The design argument

The different versions of the cosmological argument we discussed over the last few weeks were arguments for the existence of God based on extremely abstract and general features of the universe, such as the fact that some things come into existence, and that there are some contingent things.

The argument we'll be discussing today is not like this. The basic idea of the argument is that if we pay close attention to the details of the universe in which we live, we'll be able to see that that universe must have been created by an intelligent designer.

This *design argument*, or, as its sometimes called, the *teleological argument*, has probably been the most influential argument for the existence of God throughout most of history.

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The fifth way is taken from the governance of the world. We see that things which lack knowledge, such as natural bodies, act for an end, and this is evident from their acting always, or nearly always, in the same way, so as to obtain the best result. Hence it is plain that they achieve their end, not fortuitously, but designedly. Now whatever lacks knowledge cannot move towards an end, unless it be directed by some being endowed with knowledge and intelligence; as the arrow is directed by the archer. Therefore some intelligent being exists by whom all natural things are directed to their end; and this being we call God.

Aquinas is noting that things we observe in nature, like plants and animals, typically act in ways which are advantageous to themselves. Think, for example, of the way that many plants grow in the direction of light.

Clearly, as Aquinas says, plants don't do this because they know where the light is; as he says, they "lack knowledge." But then how do they manage this? What does explain the fact that plants grow in the direction of light, if not knowledge?

Aquinas' answer to this question is that they must be "directed to their end" -- i.e., designed to be such as to grow toward the light -- by God.

But one might reasonably think that this needs a bit more argument: why, exactly, should we believe that the fact that plants typically act "to obtain the best result" shows that they are designed by God? Aquinas does not say.

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Later writers filled this gap in Aquinas’ argument, by providing reasons to think that the end-directed behavior of living things shows that the universe must have been designed.

Perhaps the fullest development of this argument was provided by William Paley, an 18th century English philosopher and theologian, in his book *Natural Theology*.

This book is filled with careful and detailed discussions of various facets of the natural world, each of which Paley employs in his argument for the existence of an intelligent designer of the universe.

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I know no better method of introducing so large a subject, than that of comparing a single thing with a single thing; an eye, for example, with a telescope.* As far as the examination of the instrument goes, there is precisely the same proof that the eye was made for vision, as there is that the telescope was made for assisting it. They are made upon the same principles; both being adjusted to the laws by which the transmission and refraction of rays of light are regulated. I speak not of the origin of the laws themselves; but, such laws being fixed,* the construction, in both cases, is adapted to them. For instance; these laws require, in order to produce the same effect, that the rays of light, in passing from water into the eye, should be refracted by a more convex surface, than when it passes out of air into the eye. Accordingly we find, that the eye of a fish, in that part of it called the crystalline lense, is much rounder than the eye of terrestrial animals. What plainer manifestation of design can there be than this difference? What could a mathematical instrument-maker have done more, to shew his knowledge of his principle, his application of that knowledge, his suiting of his means to his end; I will not say to display the compass or excellency of his skill and art, for in these all comparison is indecorous, but to testify counsel, choice, consideration, purpose?

Here, as in many other places throughout the book, Paley is comparing an aspect of the natural world -- in this case, the construction of the eye -- and an artefact -- in this case, a telescope.

The resemblance between the two is that both the parts of the eye and the parts of the telescope are set up perfectly for a certain purpose: in this case, the production of an accurate image of physical objects on the basis of the light reflected off of those objects.

Further, Paley emphasizes, in either case very small changes to the parts of the instrument, or the way that they are combined, would make the instrument wholly unable to serve its purpose.

IN crossing a heath, suppose I pitched my foot against a *stone*, and were asked how the stone came to be there, I might possibly answer, that, for any thing I knew to the contrary, it had lain there for ever: nor would it perhaps be very easy to shew the absurdity of this answer. But suppose I had found a *watch** upon the ground, and it should be enquired how the watch happened to be in that place, I should hardly think of the answer which I had before given, that, for any thing I knew, the watch might have always been there. Yet why should not this answer serve for the watch, as well as for the stone? Why is it not as admissible in the second case, as in the first? For this reason, and for no other, viz. that, when we come to inspect the watch, we perceive (what we could not discover in the stone) that its several parts are framed and put together for a purpose, e.g. that they are so formed and adjusted as to produce motion, and that motion so regulated as to point out the hour of the day; that, if the several parts had been differently shaped from what they are, of a different size from what they are, or placed after any other manner, or in any other order, than that in which they are placed, either no motion at all would have been carried on in the machine, or none which would have answered the use, that is now served by it.

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This thought leads Paley to a famous thought-experiment. Suppose that one found some object which is like an eye or telescope in this way, like a watch, and we didn't know where this watch could have come from.

Would we, in this case, believe that the watch must have been designed by some intelligent watchmaker or other, or would we think that, for example, the watch simply came to be by chance?

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Would we, in this case, believe that the watch must have been designed by some intelligent watchmaker or other, or would we think that, for example, the watch simply came to be by chance?

The answer, Paley thinks, is clear: we would conclude that it must have been designed by an intelligent watchmaker. The opposite view seems ridiculous.

But, Paley thinks, this is exactly the view into which an atheist is forced. After all, we see in the world around us many examples of things, like the eyes of animals, which show the marks of design. This is relevantly just like finding a bunch of watches without knowing where they came from: we have found a whole *world* of well-designed creatures rather than just a single watch; so if it was reasonable to conclude that a watch must have been designed by an intelligent watchmaker, it is that much more reasonable to conclude that the natural world we find around us must have been designed by an intelligent creator.

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Here is one way to make Paley's line of reasoning explicit; as above, let's say that an object has the "marks of design" if its parts are finely-tuned to its purpose.

1. Many things in nature, like eyes, show the marks of design.
2. These things must either have been created by an intelligent designer or produced by random natural processes.
3. Random natural processes never produce things with the marks of design.

C. Things in nature that show the marks of design must have been created by an intelligent designer. (1,2,3)

Paley's design argument

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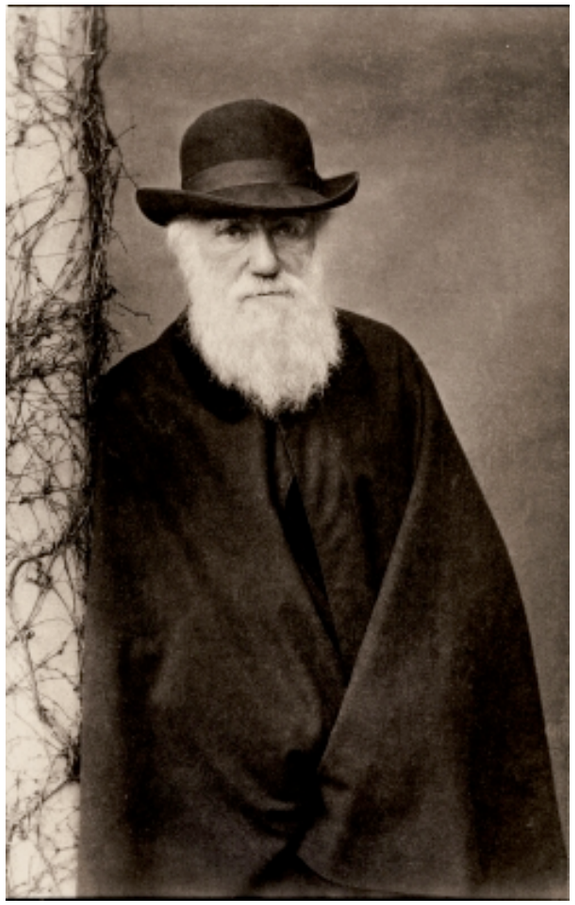
This argument for God's existence, however, faces an important challenge of which Paley could not have been aware.



This challenge came not from a philosopher finding a flaw in Paley's argument, but rather from Darwin's development of the theory of evolution. This theory provides very strong reason to doubt premise 3 of Paley's argument.

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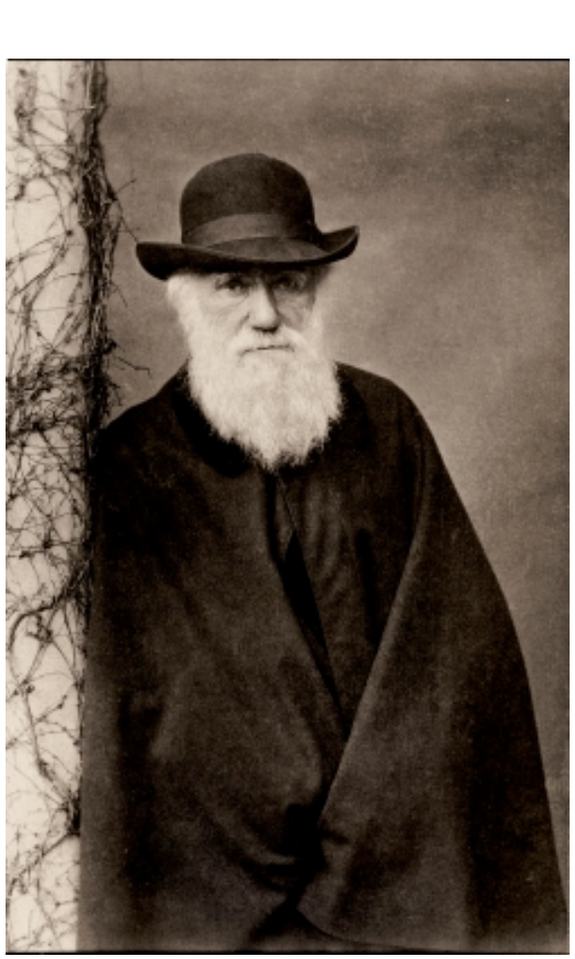

Consider, for example, Darwin's discussion of the eye:

It is scarcely possible to avoid comparing the eye with a telescope. We know that this instrument has been perfected by the long-continued efforts of the highest human intellects; and we naturally infer that the eye has been formed by a somewhat analogous process. But may not this inference be presumptuous? Have we any right to assume that the Creator works by intellectual powers like those of man? If we must compare the eye to an optical instrument, we ought in imagination to take a thick layer of transparent tissue, with spaces filled with fluid, and with a nerve sensitive to light beneath, and then suppose every part of this layer to be continually changing slowly in density, so as to separate into layers of different densities and thicknesses, placed at different distances from each other, and with the surfaces of each layer slowly changing in form. Further we must suppose that there is a power, represented by natural selection or the survival of the fittest, always intently watching each slight alteration in the transparent layers; and carefully preserving each which, under varied circumstances, in any way or in any degree, tends to produce a distincter image. We must suppose each new state of the instrument to be multiplied by the million; each to be preserved until a better one is produced, and then the old ones to be all destroyed. In living bodies, variation will cause the slight alterations, generation will multiply them almost infinitely, and natural selection will pick out with unerring skill each improvement. Let this process go on for millions of years; and during each year on millions of individuals of many kinds; and may we not believe that a living optical instrument might thus be formed as superior to one of glass, as the works of the Creator are to those of man?

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Darwin's theory shows how random natural processes could, over time, produce things with the marks of design. This theory seems to destroy Paley's argument, as Darwin himself noted in his autobiography:

> "The old argument of design in nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection had been discovered. We can no longer argue that, for instance, the beautiful hinge of a bivalve shell must have been made by an intelligent being, like the hinge of a door by man. There seems to be no more design in the variability of organic beings and in the action of natural selection, than in the course which the wind blows. Everything in nature is the result of fixed laws."

Often very bold claims are made on behalf of the theory of evolution; sometimes it is even claimed that the theory shows that God does not exist. It is hard to see why this should be so. But it does seem that the theory undermines one historically important argument for the existence of God.

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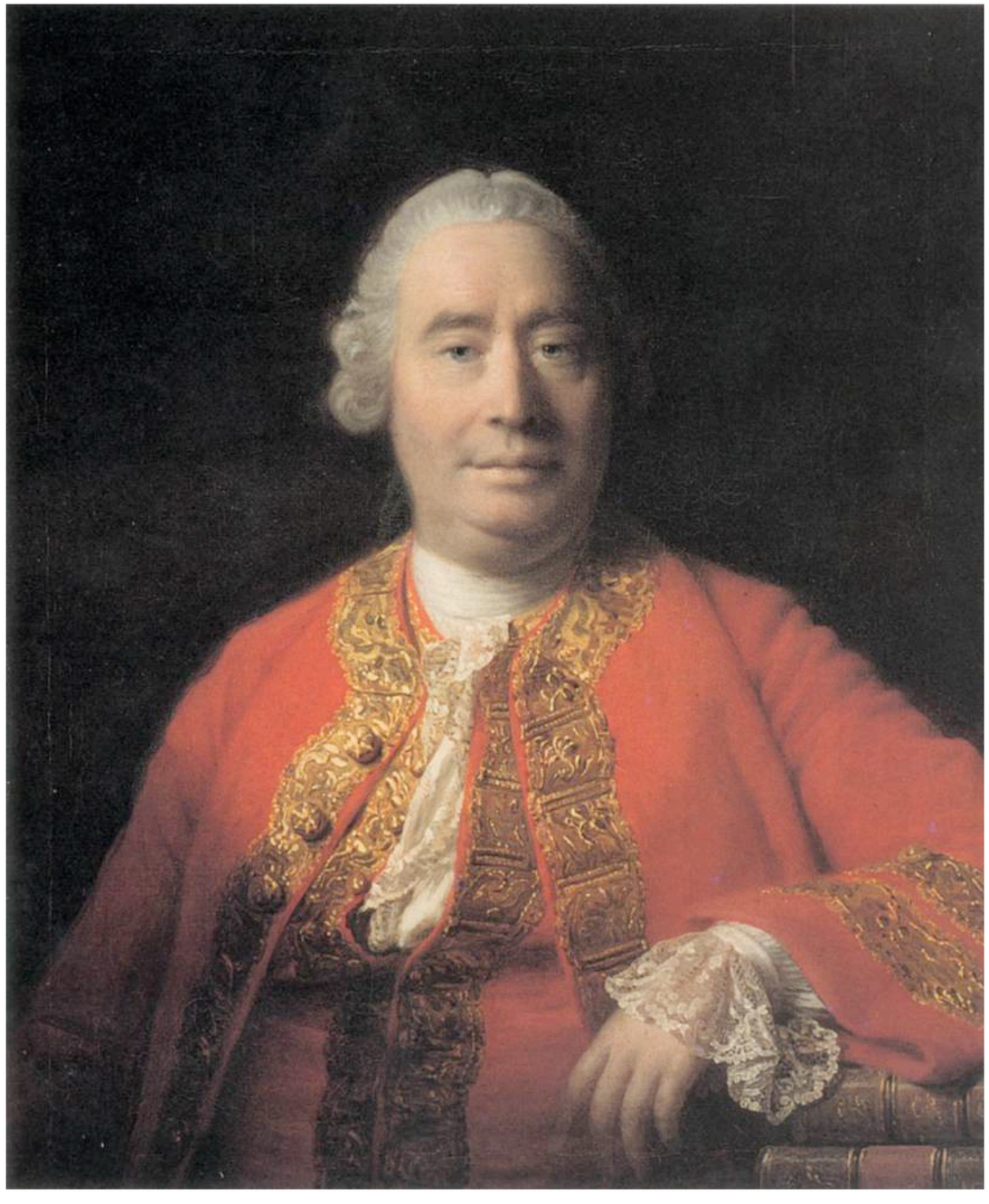
An example of such an argument is given by the character of Cleanthes in the selection from Hume's *Dialogues on Natural Religion* which we read for class today.



Born in Edinburgh, Scotland in 1711, David Hume is usually thought to be the greatest English-speaking philosopher who ever lived. Despite this, because of his reputation as an atheist, he was never able to get an academic position.

The *Dialogues on Natural Religion* is a systematic attack on the arguments for the existence of God which were most influential in Hume's time; among these, the design argument had a central place. Partly because of its controversial character, the *Dialogues* was published only after Hume's death in 1776.

This book is written in dialogue form; there are three characters, Cleanthes, Demea, and Philo. Cleanthes characteristically defends arguments for the existence of God, while Philo is the main philosophical critic of those arguments.

Here is Cleanthes' statement of his central argument:

Look round 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, and even 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 has executed. By this argument *a posteriori*, and by this argument alone, do we prove at once the existence of a Deity and his similarity to human mind and intelligence.

Some aspects of this argument are similar to Paley' design argument, but there are at least two important differences.

First, Cleanthes does not focus specifically on living things; the focus is on the universe as a whole.

Second (and related) Cleanthes does not focus on the idea that some things we find in nature are well-adapted to their purposes; after all, the universe as a whole does not have a purpose in the obvious sense that a plant or animal does. Instead, he focuses on the analogy between the universe and the artefacts produced by human beings.

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This suggests the following interpretation of Cleanthes' argument, which is often called the **argument from analogy**:

1. The universe resembles human artefacts, but is greater.
2. Human artefacts have intelligent designers.
3. Like things have like causes.

C. The universe has an intelligent designer, but one greater than the designers of human artefacts.

The argument from analogy

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Remember that I suggested that this is an example of the design argument which is not refuted by Darwin's theory of evolution. This is in part because this is an argument that the universe as a whole can be shown to have an intelligent designer; and the theory of evolution does not, of course, explain how the universe as a whole came to have the general features that it does have.

However, this strength of the argument is also the source of one of its weaknesses, as Hume -- in the voice of Philo -- points out.

If we see a house, *Cleanthes*, we conclude, with the greatest certainty, that it had an architect or builder because this is precisely that species of effect which we have experienced to proceed from that species of cause. But surely you will not affirm that the universe bears such a resemblance to a house that we can with the same certainty infer a similar cause, or that the analogy is here entire and perfect. The dissimilitude is so striking that the utmost you can here pretend to is a guess, a conjecture, a presumption concerning a similar cause; and how that pretension will be received in the world, I leave you to consider.

Hume here is calling attention to a feature of arguments from analogy: such arguments are only so strong as the similarity between the things being compared.

Can you think of uses of the sort of reasoning employed in the argument from analogy which we would ordinarily find plausible? Is Hume right that these uses are based on much closer similarity than that employed in the argument from analogy for the existence of God?

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This is connected to another of Hume's criticisms of this argument: given the weakness of the analogy between human artefacts and the universe as a whole, Hume things that even if the argument from analogy succeeds in showing that the universe was created by some intelligent being, it tells us hardly anything about what that being must be like.

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Here's how he puts the idea:

> In a word, *Cleanthes*, a man who follows your hypothesis is able, perhaps, to assert or conjecture that the universe sometime arose from something like design: But beyond that position he cannot ascertain one single circumstance, and is left afterwards to fix every point of his theology by the utmost license of fancy and hypothesis. This world, for aught he knows, is very faulty and imperfect, compared to a superior standard; and was only the first rude essay of some infant deity who afterwards abandoned it, ashamed of his lame performance: It is the work only of some dependent, inferior deity, and is the object of derision to his superiors: It is the production of old age and dotage in some superannuated deity; and ever since his death has run on at adventures, from the first impulse and active force which it received from him. . . .

What is Hume's argument here?

How should a defender of the argument from analogy respond?

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Hume also gives another objection to the argument from analogy:

> How, therefore, shall we satisfy ourselves concerning the cause of that Being whom you suppose the Author of Nature, or, according to your system of anthropomorphism, the Ideal World into which you trace the material? Have we not the same reason to trace that ideal world into another ideal world or new intelligent principle? But if we stop and go no farther, why go so far? Why not stop at the material world? How can we satisfy ourselves without going on *in infinitum*?

Here is one way to think about what Hume is getting at here. Imagine that we pose to the defender of the design argument the following question:

> In virtue of what does the universe resemble human artefacts?

The defender of the argument from analogy must have some answer. Suppose that she says:

> The universe, like human artefacts, is beautiful and well-ordered.

Now Hume can pose a dilemma for the defender of the design argument. Consider the following principle:

> Anything which is beautiful and well-ordered must, like human artefacts, have an intelligent designer.

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This principle is either true or false.

If it is false, then the argument from analogy fails, since this is the principle of like things having like causes on which the argument is based.

But if it is true, then we can ask: is God beautiful and well-ordered? It is hard for the defender of the design argument to say “No.” But if God is beautiful and well ordered, then it follows from the above principle that God must have an intelligent designer.

One might, then, think of this argument as a challenge: explain which properties the universe has in virtue of which it is similar to human artefacts so that God does not have those very properties, and hence himself need an intelligent designer.

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So let's think: what is it about the universe that might make us believe that it has an intelligent designer?

Contemporary physics suggests an answer to this question, which is illustrated by the book *Just Six Numbers*, by Martin Rees, a well-known astrophysicist and cosmologist.

Rees describes six constants which figure in the fundamental laws of nature, and to a large extent shape the nature of the universe. Here is one of them:

> The cosmos is so vast because there is one crucially important huge number N in nature, equal to 1,000,000, 000,000,000,000,000,000,000,000,000,000. This number measures the strength of the electrical forces that hold atoms together, divided by the force of gravity between them. If N had a few less zeros, only a short-lived miniature universe could exist: no creatures could grow larger than insects, and there would be no time for biological evolution.

And here's what Rees says about the six numbers:

> These six numbers constitute a 'recipe' for a universe. Moreover, the outcome is sensitive to their values: if any one of them were to be 'untuned', there would be no stars and no life. Is this tuning just a brute fact, a coincidence?

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These remarks can be turned into an argument for the existence of God. (Though, as we'll see, it is not an argument that Rees himself accepts.) To see how this argument works, we will have to think a bit about what sorts of evidence can confirm a theory.

Consider the following two theories:

T1: It rained last night.
T2: It did not rain last night.

Suppose that I an considering these two theories this morning as I walk out of my front door, and, as I walk out the door, I come across a bit of evidence which might help me decide which of T1 and T2 are true:

E: My sidewalk is wet.

Does E count in favor of T1 or T2? Why?

One natural answer is that E counts in favor of T1 because of the following fact: if T1 is true, then E is quite likely to be true, whereas if T2 is true, E is quite unlikely to be true.

This suggests the following *principle of confirmation*:

> Evidence E favors T1 over T2 if E would be more likely to be true if T1 is true than if T2 is true.

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This principle suggests the following further claim: if E is *extremely* likely to be true if T1 is true, and *extremely* likely to be false if T2 is true, then if E is true, this is very strong evidence that T1 rather than T2 is true.

Now consider the following piece of evidence which we seem to possess:

E: The universe permits life to exist.

And now consider the following two theories about the universe:

T1: The universe was designed by a creator who wanted life to exist.
T2: The basic physical constants of the universe are due to chance, rather than intelligent design.

The probability of E given T1 -- the chance of E being true if T1 is true -- is extremely high. This is not really debatable.

One of the apparent consequences of the work of Rees and others is that the probability of E given T2 -- the chance of E being true if T2 is true -- is extremely low.

If this is correct, then it follows from what we have said so far that E -- the fact that the universe is life-supporting -- is extremely strong evidence that T1, rather than T2, is true.

This argument -- which is sometimes called the *fine-tuning argument* --might be thought of as including the following claims:

> Evidence E favors T1 over T2 if E would be more likely to be true if T1 is true than if T2 is true.
> E: The universe permits life to exist.
>
> T1: The universe was designed by a creator who wanted life to exist.
> T2: The basic physical constants of the universe are due to chance, rather than intelligent design.
>
> The probability of E given T1 is extremely high.
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> The probability of E given T2 is extremely low.

Above I mentioned that Rees does himself find this use of his ideas convincing; let's see why by expanding the quotation discussed above.

> These six numbers constitute a 'recipe' for a universe. Moreover, the outcome is sensitive to their values: if any one of them were to be 'untuned', there would be no stars and no life. Is this tuning just a brute fact, a coincidence? Or is it the providence of a benign Creator? I take the view that it is neither. An infinity of other universes may well exist where the numbers are different. Most would be stillborn or sterile. We could only have emerged (and therefore we naturally now find ourselves) in a universe with the 'right' combination.

How should we understand Rees' objection here? Is this a good objection?

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It is worth considering another objection to this argument from the biologist Richard Dawkins, whose latest book, *The God Delusion*, is concerned in part with the argument from illusion.

What is the "anthropic" explanation of the fine-tuning of the universe? Is this a good explanation? Does this explanation deny any of the premises in the version of the fine-tuning argument sketched above?

The theist says that God, when setting up the universe, tuned the fundamental constants of the universe so that each one lay in its Goldilocks zone for the production of life. It is as though God had six knobs that he could twiddle, and he carefully tuned each knob to its Goldilocks value.

Biologists, with their raised consciousness of the power of natural selection to explain the rise of improbable things, are unlikely to be satisfied with any theory that evades the problem of improbability altogether. And the theistic response to the riddle of improbability is an evasion of stupendous proportions. It is more than a restatement of the problem, it is a grotesque amplification of it. Let's turn, then, to the anthropic alternative. The anthropic answer, in its most general form, is that we could only be discussing the question in the kind of universe that was capable of producing us. Our existence therefore determines that the fundamental constants of physics had to be in their respective Goldilocks zones.

It is worth emphasizing that this is not a *proof* of the existence of God. It is an argument that the fine-tuning of the universe supports the theory that God exists as against the theory that God does not exist.

Second, the argument does not, strictly speaking, show that the existence of God is very probable. What it shows, if successful, is that whatever probability you assigned to the existence of God before encountering these facts about the fine-tuning of the universe, you should raise your probability assignment significantly.

An analogy here might help. Suppose you observe that I begin class every day at 2:01. Now consider the theory that an alien controls my brain and that this alien desires very strongly that this particular class should begin every day at 2:01. How likely is it that class would begin every day at 2:01 if this theory is true? Does this mean that you should think that this theory is likely to be true?

What this kind of case shows is that an observation might count in favor of a certain theory, but that, because the theory was antecedently so improbable, the theory remains quite improbable, even given the observation. Some atheists might take this attitude to the fine-tuning argument: that it significantly raises the probability that God exists, but that theism is still quite improbable, all things considered. They might think this because they think that there are good arguments against the existence of God; we'll begin discussion of the most important of these next time.

But despite these limitations, if the objections we discussed to this argument can be overcome, it seems plausible that the fine-tuning argument might accomplish one aim that one might have for arguments for the existence of God: it might make it rational for an agnostic to believe that God exists.