

### I.C.3 The Argument from Design

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RICHARD SWINBURNE

Richard Swinburne (1934– ) was, until his retirement, the Nolloth professor of philosophy of religion at Oxford University. He has written extensively in philosophy of religion, and his body of work includes several pieces on the traditional arguments for the existence of God. The following selection is from *The Existence of God* (1979) in which he rejects all deductive forms of arguments for the existence of God but sets in their place a series of inductive arguments. In this selection, he presents an inductive version of the argument from design. His strategy is to show that several of the arguments, although only minimally suggestive when taken in isolation, together make a cumulative case for the truth of theism.

A few notes are crucial to an understanding of Swinburne's essay. First, he contrasts the 'Hempel account' of scientific explanation with the 'powers-and-liabilities account' of scientific explanation. According to the Hempelian account—named after Carl Hempel—to provide a scientific explanation of an event is (roughly) to show that the occurrence of the event is logically implied by the occurrence of particular circumstances that obtained prior to the event together with facts about the laws of nature. On the other hand, the powers-and-liabilities account says that providing a scientific explanation for an event is a matter of showing that the event's cause had powers to bring about the event that it was liable to exercise under the given circumstances. Second, Hempel thinks that scientific explanations are not the only available explanations for events in the world. There are also what he calls "personal" explanations. Third, Swinburne places a great deal of weight on the notion of simplicity. Other things being equal, if a theory *A* is simpler than a theory *B*, theory *A* is to be

preferred. Finally, Swinburne uses Bayes's theorem to sustain his argument: Let  $h$  be a theory or hypothesis, let  $e$  be the evidential phenomena, and let  $k$  be our background knowledge.  $P(h/e&k)$  represents the probability of  $h$  being true given the available evidence and our background knowledge. You do not need to understand the intricacies of Bayes's theorem in order to follow Swinburne's reasoning.

I understand by an argument from design one which argues from some general pattern of order in the universe or provision for the needs of conscious beings to a God responsible for these phenomena. An argument from a general pattern of order I shall call a teleological argument. In the definition of 'teleological argument' I emphasize the words 'general pattern'; I shall not count an argument to the existence of God from some particular pattern of order manifested on a unique occasion as a teleological argument.

## TWO FORMS OF TELEOLOGICAL ARGUMENT

I begin with the distinction between spatial order and temporal order, between what I shall call regularities of co-presence and regularities of succession. An example of a regularity of co-presence would be a town with all its roads at right angles to each other, or a section of books in a library arranged in alphabetical order of authors. Regularities of succession are simple patterns of behaviour of objects, such as their behaviour in accordance with the laws of nature—for example, Newton's laws.

Many of the striking examples of order in the universe evince an order which is due both to a regularity of co-presence and to a regularity of succession. A working car consists of many parts so adjusted to each other that it follows the instructions of the driver delivered by his pulling and pushing a few levers and buttons and turning a wheel, to take passengers whither he wishes. Its order arises because its parts are so arranged at some instant (regularity of co-presence) that, the laws of nature being as they are (regularity of succession) it brings about the result neatly and efficiently. The order of living animals and plants likewise results from regularities of both types.

Men who marvel at the order of the universe may marvel at either or both of the regularities of co-presence and of succession. The thinkers of the eighteenth century to whom the argument from design appealed so strongly were struck almost exclusively by the regularities of co-presence. They marveled at the order in animals and plants; but since they largely took for granted the regularities of succession, what struck them about the animals and plants, as to a lesser extent about machines made by men, was the subtle and coherent arrangement of their millions of parts. Paley's *Natural Theology* dwells mainly on details of comparative anatomy, on eyes and ears and muscles and bones arranged with minute precision so as to operate with high efficiency, and in the *Dialogues* Hume's Cleanthes produces the same kind of examples: 'Consider, anatomize the eye, survey its structure and contrivance, and tell me from your own feeling, if the idea of a contriver does not immediately flow in upon you with a force like that of sensation.'

The eighteenth-century argument from spatial order seems to go as follows. Animals and plants have the power to reproduce their kind, and so, given the past existence of animals and plants, their present existence is to be expected. But what is vastly surprising is the existence of animals and plants at all. By natural processes they can only come into being through generation. But we know that the world has not been going on for ever, and so the great puzzle is the existence of the first animals and plants in 4004 BC or whenever exactly it was that animals and plants began to exist. Since they could not have come about by natural scientific processes, and since they are very similar to the machines, which certain rational agents, viz. men, make, it is very probable that they were made by a rational agent—only clearly one much more powerful and knowledgeable than men.

In the *Dialogues*, through the mouth of Philo, Hume made some classical objections to the argument in this form, some of which have some force against all forms of the argument; I shall deal with most of these as we come to appropriate places in this chapter. Despite Hume's objections, the argument is, I think, a very plausible one—given its premisses. But one of its premisses was shown by Darwin and his successors to be clearly false. Complex animals and plants can be produced through generation by less complex animals and plants—species are not eternally distinct; and simple animals and plants can be produced by natural processes from inorganic matter. This discovery led to the virtual disappearance of the argument from design from popular apologetic—mistakenly, I think, since it can easily be reconstructed in a form which does not rely on the premisses shown to be false by Darwin. This can be done even for the argument from spatial order.

We can reconstruct the argument from spatial order as follows. We see around us animals and plants, intricate examples of spatial order in the ways which Paley set out, similar to machines of the kind which men make. We know that these animals and plants have evolved by natural processes from inorganic matter. But clearly this evolution can only have taken place, given certain special natural laws. These are first, the chemical laws stating how under certain circumstances inorganic molecules combine to make organic ones, and organic ones combine to make organisms. And secondly, there are the biological laws of evolution stating how organisms have very many offspring, some of which vary in one or more characteristics from their parents, and how some of these characteristics are passed on to most offspring, from which it follows that, given shortage of food and other environmental needs, there will be competition for survival, in which the fittest will survive. Among organisms very well fitted for survival will be organisms of such complex and subtle construction as to allow easy adaptation to a changing environment. These organisms will evince great spatial order. So the laws of nature are such as, under certain circumstances, to give rise to striking examples

of spatial order similar to the machines which men make. Nature, that is, is a machine-making machine. In the twentieth century men make not only machines, but machine-making machines. They may therefore naturally infer from nature which produces animals and plants, to a creator of nature similar to men who make machine-making machines.

This reconstructed argument is now immune to having some crucial premisses shown false by some biologist of the 1980s. The facts to which its premisses appeal are too evident for that—whatever the details, natural laws are clearly such as to produce complex organisms from inorganic matter under certain circumstances. But although this is so, I do not find the argument a very strong one, and this is because of the evident paucity of organisms throughout the universe. The circumstances under which nature behaves as a machine-making machine are rare. For that reason nature does not evince very strongly the character of a machine-making machine and hence the analogies between the products of natural processes on the one hand and machines on the other are not too strong. Perhaps they give a small degree of probability to the hypothesis that a rational agent was responsible for the laws of evolution in some ways similar to the rational agents who make machines, but the probability is no more than that.

I pass on to consider a form of teleological argument which seems to me a much stronger one—the teleological argument from the temporal order of the world. The temporal order of the universe is, to the man who bothers to give it a moment's thought, an overwhelmingly striking fact about it. Regularities of succession are all-pervasive. For simple laws govern almost all successions of events. In books of physics, chemistry, and biology we can learn how almost everything in the world behaves. The laws of their behavior can be set out by relatively simple formulae which men can understand and by means of which they can successfully predict the future. The orderliness of the universe to which I draw attention here is its conformity to formula, to simple, formulable, scientific

laws. The orderliness of the universe in this respect is a very striking fact about it. The universe might so naturally have been chaotic, but it is not—it is very orderly.

That the world has this very peculiar characteristic may be challenged in various ways. It may be said of the order which we seem to see in the universe that we impose the order on the world, that it is not there independently of our imposition. Put another way, all that this temporal order amounts to, it might be said, is a coincidence between how things have been so far in the world and the patterns which men can recognize and describe, a coincidence which is itself susceptible of an explanation in terms of natural selection. In fact, however, the temporal order of the world is something deeper than that. The premiss of a good teleological argument is not that so far (within his life or within human history) things have conformed to a pattern which man can recognize and describe. The premiss is rather that things have and will continue to conform to such a pattern however initial conditions vary, however men interfere in the world. If induction is justified, we are justified in supposing that things will continue to behave as they have behaved in the kinds of respect which scientists and ordinary people recognize and describe. I assume that we are justified in believing that the laws of gravity and chemical cohesion will continue to hold tomorrow—that stones will fall, and desks hold together tomorrow as well as today—however initial conditions vary, however men interfere in the world. It may of course be doubted whether philosophers have given a very satisfactory account of what makes such beliefs justified (hence ‘the problem of induction’); but I assume the common-sense view that they are justified. So the teleologist’s premiss is not just that there has been in nature so far an order which men can recognize and describe; but there has been and will continue to be in nature an order, recognizable and describable by men certainly, but one which exists independently of men. If men are correct in their belief that the order which they see in the world is an order which will hold in the future as in the past, it is clearly not an imposed or

invented order. It is there in nature. For man cannot make nature conform subsequently to an order which he has invented. Only if the order is there in nature is nature’s future conformity to be expected.

An objector may now urge that although the order of the universe is an objective matter, nevertheless, unless the universe were an orderly place, men would not be around to comment on the fact. (If there were no natural laws, there would be no regularly functioning organisms, and so no men.) Hence there is nothing surprising in the fact that men find order—they could not possibly find anything else. This conclusion is clearly a little too strong. There would need to be quite a bit of order in and around our bodies if men are to exist and think, but there could be chaos outside the earth, so long as the earth was largely unaffected by that chaos. There is a great deal more order in the world than is necessary for the existence of humans. So men could still be around to comment on the fact even if the world were a much less orderly place than it is. But quite apart from this minor consideration, the argument still fails totally for a reason which can best be brought out by an analogy. 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 its 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 he 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 reappears, casts doubt on this suggestion. ‘It is hardly surprising’, he says, ‘that the machine draws 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 indeed something extraordinary in need of explanation in ten aces of hearts being drawn. The fact that this peculiar order is a necessary condition of the draw being perceived at all makes what is perceived no less extraordinary and in need of explanation. The teleologist's starting-point is not that we perceive order rather than disorder, but that order rather than disorder is there. Maybe only if order is there can we know what is there, but that makes what is there no less extraordinary and in need of explanation.

So the universe is characterized by vast, all-pervasive temporal order, the conformity of nature to formula, recorded in the scientific laws formulated by men. Now this phenomenon, like the very existence of the world, is clearly something 'too big' to be explained by science. If there is an explanation of the world's order it cannot be a scientific one, and this follows from the nature of scientific explanation. For, in scientific explanation we explain particular phenomena as brought about by prior phenomena in accord with scientific laws; or we explain the operation of scientific laws in terms of more general scientific laws (and perhaps also particular phenomena). Thus we explain the operation of Kepler's laws in terms of the operation of Newton's laws (given the masses, initial velocities, and distances apart of the sun and planets); and we explain the operation of Newton's laws in terms of the operation of Einstein's field equations for space relatively empty of matter. Science thus explains particular phenomena and low-level laws in terms partly of high-level laws. But from the very nature of science it cannot explain the highest-level laws of all; for they are that by which it explains all other phenomena.

At this point we need to rephrase our premises in terms of the powers-and-liabilities account of science, which we have seen reason for preferring to the Hempelian account. On this account what the all-pervasive temporal order amounts to is the fact that throughout space and time there are physical objects of various kinds, every such object having the powers

and liabilities which are described in laws of nature—e.g. the power of attracting each other physical object in the universe with a force of  $\gamma mm^1/r^2$  dynes (where  $\gamma$  is the gravitational constant) the liability always to exercise this power, and the liability to be attracted by each other body in the universe with a force of  $\gamma mm^1/r^2$  dynes and so on. From the fact that it has such general powers it follows that an object will have certain more specific powers, given the kind of object that it is. For example, given that it has a mass of 1 gram, it will follow that it has the power of attracting each other body in the universe with a force of  $\gamma m^1/r^2$  dynes. This picture allows us to draw attention to one feature of the orderliness of the universe which the other picture makes it easy to ignore. Unlike the feature to which I have drawn attention so far, it is not one of which men have always known; it is one which the atomic theory of chemistry strongly suggested, and the discovery of fundamental particles confirmed. It is this. The physical objects scattered throughout space and time are, or are composed of, particles of a few limited kinds, which we call fundamental particles. Whether the protons and electrons which we suppose to be the fundamental particles are in fact fundamental, or whether they are composed of yet more fundamental particles (e.g. quarks) which are capable of independent existence is not altogether clear—but what does seem clear is that if there are yet more fundamental particles, they too come in a few specific kinds. Nature only has building-blocks of a few kinds. Each particle of a given kind has a few defining properties which determine its behaviour and which are specific to that kind. Thus all electrons have a mass of  $1/2 MeV/c^2$ , a charge of  $-1$ , a spin of  $1/2$ , etc. All positrons have other properties the same as electrons, but a charge of  $+1$ . All protons have a mass of  $938 MeV/c^2$ , a charge of  $+1$ , and a spin of  $1/2$ . And so on. There are innumerable many articles which belong to each of a few kinds, and no particles with characteristics intermediate between those of two kinds. The properties of fundamental kinds, that is, which give specific form to the general powers which all objects have, belong to a small class; and the powers and liabilities of

large-scale objects are determined by those of their fundamental components. Particles have constant characteristics over time; they only change their characteristics, or are destroyed or converted into other particles by reason of their own liabilities (e.g. to decay) or the action of other particles acting in virtue of their powers.

Put in these terms then, the orderliness of nature is a matter of the vast uniformity in the powers and liabilities of bodies throughout endless time and space, and also in the paucity of kinds of components of bodies. Over centuries long, long ago and over distances distant in millions of light years from ourselves the same universal orderliness reigns. There are, as we have seen, explanations of only two kinds for phenomena—scientific explanation and personal explanation. Yet, although a scientific explanation can be provided of why the more specific powers and liabilities of bodies hold (e.g. why an electron exerts just the attractive force which it does) in terms of more general powers and liabilities possessed by all bodies (put in Hempelian terms—why a particular natural law holds in terms of more general natural laws), science cannot explain why all bodies do possess the same very general powers and liabilities. It is with this fact that scientific explanation stops. So either the orderliness of nature is where all explanation stops, or we must postulate an agent of great power and knowledge who brings about through his continuous action that bodies have the same very general powers and liabilities (that the most general natural laws operate); and, once again, the simplest such agent to postulate is one of infinite power, knowledge, and freedom, i.e. God. An additional consideration here is that it is clearly vastly simpler to suppose that the existence and the order of the world have the same cause, and the considerations which lead us to postulate a being of infinite power, knowledge, and freedom as the cause of the former reinforce the considerations which lead us to postulate such a cause for the latter.

In the *Dialogues* Hume made the objection—why should we not postulate many gods to give order to the universe, not merely one? ‘A great number of men join in building a house or a ship, in rearing a city, in framing a commonwealth,

why may not several deities combine in framing a world?’ Hume again is aware of the obvious counter-objection to his suggestion. ‘To multiply causes without necessity is . . . contrary to true philosophy.’ He claims, however, that the counterobjection does not apply here, because (in my terminology) although the supposition that there is one god is a simpler supposition than the supposition that there are many, in postulating many persons to be responsible for the order of the universe we are postulating persons more like to men in power and knowledge—that is we are putting forward a hypothesis which fits in better with our background knowledge of what there is in the world. That may be. But Hume’s hypothesis is very complicated—we want to ask about it such questions as why are there just 333 deities (or whatever the number is), why do they have powers of just the strength which they do have, and what moves them to cooperate as closely as obviously they do; questions of a kind which obtrude far less with the far simpler and so less arbitrary theistic hypothesis. Even if Hume were right in supposing that the prior probability of his hypothesis were as great as that of theism (because the fit with background knowledge of the former cancels out the simplicity of the latter) (and I do not myself think that he is right), the hypothesis of theism nevertheless has greater explanatory power than the Humean hypothesis and is for that reason more probable. For theism leads us to expect that we will find throughout nature one pattern of order. But if there were more than one deity responsible for the order of the universe, we would expect to see characteristic marks of the handiwork of different deities in different parts of the universe, just as we see different kinds of workmanship in the different houses of a city. We would expect to find an inverse square of law of gravitation obeyed in one part of the universe, and in another part a law which was just short of being an inverse square law—without the difference being explicable in terms of a more general law. It is enough to draw this absurd conclusion to see how wrong the Humean objection is.

So I shall take as the alternatives—the first, that the temporal order of the world is where

explanation stops, and the second, that the temporal order of the world is due to the agency of God; and I shall ignore the less probable possibilities that the order is to be explained as due to the agency of an agent or agents of finite power. The proponent of the teleological argument claims that the order of nature shows an orderer—God.

## THE FORCE OF THE SECOND FORM OF TELEOLOGICAL ARGUMENT

The teleological argument, whether from temporal or spatial order, is, I believe, a codification by philosophers of a reaction to the world deeply embedded in the human consciousness. Men see the comprehensibility of the world as evidence of a comprehending creator. The prophet Jeremiah lived in an age in which the existence of a creator-god of some sort was taken for granted. What was at stake was the extent of his goodness, knowledge, and power. Jeremiah argued from the order of the world that he was a powerful and reliable god, that god was God. He argued to the power of the creator from the extent of the creation—‘The host of heaven cannot be numbered, neither the sand of the sea measured’; and he argued that its regular behaviour showed the reliability of the creator, and he spoke of the ‘covenant of the day and night’ whereby they follow each other regularly, and ‘the ordinances of heaven and earth’,<sup>1</sup> and he used their existence as an argument for the trust-worthiness of the God of Jacob. The argument from temporal order has been with us ever since.

You get the argument from temporal order also in Aquinas’s fifth way, which runs as follows:

The fifth way is based on the guidedness of nature. An orderedness of actions to an end is observed in all bodies obeying natural laws, even when they lack awareness. For their behaviour hardly ever varies, and will practically always turn out well; which shows that they truly tend to a goal, and do not merely hit it by accident. Nothing however that lacks awareness tends to a goal, except under

the direction of someone with awareness and with understanding; the arrow, for example requires an archer. Everything in nature, therefore is directed to its goal by someone with understanding and this we call ‘God’.<sup>2</sup>

Aquinas argues that the regular behaviour of each inanimate thing shows that some animate being is directing it (making it move to achieve some purpose, attain some goal); and from that he comes—rather quickly—to the conclusion that one ‘being with understanding’ is responsible for the behaviour of all inanimate things.

It seems to me fairly clear that no argument from temporal order—whether Aquinas’s fifth way or any other argument can be a good deductive argument. For although the premiss is undoubtedly correct—a vast pervasive order characterizes the world—the step from premiss to conclusion is not a valid deductive one. Although the existence of order may be good evidence of a designer, it is surely compatible with the non-existence of one—it is hardly a logically necessary truth that all order is brought about by a person. And although, as I have urged, the supposition that one person is responsible for the orderliness of the world is much simpler and so more probable than the supposition that many persons are, nevertheless, the latter supposition seems logically compatible with the data—so we must turn to the more substantial issue of whether the argument from the temporal order of the world to God is a good inductive argument. We had reached the conclusion that either the vast uniformity in the powers and liabilities of bodies was where explanation stopped, or that God brings this about by his continuous action, through an intention constant over time.

Let us represent by *e* this conformity of the world to order, and let *b* be the hypothesis of theism. It is not possible to treat a teleological argument in complete isolation from the cosmological argument. We cannot ask how probable the premiss of the teleological argument makes theism, independently of the premiss of the cosmological argument, for the premiss of the teleological argument entails in part the

premiss of the cosmological argument. That there is order of the kind described entails at least that there is a physical universe. So let  $k$  be now, not mere tautological evidence, but the existence of a complex physical universe (the premiss of the version of the cosmological argument to which I devoted most attention). Let us ask how much more probable does the orderliness of such a universe make the existence of God than does the mere existence of the universe.

With these fillings, we ask whether  $P(h/e&k) > P(h/k)$  and by how much. As we have seen  $P(h/e&k)$  will exceed  $P(h/k)$  if and only if  $P(e/h&k) > P(e/\sim h&k)$ . Put in words with our current fillings for  $h$ ,  $e$ , and  $k$ , the existence of order in the world confirms the existence of God if and only if the existence of this order in the world is more probable if there is a God than if there is not. We saw in Chapter 6 that where  $h$  is the hypothesis that there is a God  $P(e/h&k)$  may exceed  $P(e/\sim h&k)$ , either because  $e$  cannot be explained in any other way and is very unlikely to occur uncaused or because God has character such that he is more likely to bring about  $e$  than alternative states. With respect to the cosmological argument, I suggested that its case rested solely on the first consideration. Here I shall suggest that again the first consideration is dominant, but that the second has considerable significance also.

Let us start with the first consideration.  $e$  is the vast uniformity in the powers and liabilities possessed by material objects— $P(e/\sim h&k)$  is the probability that there should be that amount of uniformity in a God-less world, that this uniform distribution of the powers of things should be where explanation terminates, that they be further inexplicable. That there should be material bodies is strange enough; but that they should all have such similar powers which they inevitably exercise, seems passing strange. It is strange enough that physical objects should have powers at all—why should they not just be, without being able to make a difference to the world? But that they should all, throughout infinite time and space, have some general powers identical to those of all

other objects (and they all be made of components of very few fundamental kinds, each component of a given kind being identical in all characteristics with each other such component) and yet there be no cause of this at all seems incredible. The universe is complex as we urged, in the last chapter, in that there are so many bodies of different shapes, etc., and now we find an underlying orderliness in the identity of powers and paucity of kinds of components of bodies. Yet this orderliness, if there is no explanation of it in terms of the action of God, is the orderliness of coincidence—the fact that one body has certain powers does not explain the fact that a second body has—not the simplicity of a common underlying explanation. The basic complexity remains in the vast number of different bodies in which the orderliness of identical powers and components is embodied. It is a complexity too striking to occur unexplained. It cries out for explanation in terms of some single common source with the power to produce it. Just as we would seek to explain all the coins of the realm having an identical pattern in terms of their origin from a common mould, or all of many pictures' having a common style in terms of their being painted by the same painter, so too should we seek to explain all physical objects' having the same powers in terms of their deriving them from a common source. On these grounds alone  $P(e/h&k) \gg P(e/k)$ , and so  $P(h/e&k) \gg P(h/k)$ .<sup>3</sup>

I think, however, that we can go further by bringing in considerations from God's character—we saw in Chapter 6 that God will bring about a state of affairs if it is over all a good thing that he should, he will not bring about a state of affairs if it is over all a bad thing that he should, and that he will only bring about a state of affairs if it is in some way a good thing that he should. Put in terms of reasons—he will always act on overriding reasons and cannot act except for a reason. Now there are two reasons why human beings produce order. One is aesthetic—beauty comes in the patterns of things, such as dances and songs. Some sort of order is a necessary condition of phenomena having



beauty; complete chaos is just ugly—although of course not any order is beautiful. The second reason why a human being produces order is that when there is order he or other rational agents can perceive that order and utilize it to achieve ends. If we see that there is a certain pattern of order in phenomena we can then justifiably predict that that order will continue, and that enables us to make predictions about the future on which we can rely. A librarian puts books in an alphabetical order of authors in order that he and users of the library who come to know that the order is there may subsequently be able to find any book in the library very quickly (because, given knowledge of the order, we can predict whereabouts in the library any given book will be).

God has similar reasons for producing an orderly, as opposed to a chaotic universe. In so far as some sort of order is a necessary condition of beauty, and it is a good thing—as it surely is—that the world be beautiful rather than ugly, God has reason for creating an orderly universe. Secondly, I shall argue in Chapter 10 that it is good that God should make finite creatures with the opportunity to grow in knowledge and power. Now if creatures are going consciously to extend their control of the world, they will need to know how to do so. There will need to be some procedures which they can find out, such that if they follow those procedures, certain events will occur. This entails the existence of temporal order. There can only be such procedures if the world is orderly, and, I should add, there can only be such procedures ascertainable by men if the order of the world is such as to be discernible by men. To take a simple example, if hitting things leads to them breaking or penetrating other things, and heating things leads to them melting, men can discover these regularities and utilize them to make artefacts such as houses, tables, and chairs. They can heat iron ore to melt it to make nails, hammers, and axes, and use the latter to break wood into the right shapes to hammer together with nails to make the artefacts. Or, if light and other electro-magnetic radiation behave in

predictable ways comprehensible by men, men can discover those ways and build telescopes and radio and television receivers and transmitters. A world must evince the temporal order exhibited by laws of nature if men are to be able to extrapolate from how things have behaved in the past, to how they will behave in the future, which extrapolation is necessary if men are to have the knowledge of how things will behave in the future, which they must have in order to be able to extend their control over the world. (There would not need to be complete determinism—agents themselves could be exempt from the full rigors of determinism, and there might be violations of natural laws from time to time. But basically the world has to be governed by laws of nature if agents are consciously to extend their control of the world.) If I am right in supposing that God has reason to create finite creatures with the opportunity to grow in knowledge and power, then he has reason to create temporal order. So I suggest that God has at least these two reasons for producing an orderly world. Maybe God has reasons for not making creatures with the opportunity to grow in knowledge and power, and so the second reason for his creating an orderly universe does not apply. But with one possible, and, I shall show, irrelevant qualification, the first surely does. God may choose whether or not to make a physical universe, but if he does, he has reason for making a beautiful and so an orderly one. God has reason, if he does make a physical universe, not to make a chaotic or botched-up one. The only reason of which I can think why God should make the universe in some respects ugly would be to give to creatures the opportunity to discover the aesthetic merits of different states of affairs and through cooperative effort to make the world beautiful for themselves. But then the other argument shows that if they are to be able to exercise such an opportunity the world will need to be orderly in some respects. (There will have to be predictable regularities which creatures may utilize in order to produce beautiful states of affairs.) So, either way, the world will need to be orderly. It rather

looks as if God has overriding reason to make an orderly universe if he makes a universe at all. However, as I emphasized, human inquiry into divine reasons is a highly speculative matter. But it is nevertheless one in which men are justified in reaching tentative conclusions. For God is postulated to be an agent like ourselves in having knowledge, power, and freedom, although to an infinitely greater degree than we have. The existence of the analogy legitimizes us in reaching conclusions about his purposes, conclusions which must allow for the quantitative difference, as I have tried to do.

So I suggest that the order of the world is evidence of the existence of God both because its occurrence would be very improbable *a priori* and also because, in virtue of his postulated character, he has very good, apparently overriding, reason for making an orderly universe, if he makes a universe at all. It looks as if  $P(e/h&k)$  equals 1. For both reasons  $P(e/h&k) \gg P(e/\sim h&k)$  and so  $P(h/e&k) \gg P(h/k)$ . I conclude that the teleological argument from temporal order is a good C-inductive argument to the existence of God.<sup>†</sup>

Let us look at the argument from a slightly different angle. It is basically an argument by analogy, an analogy between the order in the natural world (the temporal order codified in laws of nature) and the patterns of order which men often produce (the ordered books on library shelves, or the temporal order in the movements of a dancer or the notes of a song). It argues from similarity between phenomena of two kinds  $B$  and  $B^*$  to similarity between their causes  $A$  and  $A^*$ . In view of the similarities between the two kinds of order  $B$  and  $B^*$ , the theist postulates a cause ( $A^*$ ) in some respects similar to  $A$  (men); yet in view of the dissimilarities the theist must postulate a cause in other respects different. All arguments by analogy do and must proceed in this way. They cannot postulate a cause in all respects similar. They postulate a cause who is

such that one would expect him to produce phenomena similar to  $B$  in the respects in which  $B^*$  are similar to  $B$  and different from  $B$  in the respects in which  $B^*$  are different from  $B$ .

All argument from analogy works like this. Thus various properties of light and sound were known in the nineteenth century, among them that both light and sound are reflected, refracted, diffracted, and show interference phenomena. In the case of sound these were known to be due to disturbance of the medium, air, in which it is transmitted. What could one conclude by analogy about the cause of the reflection, etc., of light? One could conclude that the propagation of light was, like the propagation of sound, the propagation of a wave-like disturbance in a medium. But one could not conclude that it was the propagation of a disturbance in the same medium—air, since light passed through space empty of air. Scientists had to postulate a separate medium—ether, the disturbance of which was responsible for the reflection, etc., of light. And not merely does all argument by analogy proceed like this, but all inductive inference can be represented as argument by analogy. For all inductive inference depends on the assumption that in certain respects things continue the same and in other respects they differ. Thus that crude inference from a number of observed swans all having been white to the next swan's being white is an argument by analogy. For it claims that the next swan will be like the observed swans in one respect—color, while being unlike them in other respects.

In our case the similarities between the temporal order which men produce and the temporal order in nature codified in scientific laws mean postulating as cause of the latter a person who acts intentionally. The dissimilarities between the kinds of order include the world-wide extent of the order in nature in comparison with the very narrow range of order which men produce. This means postulating as cause of the former a person of enormous power and knowledge. Now, as we saw in

<sup>†</sup>Earlier in the book Swinburne distinguishes a P-inductive argument from a C-inductive argument. A P-inductive argument is one in which the premises make the conclusion probable. A C-inductive argument is one in which the premises *add to the probability of the conclusion* (i.e., *makes it more probable than it would otherwise be*).

Chapter 2, a person has a body if there is a region of the world under his direct control and if he controls other regions of the world only by controlling the former and by its movements having predictable effects on the outside world. Likewise he learns about the world only by the world having effects on this region. If these conditions are satisfied, the person has a body, and the stated region is that body. But if a person brings about directly the connections between things, including the predictable connections between the bodies of other persons and the world, there is no region of the world, goings-on in which bring about those connections. The person must bring about those connections as a basic action. His control of the world must be immediate, not mediated by a body. So the dissimilarities between the two kinds of order necessarily lead to the postulation of a non-embodied person (rather than an embodied person) as cause of the temporal order in nature.

These considerations should suffice to rebut that persistent criticism of the argument from design which we have heard ever since Hume that, taken seriously, the argument ought to be postulating an embodied god, a giant of a man. 'Why not', wrote Hume, 'become a perfect anthropomorphite? Why not assert the deity or deities to be corporeal, and, to have eyes, a nose, mouth, ears, etc.?' The answer is the simple one that dissimilarities between effects lead the rational man to postulate dissimilarities between causes, and that this procedure is basic to inductive inference.

It is true that the greater the dissimilarities between effects, the weaker is the argument to the existence of a similar cause; and it has been a traditional criticism of the argument from design represented as an argument by analogy that the analogy is weak. The dissimilarities between the natural world and the effects which men produce are indeed striking; but the similarities between these are also, I have been suggesting, striking—in both there is the conformity of phenomena to a simple pattern of order detectable by men. But although the dissimilarities are perhaps sufficiently great to make the argument not a good P-inductive argument, this chapter suggests that it remains a good C-inductive argument. The existence of

order in the universe increases significantly the probability that there is a God, even if it does not by itself render it probable.

## THE ARGUMENT FROM BEAUTY

We saw that God has reason, apparently overriding reason, for making, not merely any orderly world (which we have been considering so far) but a beautiful world—at any rate to the extent to which it lies outside the control of creatures. (And he has reason too, I would suggest, even in whatever respects the world does lie within the control of creatures, to give them experience of beauty to develop, and perhaps also some ugliness to annihilate.) So God has reason to make a basically beautiful world, although also reason to leave some of the beauty or ugliness of the world within the power of creatures to determine; but he would seem to have overriding reason not to make a basically ugly world beyond the powers of creatures to improve. Hence, if there is a God there is more reason to expect a basically beautiful world than a basically ugly one—by the principles of Chapter 6. *A priori*, however, there is no particular reason for expecting a basically beautiful rather than a basically ugly world. In consequence, if the world is beautiful, that fact would be evidence for God's existence. For, in this case, if we let  $k$  be 'there is an orderly physical universe',  $e$  be 'there is a beautiful universe', and  $h$  be 'there is a God',  $P(e/h \& k)$  will be greater than  $P(e/k)$ ; and so by our previous principles the argument from  $e$  to  $h$  will be another good C-inductive argument.

Few, however, would deny that our universe (apart from its animal and human inhabitants, and aspects subject to their immediate control) has that beauty. Poets and painters and ordinary men down the centuries have long admired the beauty of the orderly procession of the heavenly bodies, the scattering of the galaxies through the heavens (in some ways random, in some ways orderly), and the rocks, sea, and wind interacting on earth, 'The spacious firmament on high, and all the blue aethereal sky', the water lapping against

'the old eternal rocks', and the plants of the jungle and of temperate climates, contrasting with the desert and the Arctic wastes. Who in his senses would deny that here is beauty in abundance? If we confine ourselves to the argument from the beauty of the inanimate and plant worlds, the argument surely works.

**NOTES**

1. Jer. 33: 20f. and 25f.
2. St. Thomas Aquinas, *Summa Theologiae*, 1 a, 2.3, trans. T. McDermott, OP (London, 1964).
3. '>>' means 'is much greater than', '<<' means 'is much less than'.

