactly what we postulate to explain the occurrence of sequences like (b). But this kind of explanation is inadequate when it comes to what is both specified and complex. A sequence's specificity ensures that

[5]I refer the interested reader to the *Routledge Encyclopedia of Philosophy* (Routledge, 1998) Edward Craig, ed.), and William Dembski's entry under 'Randomness'.

it can't be the result of 'chance', a sequence's complexity ensures that it can't be the result of 'necessity'. It might be thought that some combination of the two would suffice to explain specified complexity - but I don't see how. What interplay of chance and necessity could possibly produce a sequence such as (g)? It would have to involve either necessity working upon the products of chance or chance working on the products of necessity. The latter seems destined for failure - since in any such combination the chance element will 'win', making sure that at some level the sequences are unspecified. So what of necessity working on randomness? The first point is that it is utterly unclear how to think about this. What sort of 'law' ought we to apply to a random sequence to turn it into one exhibiting specified complexity? The only thing that comes to mind is this: take a random sequence, then repeat it over and over. This seems good. The problem, however, is that the pattern could never be given in advance. The pattern is only there *after* the sequence. But with genuine 'specifications' the pattern can be given in advance. In other words, the specification can be given independently of the actualisation of the pattern. But in the case we are considering this isn't so.

We thus have a distinction which is difficult to draw. It might[6] be called the distinction between 'specifications' and 'fabrications'. Both are types of pattern. And by all my previous definitions the latter would come under the former. But there is a real distinction here. It is like the difference between accommodation and prediction in science. Though it is hard to see where the difference in value between the two comes from it is there nevertheless. Similarly there is a difference between 'specifications' and 'fabrications'. If the pattern that a sequence instantiates is a fabrication, then that pattern can only be given after the fact. But if the pattern can be given in advance then it is a specification. But what do we mean by 'in advance' and 'after the fact' here? We simply mean 'independently'. Only if the targets were drawn before the archer shot his arrows, can we tell whether each of his arrows being in a bulls eye would count as evidence for counting him a good archer. If the targets were drawn around the arrows landing positions we can't tell anything at all about his ability. But if the targets were there first we know he is highly skilled. But if the targets were there first their positions were given 'independently' of the arrow's flight - and hence we detect 'design' in the flight of the arrows. If the targets were drawn in afterwards then we detect no such design. So the actualisation of some [sequence] counts as specified if, 'independently of the [sequence's] actualisation, the [sequence] is identifiable by means of a pattern'.[7] Thus since we can only imagine chance and necessity combining to produce 'fabricated complexity' rather than 'specified complexity' we are justified in rejecting the 'chance and necessity' 'explanation'.

Specified Complexity in Life

Since this paper's main subject is the design argument it should be very clear where this is headed. The aim is, of course, to show that the world exhibits specified complexity, and that therefore the world requires a 'big' explanation. An explanation that is not simply in terms of either chance or necessity. But before I go any further let me clarify that statement a little. The present writer constructed sequence (g)

[6]Following Dembski's work [3].

[7]The Archer example, and this quote, are drawn from Dembski's 'Intelligent Design as a Theory of Information' [3].

especially so that it would satisfy the first to fifth randomness criterions. The sub-sequence which gets repeated is 32 terms in length and this is the minimum length that such a sub-sequence could have had. I challenge the reader to construct another sequence which meets this fifth rule - and to do it without reference to the sequence I constructed. It isn't that there is no alternative sequence, I'm sure there are numerous alternatives (a good mathematician would be able to tell you how many). What I want to emphasise is that the sequence couldn't have just been thrown together, it took a fair amount of time and mental energy to produce it. I conclude therefore that things exhibiting specified complexity to this sort of degree are in need of a 'big' explanation.

A good illustration of this can be found in the recent film *Contact*. In this film the organisation SETI (The Search for Extra-Terrestrial Intelligence) detect a pattern in one of the radio signals they were picking up. The pattern was one of beats and pauses. These beats and pauses were arranged such as to represent the prime numbers from 2 to 101. (beat-beat-pause=2, beat-beat-beat-pause=3, etc.) The finding of this pattern was taken to be conclusive evidence for the existence extra-terrestrial intelligence. This pattern is clearly specified and complex. Furthermore, SETI's deduction seems legitimate. If such patterns were discovered a 'big' explanation seems to be appropriate. In particular an explanation in terms of an intelligence seems appropriate.

The question on everyone's lips should now be whether or not nature contains specified complexity. If it does then such things as exhibit it will need 'big' explanations. So does it? I think that the answer here is a definitive 'yes'. On an intuitive level it is fairly clear that life and the universe as a whole does exhibit specified complexity. If it didn't exhibit any specificity then the universe would be incomprehensible. As was pointed out to me recently[8] nonsense doesn't have a gist. There is no over-all pattern to that which is random, that which is non-specified and non-specifiable. But the universe is intelligible, to a large degree we can make sense of it, if we couldn't then science (and indeed life itself) would be impossible. So the universe exhibits specificity. It also exhibits complexity. This much is obvious from the fact that universities contain many different faculties and departments. Every department is devoted to studying different aspects of the world. There are an endless number of details, and it is impossible to be an expert in every field. Indeed, it is difficult to be an expert in *any* field! So, on an intuitive level the world does exhibit specified complexity. For those who don't want details this may be enough to give support to premise one of my argument.

(1) The world, and its parts, exhibit specified complexity.

But I suspect that many do want details, and I am happy to provide them. I take my examples from two main fields - biochemistry and cosmology. This allows us to look at both the very large and the very small. There is good reason for doing this. The very large is such that there can be no external scientific explanation. The very small is such that there can be no reductive scientific explanation. There may be a good case to be made from features of the world that come somewhere in between these two extremes, but I will ignore these.

[8]by Steven Makin, Senior Lecturer at the University of Sheffield.

Specified Complexity in Biochemistry

The very mention of biology, even the implicit one in 'biochemistry', may surprise the reader. This is because one of the biggest challenges to the normal design argument is that the order that life exhibits can be explained in terms of the biological theory of evolution.[9] This, however, is not an unchallenged or unchallengable orthodoxy. In his brilliant book *Darwin's Black Box*[10], Michael Behe argues that at the biochemical level life is *irreducibly complex*. What does this mean? It means that some of the mechanisms we find in biochemical systems contain several components each working together, and that if one component is missing not only does the system fail to function well but it loses even any minimal function.

Irreducible complexity seems to be a special kind of specified complexity. This is difficult to demonstrate because specified complexity was defined in terms of sequences. But it should be fairly intuitive. That which is irreducibly *complex* is obviously complex. Furthermore what is *irreducibly* complex does seem to be specified. For instance, if we were given an irreducibly complex mechanism, of which one piece was missing, we could say in advance what that piece would have to be like in order for the system to work. But that which is predictable is not random, and is therefore specified. It may, in the light of this, be helpful to offer a couple of Behe's examples. His book expounds (in some detail) five different examples. These are Cilia, Blood Clotting, Sub-Cellular Transport, The Immune System and Cell Building.

Such things as these cannot be given Darwinian explanation. Thus the evolutionary picture of life fails. (This work has not gone unnoticed. Indeed the famed Richard Dawkins, the 'arch-Darwinist from Oxford',[11] was 'unable to scientifically challenge Behe [and so] dismissed him as intellectually lazy'[12], telling him to find as answer in his own discipline.) But it fails in numerous other ways too. The irreducible complexity of these biochemical systems does not exhaust all elements of specified complexity in biochemistry. Let us look for a while at DNA. DNA consists (for our purposes) of chains of nucleotides. There are four basic nucleotides that are given the symbols C, A, T and G. Thus we are back to sequences - only now involving four different possibilities not just two. DNA sequences are far from random. They are highly specific. That this is so is evidenced by the fact that they have provided a fruitful area of research. But though DNA is specific it is far from simple - it is highly complex. Even in a simple bacterium such as E-coli we would need around 4,000,000 instructions in order to produce the required sequence.[13] It is a myth that the simplest organisms are simple. They are not. This provides us with material for a powerful sub-argument. Although we may be able to provide a naturalistic explanation of biological systems such as humans, by the use of natural selection and gene mutation it isn't clear that we can just 'hand wave' when it comes to the question of life's origin. The survival of the fittest (in the popular phrase) presupposes the arrival of the fit. Where did life originally come from? The question becomes more pressing when we consider the following two

---

[9]G.K. Chesterton, has a strong point on the subject. In his book *The Everlasting Man*, (Ignatius, 1993, First Published 1925) he says that evolution seems to make life less surprising because it is a slow unfolding process, but why should a slow miracle amaze us any less than a fast one?

[10]M. Behe, *Darwin's Black Box* (Touchstone, 1996).

[11]R. Zacharias, *Cries of the Heart* [21], pg. 220-1

[12]R. Zacharias, 'Questions I Would Like to Ask God', in *Just Thinking* (Winter 1998).

[13]See Orgel, *The Origins of Life* [11], pg. 187-197.

things (i) the second law of thermodynamics, (ii) the nature of DNA transcription/translation.

The second law of thermodynamics states that the amount of order (or energy available for work) in any closed system always decreases. But the evolutionary process takes us from the less ordered to the more ordered. This, of course, doesn't mean that evolution is in contradiction with the second law of thermodynamics. (Though numerous thinkers believe otherwise.) It may rather be that we are not dealing with a closed system. But when we look at the question of life's origin, the second law does seem to pose a problem. For the naturalistic thinker the emergence of life from non-life must mean the emergence of a much higher level of order than was previously there. But the thinking behind the second law entails that such transitions are so improbable as to be practically impossible. These small improbabilities could, perhaps, be faced if the world was eternal,[14] but our best current cosmological theories indicate that it is not: rather things began with the 'big bang' around 15-20 billion years ago.[15]

But I also mentioned that DNA transcription/translation proved problematic here. The problem is that in order for the information found in DNA to be useful there must be some sort of decoding mechanism. This mechanism is quite complicated, and it is certainly beyond my knowledge and abilities to describe it. But the interesting fact is this - that the decoding mechanism is itself coded for in the DNA. But now an obvious question arises: how did it get there in the first place? It must presumably have been coded for in the DNA - but then for that code to become a reality would require the existence of the decoding mechanism itself! We have here a very difficult 'chicken/egg' problem. And note that it is a problem involving specified complexity. The mechanism is specified - for it is functionally specifiable. But it is also complex. So once again specified complexity proves problematic for naturalistic evolutionary theory.

There are other difficulties too. Indeed evolution itself might be seen as an example of specified complexity. For systems to undergo evolution they must not merely reproduce: they must reproduce in a particular (i.e. specified) way. The offspring must be very similar to their parent(s). But they cannot be identical - for if they were, then no change would occur, and without this small amount of change there could be no development, no 'drift', no evolution - and so no complex life.

Allow me to finish this section on biochemistry with a couple of quotes. In *One World* John Polkinghorne writes,

> 'Fred Hoyle[16] compares the chance of getting just one protein (and there are about two hundred thousand different proteins in our cells) to the chance of solving the Rubic cube blindfold. ... [T]he distinguished molecular biologist, Francis Crick, ... thinks it is impossible to understand how life could have evolved on Earth in the time available.[17] Instead he believes .... that life arrived on Earth from elsewhere. It is not at all clear why what is inconceivable here was able to happen somewhere else, but so desperate remedy as Crick's .... indicates the severity of the problem'. [18]

[14]This is because the probabilities as time referenced, they are calculated upon the supposition that a certain number of possible configurations can be cycled through in a certain amount of time.

[15]See Moreland's, *Scaling the Secular City* [9], pg. 33-4, for a quick and helpful summary of the evidence for this.

[16]F. Hoyle, *The Intelligent Universe* (Michael Joseph, 1983), pg. 12.

[17]Francis Crick, *Life Itself* (Simon & Schuster, 1981).

[18]J. Polkinghorne, *One World* [15].

Crick himself wrote that

> 'An honest man, armed with all the knowledge available to us now, could only state that in some sense, the origin of life appears at the moment to be almost a miracle, so many are the conditions which had to have been satisfied to get it going.'[19]

Specified Complexity in Cosmology

The notion of specified complexity in cosmology has normally been called 'fine-tuning'. The question is this: how come the values of the universes fundamental constants are balanced in just the way that life requires? The following quote from John Polkinghorne illustrates the point brilliantly,

> In the early expansion of the universe there has to be a close balance between the expansive energy (driving things apart) and the force of gravity (pulling things together). If the expansion dominated then matter would fly apart too rapidly for condensation into galaxies and stars to take place. Nothing interesting could happen in so thinly spread a world. On the other hand, if gravity dominated the world would collapse in on itself again before there was time for the processes of life to get going. For us to be possible requires a balance between the effects of expansion and contraction which at a very early epoch in the universe's history (the Planck time) has to differ from equality by not more than 1 in 10^{60}. The numerate will marvel at such a degree of accuracy. For the non-numerate I will borrow an illustration from Paul Davis of what that accuracy means.[20] He points out that it is the same as aiming at a target an inch wide on the other side of the observable universe, twenty thousand million light years away, and hitting the mark![21]

Similar things can be said of the mass of a the proton. If it were only 0.2% higher then hydrogen would be unstable, and life could not have arisen. Again, there must be just the right balance of matter to anti-matter in the universe, it must be accurate to one part in ten billion. Further, the universe exhibits a remarkably even distribution of material (isotropy), slight variations would rule out life.[22]

Even if these figures are not precise it is nevertheless true that the chance of a life permitting universe is not practically different from zero. That is to say that there are numerous independent things - all of which must obtain - in order for life to be possible. Therefore - that the universe is so 'arranged' is an indication of its complexity. But we also know that not only is a configuration of this sort a complex configuration - it is also a specified one. For we can independently say whether or not any particular type of universe would be able to produce and sustain intelligent life. So once again we have an example of specified complexity.

There are numerous other examples of specified complexity that could be used, let me mention just two. The first, alluded to earlier, is to do with the worlds intelligibility. That the world is intelligible entails that it is specified - that it conforms to certain patterns. But the world is also complex. For not only is the world comprehensible, it also contains intelligent agents, humans, who can comprehend it. Now, if humans were simple organisms they could not manage this feat - they are, therefore, complex. So once again the existence of specified complexity - proven by the interplay of intelligibility and intelligence.

---

[19]Francis Crick, *Life Itself* (Simon & Schuster, 1981), pg. 88.
[20]From Paul Davis' *God and the New Physics*, (Dent, 1983) pg. 179.
[21]J. Polkinghorne, *One World* [15], pg. 57.
[22]This data is taken from J.P. Moreland's *Scaling the Secular City* [9], pg. 52-54. For greater detail one should read J. Barrow & F. Tipler's *The Anthropic Principle* (Oxford, 1986).

The second example is that of language. Meaningful utterances (of any real length) always exhibit specified complexity. This may not always be obvious to us (as in the case of some foreign languages) but it is nevertheless true. Consider the following combinations of letters.

(h) MeMeMeMeMeMeMeMe
(i) apImlbOawEGhugapAmg
(j) This is a real sentence.

Both (i) and (j) exhibit complexity, and both (h) and (j) exhibit specificity - but only (j) exhibits specified complexity. It is a feature, not just of English, but of language in general that it exhibits specified complexity. Without it the idea of meaning would itself be meaningless.

So there we have it, life exhibits specified complexity. Furthermore, we know that specified complexity requires a special kind of explanation. Thus we have a defence of the first five premises of the design argument.

(1) The world, and its parts, exhibit specified complexity.
(2) It is highly improbable that anything should do this without a substantive explanation.
(3) Therefore, it is highly probable that it does have a substantive explanation. [From (1) and (2)]
(4) If the specified complexity of something has a substantive explanation then that explanation is in terms of either (a) the thing itself, or (b) some other thing.
(5) If something brings about its own specified complexity then it is 'self-ordering'

Continuing the Argument

This is a big step towards a valid and sound design argument. There are further things that could be said about (2) but I'll leave that for later. The remainder of the paper will be spent taking a brief look at the other contestable premises. I earlier pointed out that the other crucial premises where (6), (8), (9) and (11).

(6) The world is not 'self-ordering'.
(8) If the specified complexity of *X* is explained in terms of *Y*, then *Y* either exhibits specified complexity or is capable of spontaneously generating specified complexity..
(9) Not everything which exhibits specified complexity has an explanation in terms of something else which exhibits it.
(11) In our experience the only things which are (even candidates for being) spontaneously 'self-ordering' or 'other ordering' are minds.

Let's first look at premise (6). The premise states that the world is not self-ordering. The line of reasoning behind this premise has already been given in talking about the origin of life. The thought is that the second law of thermodynamics rules out this possibility. To remind the reader: the law states that the disorder (or entropy) of any closed physical system always increases. Consider the following illustration of this law from Heinz Pagels.

> Take a glass jar and fill it up a quarter of the way with salt. Then add granulated pepper until it is half full. There is a black layer on top of a white layer - an improbable configuration of the particles. This configuration has relatively low entropy because it is highly organised and not messy. Now shake the jar vigorously. The result is a grey mixture, a disorganised configuration of the salt and pepper. If you keep shaking it is very unlikely that the original configuration will ever return. Not in millions of years of shaking will it return. The disorganisation of the system has permanently increased.[23]

Things tend to get more and more disorganised as time goes by. But this is just a way of saying that as time passes things become less and less specified and specifiable. But if closed physical systems become less specified over time then they are not self-ordering. Thus the universe (considered as a closed physical system) is not self-ordering. Therefore premise (6) is true.

(8) seems to exhaust the logical possibilities and must, therefore, be true. But what of (9) and (11)? Well (9) certainly seems to be true. Infinite regresses of 'explanation' are no explanation at all. I recall Patterson Brown's famous paper 'Infinite Causal Regression'.[24] If some entity X needs an explanation due to its exhibiting feature F, then pointing to entity Y which also has feature F will not suffice to explain X's possession of F. Rather we have put off explanation. We either need to be told something further about Y which makes its possession of F understandable (in a way that that of X was not), or we need to introduce a further entity, Z. The reason, therefore, that not everything which exhibits specified complexity has an explanation in terms of something else which exhibits it, is that such an regress of beings wouldn't constitute an explanation at all. But as premise (3) states - it is highly probable that the world's specified complexity does have an explanation. Thus (9) stands firm.

Now only (11) requires defence. At this point I must simply say that my defence of it, though intuitive, is far from rigorous. We did note that specified complexity needed a 'big' explanation. We further noted that it could not be in terms of either chance or necessity, or any combination of the two. With these and four other intuitive points I think (11) can be vindicated. What are those four points? The first is that minds certainly are capable of producing specified complexity. If they were not so capable, then my writing this paper would have been impossible. The second point is that phenomenologically this process of producing order seems to be utterly spontaneous. I think that this appearance should be taken at face value. Why? Well, (a) why not? and (b) how else would we be able to create genuinely innovative things, which nevertheless display order - specificity. The third point is that it is very difficult to think of any other alternative - I've tried. The fourth, and final, point is that in every day life each of us is satisfied with a personal explanation of specified complexity - but no other kind of explanation really satisfies us - the same should be true in this case.

---

[23]H. R. Pagels, *The Cosmic Code* [12], pg. 113.

[24]P. Brown, 'Infinite Causal Regression', in *Aquinas: A Collection of Critical Essays*, ed. A. Kenny (Notre Dame, 1976)

Two Objections

Several of the traditional objections to the design argument have been touched upon along the way, but it would be worth at least mentioning a couple of the others. I do this because I recognise that even in this improved form the argument is still vulnerable, and is far from conclusive. The two objections I think it is worth briefly looking at may be called (i) The Many Worlds Objection, and (ii) The Uniqueness of the World Objection.

The Many Worlds Objection

The person giving this objection states that the world we inhabit is not the only world. According to such a view there are many worlds, each as real as this one. If this were so then though it may be true that in any specified world it is unlikely that life (or specified complexity) should arise, it is overwhelmingly likely that it would (by chance) occur in some world. Therefore, the specified complexity of the world requires no substantive explanation - and therefore (2) is false.

This objection is tough. But I have a few questions of it. Firstly, do those who put it forward really believe it, do they really believe in this 'world ensemble'? I suspect that many do not. I further suspect that many of those who would endorse this view do so simply to avoid the theistic conclusion of the design argument. They have settled the question in advance - for them theism is not an option. This seems to be simple closed-mindedness. Secondly, I wonder whether the proponent of the argument really thinks that (2) is false, or does he or she just object to (3)? Why do I ask this? Well, something like (2) seems to be part of our every day reasoning, how else would we detect the work of intelligence in the remnants of ancient civilisations - indeed how else would we detect a mind behind the 'back soon' notes of our friends and colleagues? But if we accept (2) on what grounds do we reject (3)?

I doubt that in most cases the 'sceptic' has convincing answers to any of these questions - or at least not answers that he himself would be willing to endorse. I admit that this does not amount to a complete rebuttal of the objection - rather it is a plea for intellectual honesty of those who use it. If the objection really is an honest one I have nothing to say against it.

The Uniqueness of the World Objection

This objection states that since we only have acquaintance with one world we cannot say how likely or unlikely it is that the 'cosmic constants' should be as they are. Thus (once again) we cannot assert (2).

This objection has some force. Before I come to it let me point out that it stands in an interesting relation to the last objection. This objection states either that there is only one world, contradicting the many world hypothesis, or that we only have epistemic access to one world. Now, even if we take the latter line we can see that this poses problems for the previous objection - for it reveals that positing a 'world ensemble' is totally ad hoc, we have absolutely no evidence that such a plethora of worlds exists. That said, what can be said for this objection?

Firstly, I think that it has a point. Namely that the real 'physical probability' of the cosmic constants being as they are is unknowable. But this certainly doesn't mean that those probabilities are high. In fact, not only does it not show they are high it shows that they may be even lower than has been thought. It is arbitrary to either suppose that our 'suggested probabilities' are too large or too small. But if those probabilities are our only guide, then they at least create a presumption in

favour of (2), we may not be as confident of it as many theists would like to suppose, but nevertheless it can be rationally believed. But in another respect this objection is wrong - for it looks only at 'cosmological specified complexity', at 'fine-tuning'. But even in this paper I have argued that there are other examples available - and in these cases we do have epistemic access to the probabilities in question, and that access has only shown our worries to be justified - the specified complexity in question is highly improbable without a substantive explanation.[25]

Conclusion

I think that I have done enough to demonstrate that the design argument is far from dead and that, on the contrary, it gives considerable weight to the conclusion that God exists. By this I mean that it would not be unreasonable to believe in God on the basis of this argument. What I don't mean is that given this argument it would be flatly irrational to deny God's existence. There are numerous objections to the argument, and if, at points, one is willing to say (and believe) things which seem to be against common sense then there is little that can be said. A number of well known atheists have agreed. For instance, Robin Le Poidevin, in his book *Arguing For Atheism*, writes

> It seems that it would be better for the atheist to give up the attempt to explain why the laws of the universe are life-favouring ... It looks as if the theist has won this particular skirmish.[26]

But this is a substantial conclusion, and not one that can be easily ignored. The universe is both intricate and intelligible, both specified and complex. This fact cries out for explanation, and an adequate explanation can only be given within a theistic world-view. In the words of John Polkinghorne, 'There is no free lunch, and only God has the resources to put in what was needed to get what we've got.'[27]

[25]Part 2 of Behe's book, *Darwin's Black Box* [1], provides a helpful introduction to the origin of life literature.
[26]R. Le Poidevin, *Arguing for Atheism* [14], pg. 68.
[27]From Ravi Zacharias, *A Shattered Visage* [20], pg. 44.

Bibliography

[1] M. Behe	***Darwin's Black Box*** **(Touchstone, 1996)**
[2] P. Brown	'Infinite Causal Regression', in *Aquinas: A Collection of Critical Essays*, ed. A. Kenny (Notre Dame, 1976)
[3] W. Dembski	**'The Explanatory Filter', 'The Act of Creation', and 'Intelligent Design as a Theory of Information', all available @http:www.arn.org/dembski/wdhome.htm**
[4] J.C.A. Gaskin	*Hume's Philosophy of Religion* (Macmillan, 1988)
[5] N. Geisler & W. Corduan	***Philosophy of Religion*** **(Baker, 1988)**
[6] D. Hume	*Dialogue Concerning Natural Religion* (Hafner,)
[7] P. Kreeft & R. Tacelli	*Handbook of Christian Apologetics* (Monarch, 1995)
[8] J.L. Mackie	*The Miracle of Theism* (Oxford, 1982)
[9] J.P. Moreland	***Scaling the Secular City*** **(Baker, 1987)**
[10] J.P. Moreland & Kai Nielsen	*Does God Exist?* (Prometheus, 1993) especially W.L. Craig's contribution 'In Defence of Rational Theism'.
[11] L. Orgel	***The Origins of Life*** **(Wiley,1973)**
[12] H. R. Pagels	*The Cosmic Code* (Penguin, 1994)
[13] L. Stafford Betty with B. Cordell	'The Athropic Teleological Argument' in *Philosophy of Religion*, eds. Peterson, Hasker, Reichenbach, & Basinger (Oxford, 1996)
[14] R. Le Poidevin	*Arguing For Atheism* (Routledge, 1996)
[15] J. Polkinghorne	***One World*** **(SPCK, 1986)**
[16] B. Russell	*Why I am not a Christian* (Routledge, 1996)
[17] R.G. Swinburne	*The Existence of God* (Oxford, 1990)
[18] R. Varghese	*Great Thinkers on Great Questions* (Oneworld, 1998)
[19] R. Zacharias	*Can Man Live Without God* (Word, 1994)
[20] R. Zacharias	*A Shattered Visage* (Hodder & Stoughton, 1996)
[21] R. Zacharias	*Cries of the Heart* (Word, 1997)

References that were most heavily used are **emboldened**.