Teleological argument: derived from the Greek terms *telos* (end or goal) and *logos* (reason or rational account). The teleological argument, first developed by ancient Greek and Indian philosophers, takes a variety of forms. The common theme among them all is that the means/ends order which exists in the natural world is best explained by purposive design.

As we saw in the last chapter, cosmological arguments begin with the fact that there are contingently existing things in the world and conclude with the existence of a *non-contingent creator* to account for the *existence* of those things. Teleological arguments (or *arguments from, or to, design*), on the other hand, are quite different, for they begin with certain properties in the world and conclude with the existence of a *grand designer* of the world – a designer with certain mental properties such as intention, knowledge, and purpose.

The beginnings of the teleological argument go back to ancient thinkers in the East and the West. In India, for example, the argument was propounded by the Nyāya school (100–1000 CE), which argued for the existence of God based on the order of the world – order they compared to artifacts and the human body.[1] In the West, the argument can be traced back to Heraclitus (fl. 500 BCE), Plato, Aristotle, and the Stoics. While the argument continued to be utilized from time to time throughout history, its rebirth occurred in the early nineteenth century with perhaps its most ardent defender: William Paley (1743–1805).

PALEY'S DESIGN ARGUMENT

William Paley's book, *Natural Theology* (1802), is a sustained defense and explication of the design argument. It begins with these words:

> 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 show the absurdity of this answer. But suppose I had found a *watch* upon the ground, and it should be inquired 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

William Paley (1743–1805) was an English theologian, philosopher, and Christian apologist. He became a fellow at Christ College, Cambridge, in 1766. He wrote a number of books including *The Principles of Moral and Political Philosophy* which became the ethical textbook at the University of Cambridge. His most famous work is *Natural History: Or Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature* (1802) – the book in which he presents his watchmaker analogy.

> 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 different 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... . This mechanism being observed (it requires indeed an examination of the instrument, and perhaps some previous knowledge of the subject, to perceive and understand it; but being once, as we have said, observed and understood), the inference, we think, is inevitable, that the watch must have had a maker: that there must have existed, at some time, and at some place or other, an artificer or artificers who formed it for the purpose which we find it actually to answer; who comprehended its construction, and designed its use... .
>
> ... [E]very indication of contrivance, every manifestation of design, which existed in the watch, exists in the works of nature; with the difference, on the side of nature, of being greater and more, and that in a degree which exceeds all computation.[2]

Paley is using an argument from analogy: since we infer a designer of an artifact such as a watch, given its evident purpose and ordered structure, so too we should infer a grand designer of the works of nature, since they are even greater in terms of their order and complexity – what he later describes as "means ordered to ends." Paley's argument can be sketched in the manner of the "Paley's design argument" box.

Paley's argument has not, of course, gone unchallenged. Some of the most ardent objections arise from the works of David Hume and Charles Darwin.

Objections 1–3: Hume's rebuttals

Perhaps the most familiar objections to Paley's design argument are those rebuttals offered by skeptic philosopher David Hume in his book, *Dialogues Concerning Natural*

PALEY'S DESIGN ARGUMENT

1   Artifacts (such as a watch), with their means to ends configurations, are the products of (human) design.
2   The works of nature, such as the human hand, resemble artifacts.
3   Thus the works of nature are probably the products of design.
4   Furthermore, the works of nature are much more in number and far greater in complexity.
5   Therefore, the works of nature were probably the products of a grand designer – one much more powerful and intelligent than a human designer.

Religion (1779).[3] One important Humean rebuttal is that the analogy between the works of nature and human artifacts is not particularly strong.[4] There are various reasons why the analogy is weak, including: (1) unlike watches, there is only one universe, and thus we have no other universes to compare it to or judge it by, and (2) in many ways the world (i.e. the accumulation of the works of nature) is not like a human artifact or machine and could just as easily be conceived of as a great animal or vegetable. As such, it begs the question to suppose that it was designed.

Another rebuttal is that even if we could infer a grand designer of the universe, this designer turns out to be something less than the God of the theistic religions. Since "like effects arise from like causes," from a finite world we cannot infer an infinite designer. Furthermore, there are gross imperfections and considerable evils in the world. So, if the world is designed, it is reasonable to conclude that the designer (or designers, since there is no reason to presume only one), must have these corresponding defects as well.

A third rebuttal is that just because a universe has the appearance of design, it does not follow that it is in fact designed.[5] Hume cites as one alternative the hypothesis of Epicurus who proposed that the universe consists of a finite number of particles moving in random motion. Eventually these particles will end up in a stable state, and

David Hume (1711–1776), Scottish philosopher and historian, is widely recognized to be the most important philosopher to write in English and one of the most significant thinkers in the history of Western philosophy. Among his most significant philosophical works are *A Treatise of Human Nature* (1739–1740), *Enquiries Concerning Human Understanding* (1748), and his most controversial work, *Dialogues Concerning Natural Religion* (published posthumously in 1779) in which he attacks the design argument.

this state would have the appearance of design without actually being so. In other words, the apparently designed universe may turn out to be the result of mere chance.

What might be said in response to these rebuttals? First, contrary to Hume's claim, it can be argued that while the world is unique, it does not follow that an argument from analogy cannot apply. If analogies could not be applied to unique events, absurd conclusions would follow. For example, one could never come to the conclusion about a unique artifact (discovered from an ancient time period, say) that it was designed. But such conclusions are frequently reached by archaeologists. Second, while the watch/world analogy may not be perfect, it nonetheless captures the central point: where purpose, order, and intention are evident, it is reasonable to posit a designer. And the works of nature do seem to reflect purpose, order, and intention. More will be said about this below.

Regarding the second rebuttal, several replies can be offered. First, Hume is right to note that the argument does not prove that the God of the religions exists. Nonetheless, it does arguably provide evidence that there is likely a grand designer of the world (that is, a designer of the works of nature of which the world is composed). Other arguments could be used to buttress this one in an attempt to demonstrate the existence of the God of the religions. Second, regarding the evil and imperfections in the world, it can be replied that this argument is not addressing the issue of divine omnibenevolence but rather purpose, intention, and design. God may not be able to create a world with free creatures who never commit evil acts, even if God is an omnibenevolent and omnipotent being.[6]

Hume's third rebuttal, that the world could have arisen from mere chance, leads us to a fourth objection to Paley's argument, and to Charles Darwin.

Objection 4: a Darwinian view of biological organisms

Perhaps the most influential thinker of the nineteenth century was Charles Darwin (1809–1882). In his book *Origin of Species* (1859), Darwin proposed what became one of the most significant theories in the history of human thought: that living organisms developed from simpler to more complex forms gradually over time and through the purely natural and non-purposive processes of random variation, natural selection and survival of the fittest.[7] This is, of course, Darwin's theory of evolution.

At first glance the theory of evolution appears to sound the death knell for Paley's design argument, for here we have chance and the laws of nature, rather than intention, purpose, and design, accounting for the works of nature. So there is no need to posit a grand designer of the world. The following is a common view of Darwin's apparent destruction of the design argument:

> It has been generally agreed (then and since) that Darwin's doctrine of natural selection effectively demolished William Paley's classical design argument for

the existence of God. By showing how blind and gradual adaptation could counterfeit the apparently purposeful design that Paley... and others had seen in the contrivances of nature, Darwin deprived their argument of the analogical inference that the evident purpose to be seen in the contrivances by which means and ends were related in nature was necessarily a function of the mind.[8]

While Darwin's theory has clearly provided a significant alternative to a grand creation story about the works of nature, at least two responses can be offered to its apparent destructive force to the design argument. First, as we will see below, not everyone is convinced that a purely naturalistic, non-purposive account provides a complete explanation of all the flora and fauna which exist in the natural world. Second, even given a full-blown Darwinian view of things, the defender of the design argument could maintain that this evolutionary process is the very method by which the designer is bringing about his intentions and purposes for the world.[9]

In fact, Darwin himself may have held this view, at least at one point in his career. The year after he published the *Origin of Species*, he said the following in a letter to Harvard biologist Asa Gray:

> I am inclined to look at everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance.... . I cannot think that the world as we see it is the result of chance; yet I cannot look at each separate thing as the result of Design."[10]

Nevertheless, Hume's rebuttals, combined with Darwin's evolutionary account of living organisms, all but sunk the design argument in the nineteenth and early-to-mid twentieth centuries. However, it was resurrected toward the latter half of the twentieth century in a variety of forms and even now is probably the most widely discussed and influential argument for the existence of God. Two of the most important recent versions are the fine-tuning and intelligent design arguments. We will first take a look at fine-tuning.

Charles Darwin (1809–1882) was an English naturalist who is considered to be one of the most influential thinkers in the history of Western civilization. His observations made during his five-year voyage on the *Beagle* were instrumental in developing his theory of natural selection. His book, *On the Origin of Species* (1859), established evolution by common descent as the central scientific explanation for the development and diversification of biological organisms. In *The Descent of Man* (1871) he applied his theory directly to human beings.

A FINE-TUNING ARGUMENT

A number of scholars who believe that the seemingly purposive, means-to-ends structures in the realm of biology can be fully explained by natural evolutionary processes also maintain that certain non-biological or inorganic aspects of the universe are best explained by means of an intelligent designer. Some have argued that the fundamental laws and parameters of physics and the initial conditions of the universe are extraordinarily balanced – or "finely tuned" – with just the right conditions for life to occur and flourish. Robin Collins for example, one of the foremost defenders of the fine-tuning teleological argument, asserts that "the initial conditions of the universe are balanced on a 'razor's edge'" for the existence of life.[11] Dozens of such parameters and conditions have been proposed, including the following described by Collins:[12]

1. If the initial explosion of the big bang had differed in strength by as little as one part in 10^{60}, the universe would have either quickly collapsed back on itself, or expanded too rapidly for stars to form. In either case, life would be impossible. (As John Jefferson Davis points out, an accuracy of one part in 10^{60} can be compared to firing a bullet at a one-inch target on the other side of the observable universe, twenty billion light years away, and hitting the target.)[13]
2. Calculations indicate that if the strong nuclear force, the force that binds protons and neutrons together in an atom, had been stronger or weaker by as little as five percent, life would be impossible.[14]
3. Calculations by Brandon Carter show that if gravity had been stronger or weaker by one part in 10^{40}, then life-sustaining stars like the sun could not exist. This would most likely make life impossible.[15]
4. If the neutron were not about 1.001 times the mass of the proton, all protons would have decayed into neutrons or all neutrons would have decayed into protons, and thus life would not be possible.[16]
5. If the electromagnetic force were slightly stronger or weaker, life would be impossible, for a variety of different reasons.[17]

Many of the parameters and conditions are apparently unrelated and, if so, this lowers the probability even further of their occurring by chance. The explanatory options are basically limited to three: the fine-tuning of the parameters and conditions happened by chance, by necessity, or by intelligent design.

Thus, we can sketch a fine-tuning teleological argument in the way shown in the box overleaf.

A FINE-TUNING TELEOLOGICAL ARGUMENT

1   The fine-tuning of the universe either happened by chance, necessity, or intelligent design.
2   The fine-tuning of the universe did not happen by chance or necessity.
3   Therefore, the fine-tuning of the universe happened by intelligent design.

Responses to the fine-tuning argument

Not surprisingly, a number of scholars disagree that intelligent design must be conjectured in order to account for the existence of the "finely tuned" parameters and initial conditions of the universe. The premise of the argument that is primarily challenged is 2: *The fine-tuning of the universe did not happen by chance or necessity.* We will consider three prominent responses.

The many-universes hypothesis

One way of explaining our finely tuned universe without positing an intelligent designer is to suggest that there are a very large number of universes – perhaps an infinite number of them. Given this large number, it is not surprising that at least one of them (ours in this case) include life-permitting initial conditions and parameters. While it is more probable that a universe arising from chance would include life-*prohibiting* parameters, if the number of universes is large enough, certainly some of them would have just the right parameters for life. Fortunately for us, our universe happens to be one of them. While science fiction writers have enjoyed much success in creating such scenarios, recent advances in string theory and inflationary cosmology have also led scholars to take seriously the notion of multiple universes.

Critics, however, note that there is currently no *experimental* evidence in support of the many-universes hypotheses. While there is some support in physics for string theory and inflationary cosmology, they are currently provisional and highly speculative.[18] Furthermore, as philosopher Robin Collins has argued, even if there are an infinite number of universes, it seems that they must be produced by some kind of a "many-universe generator." Such a device, however, would itself need to be finely tuned, and is thus in need of an intelligent designer explanation.[19] For, he argues, even a simple mechanism like a bread maker needs to be well designed to produce loaves of bread. How much more so a universe maker that produces finely tuned universes like our own.[20]

The anthropic principle

There are different versions of the anthropic principle ("anthropic" meaning related to human beings). The most widely held version of it is what physicists John Barrow and Frank Tipler call the Weak Anthropic Principle, or WAP. Here is the definition they offer:

> Weak Anthropic Principle (WAP): The observed values of all physical and cosmological quantities are not equally probable, but they take on values restricted by the requirement that there exist sites where carbon-based life can evolve and by the requirement that the Universe be old enough for it to already have done so.[21]

They also note a central feature that emerges from this principle:

> The basic features of the Universe, including such properties as its shape, size, age, and laws of change, must be *observed* to be of a type that allows the evolution of observers, for if intelligent life did not evolve in an otherwise possible universe, it is obvious that no one would be asking the reason for the observed size, shape, age, and so forth of the Universe.[22]

In other words, if the physical laws and constants of the universe were not just as they are – finely tuned for life – we would not be here to realize that fact. There would be no observers in a universe which lacked the conditions necessary for life. Thus, since we are here to observe them, we should not be surprised that the conditions are just right for life even if we live in a purely naturalistic universe. Therefore, there is no need to conjecture an intelligent designer of the universe.

In response, it can be argued that our being here to recognize the fine-tuning neither negates the amazement of the conditions nor eliminates the need for an intelligent design explanation. Richard Swinburne uses the following analogy to demonstrate this point.

> Suppose that a madman kidnaps a victim and shuts him in a room with a card shuffling machine. The machine shuffles ten packs of cards simultaneously and then draws a card from each pack and exhibits simultaneously the ten cards. The kidnapper tells the victim that he will shortly set the machine to work and it will exhibit the first draw, but that unless the draw consists of an ace of hearts from each pack, the machine will simultaneously set off an explosion which will kill the victim, in consequence of which we will not see which cards the machine drew. The machine is then set to work, and to the amazement and relief of the victim the machine exhibits an ace of hearts drawn from each pack. The victim thinks

that this extraordinary fact needs an explanation in terms of the machine having been rigged in some way. But the kidnapper, who now appears, casts doubt on this suggestion. "It is hardly surprising," he says, "that the machine drew only aces of hearts. You could not possibly see anything else. For you would not be here to see anything at all, if any other cards had been drawn." But of course the victim is right and the kidnapper is wrong. There is something extraordinarily in need of explanation in ten aces being drawn. The fact that this particular order is a necessary condition of the draw being perceived at all makes what is perceived no less extraordinary and in need of explanation.[23]

The debate thus turns on whether such "anthropic coincidences" are more reasonably taken to be accidental or intentional.

Who designed the designer?

A third response to the fine-tuning argument is that putting forward an intelligent designer as an explanation for the finely tuned universe simply moves the debate back one step, for we can then ask the question, "Who designed the Designer?" In his familiar dialogue on religion, David Hume raises this objection:

How shall we satisfy ourselves concerning the cause of that Being whom you suppose the Author of Nature ... 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*? And, after all, what satisfaction is there in that infinite progression? Let us remember the story of the Indian philosopher and his elephant. [The Indian philosopher said that the world was resting on the back of an elephant, and the elephant was resting on the back of a great tortoise, and the tortoise on the back of he knew not what.] It was never more applicable than to the present subject. If the present world rests upon some ideal world, this ideal world must rest upon some other, and so on without end. It were better, therefore, never to look beyond the present material world. By supposing it to contain the principle of its order within itself, we really assert it to be God; and the sooner we arrive at the Divine Being, so much the better. When you get one step beyond the mundane system, you only excite an inquisitive humor which it is impossible ever to satisfy.[24]

In other words, even if we can explain the apparent fine-tuning of the world as being the product of an intelligent designer, that designer must have a mind that

is just as "finely-tuned" as the natural world. So the designer, too, is in need of an explanation, as is the designer of the designer, and so on. If we enter the fray of needing an explanation for apparent design, this process goes on indefinitely. But why add hypotheses unnecessarily? Why not simply stop with the physical world?[25]

AN INTELLIGENT DESIGN ARGUMENT

Another recent form of the teleological argument is often referred to as the *intelligent design argument*. This argument is rooted in the work being done by a group of philosophers, scientists, and others who are a part of the Intelligent Design Movement. What the members of this group have in common is the belief that certain probabilistic methods can be utilized in determining whether a given biological system has been designed. William Dembski, a leader in the movement, argues that "[d]emonstrating transcendent design in the universe is a scientific inference, not a philosophical pipedream."[26] He has developed what he calls an *Explanatory Filter* for detecting design. In simplified form, the filter asks three questions in the following order:

1 Does a law explain it?
2 Does chance explain it?
3 Does design explain it?

First, one sets about determining whether law (i.e. regularity/necessity) best explains an event, object, or structure. If an event (I'll use "event" here to mean an event, object, or structure) has a fairly high probability of occurring, then it is explainable by law. For example, the rising of the Atlantic tide twice daily is a regular event – one best explainable by the laws of nature. If law does not explain an event, however, then we turn to chance. For example, if I spin a roulette wheel, I use chance to account for why the wheel stopped where it did.[27] In order to then eliminate chance

Intelligent Design Movement: the intelligent design movement, first begun in the 1980s, includes philosophers, scientists, and other scholars who regard the Darwinian vision that undirected natural causes could produce the full diversity and complexity of life as inadequate, and who propose a research program wherein intelligent causes become the key for understanding this diversity and complexity. Leading figures in the movement include Phillip Johnson, Michael Behe, William Dembski, Paul Nelson, and Stephen Meyer.
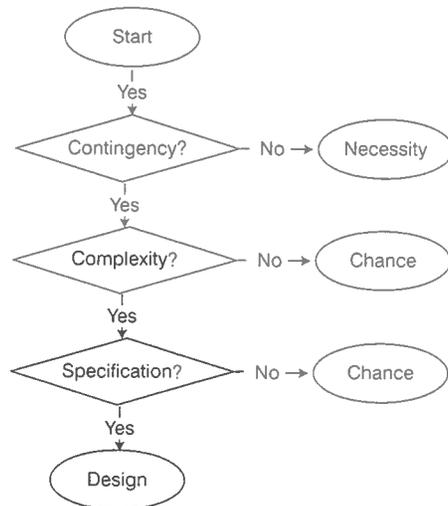
Figure 5.1 Explanatory filter algorithm

and conclude with design as the best explanation of an event, Dembski applies what he calls *specified complexity*, for which he offers the following description:

A single letter of the alphabet is specified without being complex (i.e. it conforms to an independently given pattern but is simple). A long sequence of random letters is complex without being specified (i.e. it requires a complicated instruction-set to characterize but conforms to no independently given pattern). A Shakespearean sonnet is both complex and specified.[28]

The explanatory filter algorithm is diagrammed in Figure 5.1

Thus, if there are events, objects or structures in the natural world which are both complex and specified, Dembski concludes that design best explains them.

One example that intelligent design proponents often use as a case of specified complexity in nature is "irreducibly complex" systems. The person who coined the term is biochemist Michael Behe. Behe defines it this way:

By *irreducibly complex* I mean a single system composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning. An irreducibly complex system cannot be produced directly (that is, by continuously improving the initial function, which continues to work by the same mechanism) by slight,
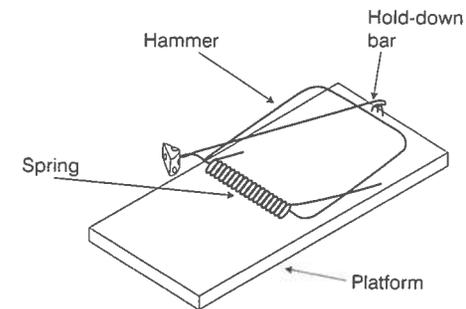
Figure 5.2 Standard mousetrap

successive modifications of a precursor system, because any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional.[29]

Behe uses the simple analogy of a mousetrap to demonstrate his point.

A typical mousetrap consists of a hammer, spring, holding bar, and a platform or base to which all the other parts are connected. Each of these parts is a *necessary* component for catching the mouse, and taken together the parts constitute a *sufficient* condition for catching a mouse. If any of the parts that make up the trap were missing, it wouldn't work as a mouse-catching device. It is thus an irreducibly complex mechanism in that it cannot be reduced in terms of components and still function as a mousetrap.

Behe's point, then, is that the biochemical world has a number of systems which consist of finely calibrated, interdependent parts which would not function without each of their components operating together. These systems, being irreducibly complex, cannot therefore be explained by the gradualism and natural selection of evolutionary theory. Positing a designer for them is a much better hypothesis.

A primary example Behe uses of an irreducibly complex biochemical system is the bacterial flagellum ("flagellum" is derived from Latin and means a whip or shoot). In the early 1970s, certain bacteria were seen to move about by rotating their flagella, or whip-like tail, which whirls about at high rates of speed – some of them hundreds of revolutions per second. The structure of these bacteria includes what is likened to an outboard motor. As Figure 5.3 indicates, there are a number of different components (about forty in all) which work together in the movement of the bacteria, including a hook, filament, stator, and rotor.[30]

What is of interest here is that the forty parts of which this flagellar motor consists apparently must be arranged just so. If any one of them is misplaced or absent, the "motor" will not function at all. It is thus an irreducibly complex mechanism. Defenders of the intelligent design argument maintain that it is more reasonable
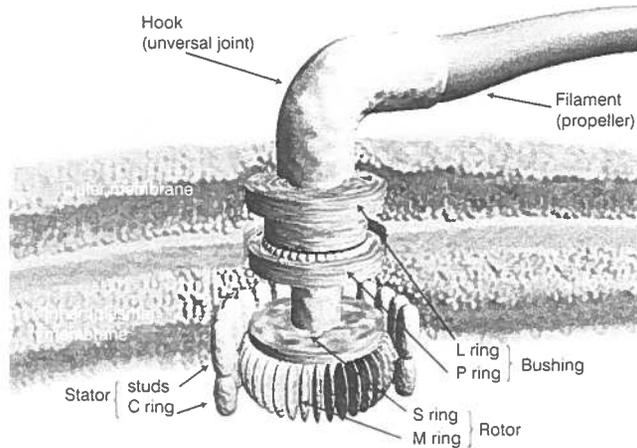
Figure 5.3 Flagellar motor, an example of an "irreducibly complex" mechanism (figure courtesy the Access Research Network)

to believe that an intelligent designer was involved in creating such a system than that the system developed gradually through naturalistic Darwinian processes. For unless the mechanism is fully functional, natural selection would have no reason to preserve it. [31]

An intelligent design argument can thus be put in the form stated in the 'Intelligent design argument' box below.

AN INTELLIGENT DESIGN ARGUMENT

1 If there are events, objects or structures in the natural world which are both complex and specified, then it is reasonable to conclude that they are the result of design.
2 There are events, objects or structures in the natural world, such as irreducibly complex molecular systems, which are both complex and specified.
3 Therefore, it is reasonable to conclude that they are the result of design.

Objections to an intelligent design argument

There are numerous objections to the intelligent design argument. Below are two significant ones – the first focused on premise 1 and the second focused on premise 2.

Objection 1: the intelligent design argument rests on contentious philosophical assumptions rather than on scientific inference

One objection to Dembski's explanatory filter is that it presupposes that if there is not a known scientific process by which to account for the phenomenon in question, then that is reason enough to conclude that there is no such process. However, it is quite a contentious claim that simply because an event is unexplainable given currently known natural laws and processes, it is therefore best explainable by intelligent design. This raises a variety of epistemic concerns, not the least of which is that it seems to violate the very nature of the scientific method of discovery; namely, searching for explanations of contingent natural phenomenon in terms of physical principles, laws, and processes. As one scholar puts it, "[I]t turns out that decisively identifying an instance of [specified complexity] requires commitment to philosophical assumptions that are not themselves concomitant with the practice of science."[32]

In response, it could be argued that the design filter is providing the best process of discovery given the available scientific evidence and the most reasonable method for explaining events. If further evidence leads one to a non-intentional, non-purposive, naturalistic explanation of the event, then the design explanation can be revoked. Of course, it could be maintained that all biological explanations should include non-intentional, non-purposive, naturalistic explanations. But to make this an a priori, metaphysical assumption before examining the evidence may well be unwarranted bias against the very possibility of intelligent design.

Objection 2: challenges to alleged examples of irreducible complexity

A second type of objection focuses on the examples offered as being irreducibly complex. One leading challenger of Behe's examples of irreducible complexity is professor of biology Kenneth Miller. Miller offers the following criticism of the bacterial flagellum as evidence of irreducible complexity:

Evolution produces complex biochemical machines by copying, modifying, and combining proteins previously used for other functions. Looking for examples? The system in Behe's essay will do just fine. He writes that in the absence of "almost any" of its parts, the bacterial flagellum "does not work." But guess

what? A small group of proteins from the flagellum *does* work without the rest of the machine – it's used by many bacteria as a device for injecting poisons into other cells. Although the function performed by this small part when working alone is different, it nonetheless can be favored by natural selection.[33]

The objection is straightforward. The flagellum is a case of *reducible* complexity, not *irreducible* complexity, since at least some of its components have a function without the flagellum taken as a whole. Natural selection could then have favored these individual components in the evolutionary development of the flagellum; no intelligent design hypothesis is required, and thus the mousetrap analogy is flawed. He continues:

> Ironically, Behe's own example, the mousetrap, shows what's wrong with the idea. Take away two parts (the catch and the metal bar), and you may not have a mousetrap but you do have a three-part machine that makes a fully functional tie clip or paper clip. Take away the spring, and you have a two-part key chain. The catch of some mousetraps could be used as a fishhook, and the wooden base as a paperweight... . The point, which science has long understood, is that bits and pieces of supposedly irreducibly complex machines may have different – but still useful – functions.[34]

One rebuttal to Miller's objection is that that while there are specific functions of individual proteins before they form together to make up a bacterial flagellum – just as there could be individual functions of some of the parts of a mousetrap – there is yet the difficulty of explaining how all the individual parts formed together into the complex, machine-like flagellum. Paperclips, fishhooks, and key chains don't conjoin into mousetraps without a design plan and yet, it is claimed, the interrelations of the elementary proteins that make up the flagellar motor have surfaces which are much less suitably matched, if *randomly* integrated, than the parts of mousetrap. Furthermore, at this time only ten percent of the flagellum's forty motor parts are found in other structures of the cell, and so the other parts of the system lack a Darwinian explanation.[35]

Of course, one could respond by noting that just because there is no current naturalistic explanation for the interrelations of the proteins, or for the other parts of the system, or for their joining together, that does not imply that there is no such explanation. And this leads us right back to Objection 1, that the intelligent design argument rests on certain philosophical assumptions rather than on scientific inference.

SUMMARY

The design argument has had a checkered history. It began with the ancient Greeks and Indus Valley peoples of India roughly 2,000 years ago, but it reached its peak in the nineteenth century with William Paley. Paley's version of the argument – and his clever watch analogy – caught widespread attention. However, through the writings of David Hume and Charles Darwin's revolutionary theory of evolution, the design argument stalled in the West for roughly a century.

In recent decades, however, the design argument has experienced somewhat of a renaissance. There are now a variety of design arguments which are discussed in monographs, companions, and academic journals. One type is the fine-tuning argument. Utilizing discoveries in physics and cosmology, defenders of this argument maintain that the fundamental laws and parameters of physics and the initial conditions of the universe are finely tuned for life in our universe. They claim that given the narrow limits of dozens of laws and physical constants, a grand designer better explains them than does chance or necessity. However, a variety of alternative explanations have been offered for the appearance of design. These explanations include the many universes hypothesis and the anthropic principle. It is also argued that the design argument begs the question of who designed the designer, and the designer's designer, and so on. Why not just stop with the universe itself?

Another type of teleological argument in recent times is the "intelligent design" argument. Its leading proponents include William Dembski and Michael Behe. They are proposing a research program in which intelligent causes are included as a component for understanding the diversity and complexity of life. Objections to this movement are multifaceted and include both challenges to its theoretical underpinnings as well as to the alleged scientific evidence in support of it.

There is currently much scholarly activity occurring concerning design arguments. Some are convinced that one or more of the arguments point to a grand designer of the cosmos; others are convinced that they do not; and still others are undecided. In any event, Paley and Hume would perhaps be delighted to know that their legacies on this topic continue to our own day ... with no end in sight.

QUESTIONS FOR REVIEW/DISCUSSION

1. Create your own argument from analogy. What are its strengths? What are some weaknesses? Do these strengths or weaknesses apply to the design argument from analogy?

2. Which of Hume's rebuttals to Paley's design argument do you find most persuasive? Why?

3. Does it make sense to affirm the existence of a grand intelligent designer of the universe given that much of what we find on planet Earth, for example, does not seem to reflect "optimal design"? Explain your answer.

4. Are evolution and creation compatible? Explain your answer.

5. Does Swinburne's card-shuffling analogy rebut the anthropic argument response to the fine-tuning argument? Why or why not?

6. In response to the "who designed the designer" objection to the fine-tuning teleological argument, consider the following example. Suppose that during a deep-sea expedition, divers came upon what appeared to be an underwater city. It was like nothing they'd ever seen before, but there were structures apparently designed to sustain oxygen-breathing creatures, including large rooms from which water could be pumped out, long tubes which could be used to pump in oxygen from above water, and inlets and outlets which could be used for various transportation purposes.

   In such a scenario, it could be argued that it would be more reasonable to believe that intelligent design was involved in creating such a place than it would be to suppose that it came into existence through underwater evolutionary erosion and/or other chance naturalistic processes, and that we would not claim that there is no need to suggest intelligent design for the city since such intelligence itself may be in need of further explanation. So too, goes the argument, with the world and a grand designer.

   What do you make of this analogy?

7. What are some differences between Paley's design argument and the intelligent design argument? What are some similarities?

8. How would you respond to the following claim? "Natural science must presuppose a purely naturalistic or materialistic methodology; to do otherwise is to bring into science an *unwarranted philosophical presupposition* of religion and the supernatural."

9. Do you find any of the three teleological arguments presented in this chapter persuasive? If so, which one(s), and why? If not, what is your best reason for rejecting one or more of them?

10. What evidence do you have to support your belief in, or disbelief in, God?

FURTHER READING

Behe, Michael (1996) *Darwin's Black Box*. New York: Free Press. (Offers Behe's argument for irreducible complexity.)

Dawkins, Richard (1987) *The Blind Watchmaker*. New York: Norton. (Perhaps the most influential book defending naturalistic evolution and challenging the intelligent design of living organisms.)

Dembski, William (1998) *The Design Inference*. Cambridge: Cambridge University Press. (Presents Dembski's method for detecting intelligent causes.)

Dembski, William and Michael Ruse (2004) *Debating Design: From Darwin to DNA*. Cambridge: Cambridge University Press. (A collection of essays, pro and con, on intelligent design by some of the leaders on both sides of the debate.)

Everitt, Nicholas (2004) *The Nonexistence of God*. New York: Routledge. (Chapter 5 focuses on teleological arguments.)

Hacking, Ian (1987) "Inverse Gambler's Fallacy: The Argument from Design." *Mind* 96, 331–40. (Spells out the gambler's fallacy of concluding that, on the basis of an unlikely outcome of a random event, the event is likely to have occurred a number of times before.)

Hume, David ([1779] 1998) *Dialogues Concerning Natural Religion*. Ed. Richard Popkin. Indianapolis, IN: Hackett. (A classic critique of the design argument.)

Johnson, Phillip (1991) *Darwin on Trial*. Downers Grove, IL: InterVarsity. (The book which put the intelligent design movement on the map.)

Le Poidevin, Robin (1996) *Arguing for Atheism: An Introduction to the Philosophy of Religion*. New York: Routledge. (An erudite but readable presentation by a leading philosopher; Chapters 4 and 5 deal with design issues.)

Leslie, John (1989) *Universes*. London and New York: Routledge. (An important work on the anthropic principle.)

Mackie, J. L. (1982) *The Miracle of Theism: Arguments For and Against the Existence of God*. Oxford: Clarendon Press. (Mackie was a well-known and well-respected atheist in the twentieth century, and Chapter 8 includes his rebuttal to the design argument.)

Manson, Neil, ed. (2003) *God and Design: The Teleological Argument and Modern Science*. New York: Routledge. (Includes arguments, pro and con, on the design argument.)

Meister, Chad, ed. (2007) *The Philosophy of Religion Reader*. London: Routledge. (Contains several classic and contemporary essays on the design argument.)

Moreland, J. P. (2007) "The Argument from Consciousness," in Chad Meister and Paul Copan, eds. *The Routledge Companion to Philosophy of Religion*. London: Routledge, 373–84. (A design argument for the existence of God based on the mind and consciousness.)

Paley, William ([1802] 1963) *Natural Theology*. Indianapolis, IN: Bobbs-Merrill. (The classic defense of the design argument, including the watch analogy.)

Ruse, Michael (1982) *Darwinism Defended*. Reading, MA: Addison-Wesley. (A solid defense of Darwinism by a leading philosopher of biology.)

Swinburne, Richard (1991) *The Existence of God*. New York: Clarendon. (A very cogent defense of theism; Chapter 8 focuses on teleological arguments.)

WEBSITES

http://plato.stanford.edu/entries/teleological-arguments/
A helpful and concise entry from the *Stanford Encyclopedia of Philosophy* on teleological arguments by philosopher of science Del Ratzsch.

http://www.arn.org
A website devoted to providing accessible information on science, technology and society from an intelligent design perspective.

http://home.messiah.edu/~rcollins/ft.htm
Robin Collins' fine-tuning website; maintained by philosopher Robin Collins (Messiah College).

http://www.anthropic-principle.com/
A site devoted to the anthropic principle; maintained by Nick Bostrom (Oxford University).

http://www.infidels.org/library/modern/theism/design.html
An infidels.org site which includes a good number of articles on the design argument and related topics.

6 Ontological arguments for God's existence