5
Cosmological Arguments

THE rejection of Berkeley's form of theism entails that if a god is to be introduced at all, it must be as a supplement to the material world, not as a substitute for it. The rejection of all forms of ontological argument then entails that the theist must argue from the world (or from some part or aspect of our experience) to a god. This brings us to the cosmological argument, which is *par excellence* the philosophers'argument for theism. It has been presented in many forms, but in one version or another it has been used by Greek, Arabic, Jewish, and Christian philosophers and theologians, including Plato, Aristotle, al Farabi, al Ghazali, ibn Rushd (Averroes), Maimonides, Aquinas, Spinoza, and Leibniz. [1] What is common to the many versions of this argument is that they start from the very fact that there is a world or from such general features of it as change or motion or causation--not, like the argument from consciousness or the argument for design, from specific details of what the world includes or how it is ordered--and argue to God as the uncaused cause of the world or of those general features, or as its creator, or as the reason for its existence. I cannot examine all the variants of this argument that have been advanced, but I shall discuss three intendedly demonstrative approaches and an inductive, probabilistic, approach. And although arguments to a first cause or a creator are more immediately attractive, and appeared earlier in history, than those which argue from the contingency of the world to a necessary being, the latter are in some respects simpler and perhaps more fundamental, so I shall begin with one of these.

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[1] W. L. Craig, *The Cosmological Argument from Plato to Leibniz* (Macmillan, London, 1980). Quotations from al Farabi and al Ghazali are taken from this work.

(a) Contingency and Sufficient Reason

Leibniz gives what is essentially the same proof in slightly different forms in different works; we can sum up his line of thought as follows. [2] He assumes the *principle of sufficient reason*, that nothing occurs without a sufficient reason why it is so and not otherwise. There must, then, be a sufficient reason for the world as a whole, a reason why something exists rather than nothing. Each thing in the world is contingent, being causally determined by other things: it would not occur if other things were otherwise. The world as a whole, being a collection of such things, is therefore itself contingent. The series of things and events, with their causes, with causes of those causes, and so on, may stretch back infinitely in time; but, if so, then however far back we go, or if we consider the series as a whole, what we have is still contingent and therefore requires a sufficient reason outside this series. That is, there must be a sufficient reason for the world which is *other than* the world. This will have to be a necessary being, which

contains its own sufficient reason for existence. Briefly, things must have a sufficient reason for their existence, and this must be found ultimately in a necessary being. There must be something free from the disease of contingency, a disease which affects everything in the world and the world as a whole, even if it is infinite in past time.

This argument, however, is open to criticisms of two sorts, summed up in the questions 'How do we know that everything must have a sufficient reason?' and 'How can there be a necessary being, one that contains its own sufficient reason?'. These challenges are related: if the second question cannot be answered satisfactorily, it will follow that things as a whole cannot have a sufficient reason, not merely that we do not know that they must have one.

Kant's criticism of the Leibnizian argument turns upon this second objection; he claims that the cosmological proof depends upon the already criticized ontological proof. [3] The latter starts from the concept of an absolutely necessary being, an *ens realissimum*, something whose essence includes existence, and tries to derive from that concept itself alone the fact that there is such a being. The cosmological proof 'retains the connection of absolute necessity with the highest reality, but instead of reasoning . . . from the highest reality to

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[2]The clearest account is in "'On the Ultimate Origination of Things'", printed, e.g., in
 G. W. Leibniz, *Philosophical Writings* (Dent, London, 1934), pp. 32-41.
[3]*Critique of Pure, Reason*, Transcendental Dialectic, Book II, Chapter III, Section 5
 (seen. 1 to Chapter 3 above).

necessity of existence, it reasons from the previously given unconditioned necessity of some being to the unlimited reality of that being'. However, Kant's claim that the cosmological proof 'rests' or 'depends' on the ontological one, that 'the so-called cosmological proof really owes any cogency which it may have to the ontological proof from mere concepts' is at least misleading. The truth is rather this. The cosmological argument purports to show, from the contingency of the world, in conjunction with the principle of sufficient reason, that there must be something else which is not contingent, which exists necessarily, which is or contains its own sufficient reason. When we ask how there could be such a thing, we are offered the notion of an *ens realissimum* whose essence includes existence. This is the notion which served as. the starting-point of (in particular) Descartes's ontological proof. But the notion is being used quite differently in the two cases. Does this connection imply that successful criticism of the ontological proof undermines the cosmological one also? That depends on the nature of the successful criticism. If its outcome is that the very concept of something's essence including existence is illegitimate--which would perhaps have been shown by Kant's thesis that existence is not a predicate, or by the quantifier analysis of existence in general, if either of these had been correct and uncontroversial--then at least the final

step in the cosmological proof is blocked, and Leibniz must either find some different explanation of how something might exist necessarily and contain its own sufficient reason, or else give up even the first step in his proof, abandoning the search for a sufficient reason of the world as a whole. But if the outcome of the successful criticism of the ontological proof were merely that we cannot validly start from a mere concept and thence derive actual existence--if we allowed that there was nothing illegitimate about the concept of a being whose essence includes existence, and insisted only that whatever a concept contains, it is always a further question whether there is something that instantiates it--then the cosmological proof would be unaffected by this criticism. For it does offer something that purports independently to answer this further question, namely the first step, the claim that the contingency of the world shows that a necessary being is required. Now our final criticisms, not only of Descartes's version of the ontological proof, but also of Anselm's and Plantinga's, were of this second sort. I said that the view that existence disappears wholly into the existential quantifier is controversial, and therefore did not press the first sort of criticism. Consequently the cosmological proof is not undermined

by the so far established weakness of the ontological, though, since Kant thought he had carried through a criticism of the first sort, it would have been consistent for him to say that the cosmological proof was at least seriously threatened by it, that Leibniz would need to find some other account of how there could be a necessary being.

But perhaps we can still make something like Kant's point, even if we are relying only on a criticism of the second sort. Since it is always a further question whether a concept is instantiated or not, no matter how much it contains, the existence even of a being whose essence included existence would not be self-explanatory: there might have failed to be any such thing. This 'might' expresses at least a conceptual possibility; if it is alleged that this being none the less exists by a metaphysical necessity, we are still waiting for an explanation of this kind of necessity. The existence of this being is not logically necessary; it does not exist in all logically possible worlds; in what way, then, does it necessarily exist in this world and satisfy the demand for a sufficient reason?

It might be replied that we understand what it is for something to exist contingently, in that it would not have existed if something else had been otherwise: to exist necessarily is to exist but not contingently in this sense. But then the premiss that the natural world as a whole is contingent is not available: though we have some ground for thinking that each part, or each finite temporal stretch, of the world is contingent in this sense upon something else, we have initially no ground for thinking that the world as a whole would not have existed if something else had been otherwise; inference from the contingency of every part to the contingency *in this sense* of the whole is invalid. Alternatively, we might say that something exists contingently if and only if it might not have existed, and by contrast that something exists necessarily if and only if it exists, but it is not the case that it might not have existed. In this sense we could infer the contingency of the whole

from the contingency of every part. But once it is conceded, for reasons just given, that it is not logically impossible that the alleged necessary being might not have existed, we have no understanding of how it could be true of this being that it is not the case that it might not have existed. We have as yet no ground for believing that it is even possible that something should exist necessarily in the sense required.

This criticism is reinforced by the other objection, 'How do we know that everything must have a sufficient reason?'. I see no plausibility in the claim that the principle of sufficient reason is known *apriori*

priori to be true. Leibniz thought that reliance on this principle is implicit in our reasoning both about physics and about human behaviour: for example, Archimedes argued that if, in a symmetrical balance, equal weights are placed on either side, neither will go down, because there is no reason why one side should go down rather than the other; and equally a rational being cannot act without a motive. [4] But what is being used by Archimedes is just the rule that like causes produce like effects. This, and in general the search for, and expectation of, causes and regularities and reasons, do indeed guide inquiry in many fields. But the principles used are not known *a priori*, and Samuel Clarke pointed out a difficulty in applying them even to human behaviour: someone who has a good reason for doing either A or B, but no reason for doing one of these rather than the other, will surely choose one arbitrarily rather than do neither. [5] Even if, as is possible, we have some innate tendency to look for and expect such symmetries and continuities and regularities, this does not give us an *a priori* guarantee that such can always be found. In so far as our reliance on such principles is epistemically justified, it is so a *posteriori*, by the degree of success we have had in interpreting the world with their help. And in any case these principles of causation, symmetry, and so on refer to how the world works; we are extrapolating far beyond their so far fruitful use when we postulate a principle of sufficient reason and apply it to the world as a whole. Even if, within the world, everything seemed to have a sufficient reason, that is, a cause in accordance with some regularity, with like causes producing like effects, this would give us little ground for expecting the world as a whole, or its basic causal laws themselves, to have a sufficient reason of some different sort.

The principle of sufficient reason expresses a demand that things should be intelligible *through and through*. The simple reply to the argument which relies on it is that there is nothing that justifies this demand, and nothing that supports the belief that it is satisfiable even in principle. As we have seen in considering the other main objection to Leibniz's argument, it is difficult to see how there even could be anything that would satisfy it. If we reject this demand, we are not thereby committed to saying that things are utterly unintelligible. The sort of intelligibility that is achieved by successful causal inquiry and scientific explanation is not undermined by its inability

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[4]*The Leibniz-Clarke Correspondence*, edited by H. G. Alexander (Manchester University Press, 1956 and 1976), Leibniz's Second Paper.
[5]*The Leibniz-Clarke Correspondence*, Clarke's Third and Fifth Replies.

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to make things intelligible through and through. Any particular explanation starts with premises which state 'brute facts', and although the brutally factual starting-points of one explanation may themselves be further explained by another, the latter in turn will have to start with something that it does not explain, *and so on however far we go*. But there is no need to see this as unsatisfactory.

A sufficient reason is also sometimes thought of as a final cause or purpose. Indeed, if we think of each event in the history of the world as having (in principle) been explained by its antecedent causes, but still want a further explanation of the whole sequence of events, we must turn to some other sort of explanation. The two candidates that then come to mind are two kinds of purposive or teleological explanation. Things are as they are, Plato suggested, because it is *better* that they should be so. [6] This can be construed either as implying that (objective) value is in itself creative--an idea which we shall be taking up in Chapter 13--or as meaning that some intelligent being sees what would be better, chooses it, and brings it about. But why must we look for a sufficient reason of either of these sorts? The principle of sufficient reason, thus understood, expresses a demand for some kind of absolute purposiveness. But if we reject this demand, we are not thereby saying that 'man and the universe are ultimately meaningless'. [7] People will still have the purposes that they have, some of which they can fulfil, even if the question 'What is the purpose of the world as a whole?' has no positive answer.

The principle of sufficient reason, then, is more far-reaching than the principle that every occurrence has a preceding sufficient cause: the latter, but not the former, would be satisfied by a series of things or events running back infinitely in time, each determined by earlier ones, but with no further explanation of the series as a whole. Such a series would give us only what Leibniz called 'physical' or 'hypothetical' necessity, whereas the demand for a sufficient reason for the whole body of contingent things and events and laws calls for something with 'absolute' or 'metaphysical' necessity. But even the weaker, deterministic, principle is not an *a priori* truth, and indeed it may not be a truth at all; much less can this be claimed for the principle of sufficient reason. Perhaps it just expresses an arbitrary demand; it may be intellectually satisfying to believe that there is, objectively, an explanation for everything together, even if we can only guess at what the explanation might be. But we have no right to

[6]Plato, *Phaedo*, 97- 9.
[7]Craig, op. cit., p. 287.

assume that the universe will comply with our intellectual preferences. Alternatively, the supposed principle may be an unwarranted extension of the determinist one, which, in so far as it is supported, is supported only empirically, by our success in actually finding causes, and can at most be accepted provisionally, not as an *a priori* truth. The form of the cosmological argument which relies on the principle of sufficient reason therefore fails completely as a demonstrative proof.

(b) The Regress of Causes

There is a popular line of thought, which we may call the first cause argument, and which runs as follows: things must be caused, and their causes will be other things that must have causes, and so on; but this series of causes cannot go back indefinitely; it must terminate in a first cause, and this first cause will be God. This argument envisages a regress of causes in time, but says (as Leibniz, for one, did not) that this regress must stop somewhere. Though it has some initial plausibility, it also has obvious difficulties. Why must the regress terminate at all? Why, if it terminates, must it lead to a single termination, to one first cause, rather than to a number--perhaps an indefinitely large number--of distinct uncaused causes? And even if there is just one first cause, why should we identify this with God? I shall come back to this argument and to possible replies to these objections; but first I want to look at a more elaborate philosophical argument that has some, though not much, resemblance to it.

Of Aquinas''s 'five ways', the first three are recognizably variants of the cosmological proof, and all three involve some kind of terminated regress of causes. [8] But all of them are quite different from our first cause argument. The first way argues to a first mover, using the illustration of something's being moved by a stick only when the stick is moved by a hand; here the various movings are simultaneous, we do not have a regress of causes in time. Similarly the 'efficient causes' in the second way are contemporary agents. Both these arguments, as Kenny has shown, depend too much on antiquated physical theory to be of much interest now. The third way is much more significant. This argument is in two stages, and can be freely translated, with some condensation, as follows:

First stage: If everything were able-not-to-be, then at some time there would have been nothing (because what is able-not-to-be,

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[8] A. Kenny, *The Five Ways* (Routledge & Kegan Paul, London, 1969).

at some time is not); and then (since what does not exist cannot begin to be except through something which is) even now there would be nothing. It is plainly not true that

there is nothing now; so it cannot be true that everything is able-not-to-be. That is, there must be at least one thing which is necessary. Second stage: Everything that is necessary either has a cause of its necessity outside itself, or it does not. But it is not possible to go to infinity in a series of necessary things each of which has a cause of its necessity outside itself, this is like what has been proved about efficient causes. Therefore we must assume something which is necessary through itself, which does not have a cause of its necessity outside itself, but which is the cause of the necessity of the other things; and this men all call God.

This argument is quite different from our first cause argument and also from Leibniz's argument from contingency. Although it uses the contrast between things which are able-not-to-be (and therefore contingent) and those which are necessary, it is not satisfied with the conclusion that there is something necessary; it allows that there may be many necessary things, and reaches God only at the end of the second stage, as what has its necessity 'through itself' (*per se*). Clearly 'necessary' does not mean the same for Aquinas as for Leibniz. What it does mean will become clearer as we examine the reasoning.

In the first stage, the premiss 'what is able-not-to-be, at some time is not' seems dubious: why should not something which is *able* not to be nevertheless just happen to exist always? But perhaps Aquinas means by 'things that are able-not-to-be' (*possibilia non esse*) something like 'impermanent things', so that this premiss is analytic. Even so, the statement that if everything were such, at some time there would have been nothing, does not follow: some impermanent things might have lasted through all past time, and be going to display their impermanence by perishing only at some time in the future. But we may be able to understand Aquinas's thought by seeing what is said more explicitly by Maimonides, by whom Aquinas appears to have been influenced here.[9] His corresponding proof seems to assume that past time has been finite--and reasonably so, for if past time has been finite there would seem to be an easier argument for a divine creator, such as we shall consider below. The suggestion is that it would not have been possible for

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[9]Craig, op. cit., Chapter 4.

impermanent things to have lasted throughout an infinite time, and hence they would have perished already.

However, another objection is that there might be a series of things, each of which was impermanent and perished after a finite period, but whose periods of existence overlapped so that there never was a time when there was nothing. It would be a clear logical fallacy (of which some commentators have accused Aquinas) to infer 'at some time everything is not' from 'each thing at some time is not'. But we might defend

Aquinas in either of two ways. First, if each thing were impermanent, it would be the most improbable good luck if the overlapping sequence kept up through infinite time. Secondly, even if this improbable luck holds, we might regard the series of overlapping things as itself a thing which had already lasted through infinite time, and so could not be impermanent. Indeed, if there were such a series which never failed, this might well indicate that there was some *permanent* stock of material of which the perishable things were composed and into which they disintegrated, thereby contributing to the composition of other things.

A third objection concerns the premiss that 'what does not exist cannot begin to be except through something that is'. This is, of course, a form of the principle that nothing can come from nothing; the idea then is that if our series of impermanent things had broken off, it could never have started again after a gap. But is this an *a priori* truth? As Hume pointed out, we can certainly conceive an uncaused beginning-to-be of an object; if what we can thus conceive is nevertheless in some way impossible, this still requires to be shown.10 Still, this principle has some plausibility, in that it is constantly confirmed in our experience (and also used, reasonably, in interpreting our experience).

Altogether, then, the first stage of Aquinas's argument falls short of watertight demonstration, but it gives some lower degree of support to the conclusion that there is at least one thing that is necessary in the sense, which has now become clear, that it is permanent, that *for some reason* it is not able-not-to-be. The second stage takes this conclusion as its starting-point. One permanent thing, it allows, may be caused to be permanent, sustained always in existence, by another. But, it holds, there cannot be an infinite regress of such things. Why not? Aquinas refers us to his earlier proof about efficient causes, in the second way. This runs:

10*Treatise*, Book I, Part iii, Section 3; contrast Kenny, op. cit., p. 67.

It is not possible to go to infinity in a series of efficient causes. For in all ordered efficient causes the first item is the cause of the intermediate one and the intermediate is the cause of the last (whether there is only one intermediate or more than one); now if the cause is removed, so is the effect. Therefore if there has not been a first item among efficient causes there will not be a last or an intermediate. But if one goes to infinity in a series of efficient causes, there will not be a first efficient cause, and so there will not be a last effect or intermediate efficient causes . . .

Unfortunately this argument is unsound. Although in a *finite* ordered series of causes the intermediate (or the earliest intermediate) is caused by the first item, this would not be so if there were an infinite series. In an infinite series, every item is caused by an earlier item. The way in which the first item is 'removed' if we go from a finite to an infinite series does not entail the removal of the later items. In fact, Aquinas (both here and in

the first way) has simply begged the question against an infinite regress of causes. But is this a sheer mistake, or is there some coherent thought behind it? Some examples (some of which would not themselves have been available to Aquinas, though analogues of them would have been) may suggest that there is. If we were told that there was a watch without a mainspring, we would hardly be reassured by the further information that it had, however, an infinite train of gear-wheels. Nor would we expect a railway train consisting of an infinite number of carriages, the last pulled along by the second last, the second last by the third last, and so on, to get along without an engine. Again, we see a chain, consisting of a series of links, hanging from a hook; we should be surprised to learn that there was a similar but infinite chain, with no hook, but links supported by links above them for ever. The point is that in these examples, and in the series of efficient causes or of necessary things, it is assumed that there is a relation of *dependence*-or, equivalently, one in the reverse direction of *support*--and, if the series were infinite, there would in the end be nothing for the effects to depend on, nothing to support them. And the same would be true if the regress were not infinite but circular.

There is here an implicit appeal to the following general principle: Where items are ordered by a relation of dependence, the regress must end somewhere; it cannot be either infinite or circular. Perhaps this principle was intended by al Farabi in the dictum that is translated 'But a series of contingent beings which would produce one another cannot proceed to infinity or move in a circle' (p. 83). As our examples show, this principle is at least highly plausible;

the problem will be to decide when we have such a relation of dependence.

In the second stage of Aquinas's argument, therefore, the key notion is that any necessary--that is, permanent--thing either depends for its permanence on something else or is *per se necessarium* in a sense which can apply only to God. The actual text of the third way does not reveal Aquinas's thinking about this. But comparison of it with other passages in his writings and with Maimonides's proof suggests that the implicit assumption is that anything whose essence does not involve existence must, even if it is permanent, depend for its existence on something else. [11] This assumption would give the dependence which would call for an end to the regress and also ensure that nothing could end it but a being whose essence involved existence--which would explain the assertion that what is *per se necessarium* is what men all call God.

But the final objection to the argument is that we have no reason for accepting this implicit assumption. Why, for example, might there not be a permanent stock of matter whose essence did not involve existence but which did not derive its existence from anything else?

It is obvious that, as I said earlier, Aquinas's third way is very different from Leibniz's cosmological proof. Yet there has been a tendency to assimilate the former to the latter.

[12] This is understandable, in that Aquinas would need something like the principle of sufficient reason to support what I have called the implicit assumption against our final objection: for example, there being a permanent stock of matter would be just a brute fact that had no sufficient reason, whereas something whose essence involved existence would seem to have, in itself, *per se*, a sufficient reason for its permanence. But in view of our criticisms of Leibniz's argument, no borrowing from it can rescue that of Aquinas.

But what about the popular first cause argument? Can we not now answer our earlier queries? Why must the regress of causes in time terminate? Because things, states of affairs, and occurrences *depend* on their antecedent causes. Why must the regress lead to one first cause rather than to many uncaused causes, and why must that one cause be God? Because anything other than God would need something else causally to depend upon. Moreover, the assumption needed for this argument is more plausible than that needed for

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[11]Craig. op. cit., pp. 142 -3, 146 -8.
[12]Craig, op. cit., p. 283.

Leibniz's proof, or for Aquinas's. The notion that everything must have a sufficient reason is a metaphysician's demand, as is the notion that anything permanent must depend for its permanence on something else unless its essence involves existence. But the notion that an effect *depends* on a temporally earlier cause is part of our ordinary understanding of causation: we all have some grasp of this asymmetry between cause and effect, however hard it may be to give an exact analysis of it. [13]

Nevertheless, this argument is not demonstratively cogent. Though we understand that where something has a temporally antecedent cause, it depends somehow upon it, it does not follow that everything (other than God) *needs* something else to depend on in this way. Also, what we can call al Farabi's principle, that where items are ordered by a relation of dependence, the regress must terminate somewhere, and cannot be either infinite or circular, though plausible, may not be really sound. But the greatest weakness of this otherwise attractive argument is that some reason is required for making God the one exception to the supposed need for something else to depend on: why should God, rather than anything else, be taken as the only satisfactory termination of the regress? If we do not simply accept this as a sheer mystery (which would be to abandon rational theology and take refuge in faith), we shall have to defend it in something like the ways that the metaphysicians have suggested. But then this popular argument takes on board the burdens that have sunk its more elaborate philosophical counterparts.

(c) Finite Past Time and Creation

There is, as Craig explains, a distinctive kind of cosmological argument which, unlike those of Aquinas, Leibniz, and many others, assumes or argues that the past history of the world is finite. [14] This, which Craig calls, by its Arabic name, the *kalam* type of argument, was favoured by Islamic thinkers who were suspicious of the subtleties of the philosophers and relied more on revelation than on reason. Nevertheless, they did propound this as a rational proof of God's existence, and some of them used mathematical paradoxes that are descended from Zeno's, or that anticipate Cantor's, to show that there cannot be an actual infinite--in particular, an infinite past time. For example, if time past were infinite, an infinite stretch would have

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[13] Cf. Chapter 7 of *The Cement of the Universe* (see n. 2 to Chapter 1 above).
[14] Craig, op. cit., Chapter 3.

actually to have been traversed in order to reach the present, and this is thought to be impossible. Then there is an ingenious argument suggested by al Ghazali: the planet Jupiter revolves in its orbit once every twelve years, Saturn once every thirty years; so Jupiter must have completed more than twice as many revolutions as Saturn; yet if past time were infinite they would each have completed the same (infinite) number; which is a contradiction. (pp. 101 -2) The first of these (which Kant also uses in the thesis of his First Antinomy) just expresses a prejudice against an actual infinity. It assumes that, even if past time were infinite, there would still have been a starting-point of time, but one infinitely remote, so that an actual infinity would have had to be traversed to reach the present from there. But to take the hypothesis of infinity seriously would be to suppose that there was no starting-point, not even an infinitely remote one, and that from any specific point in past time there is only a finite stretch that needs to be traversed to reach the present. Al Ghazali's argument uses an instance of one of Cantor's paradoxes, that in an infinite class a part can indeed be equal to the whole: for example, there are just as many even numbers (2, 4, 6, etc.) as there are whole numbers (1, 2, 3, etc.), since these classes can be matched one-one with eachother. But is this not a contradiction? Is not the class of even numbers both equal to that of the integers (because of this one-one correlation) and smaller than it (because it is a proper part of it, the part that leaves out the odd numbers)? But what this brings out is that we ordinarily have and use a criterion for one group's being smaller than another--that it is, or can be correlated one-one with, a proper part of the other--and a criterion for two groups' being equal in number--that they can be correlated one-one with each other-which together ensure that *smaller than* and *equal* to exclude one another for all pairs of finite groups, but not for pairs of infinite, groups. Once we understand the relation between the two criteria, we see that there is no real contradiction.

In short, it seems impossible to disprove, *a priori*, the possibility of an infinite past time. Nevertheless, many people have shared, and many still do share, these doubts about an

actual infinite in the real world, even if they are willing to leave mathematicians free to play their Cantorian games--which, of course, not all mathematicians, or all philosophers of mathematics, want to play. Also the view that, whatever we say about *time*, the *universe* has a finite past history, has in recent years received strong empirical support from the cosmology that is a branch of astronomy. So let us consider what the prospects

would be for a proof of the existence of a god if we were supplied, from whatever source, with the premiss that the world has only a finite past history, and therefore a beginning in time, whether or not this is also the beginning of time. Here the crucial assumption is stated by al Ghazali: '[We] know by rational necessity that nothing which originates in time originates by itself, and that, therefore, it needs a creator' (p. 102). But *do* we know this by rational necessity? Surely the assumption required here is just the same as that which is used differently in the first cause argument, that anything other than a god needs a cause or a creator to depend on. But there is *a priori* no good reason why a sheer origination of things, not determined by anything, should be unacceptable, whereas the existence of a god with the power to create something out of nothing is acceptable.

When we look hard at the latter notion we find problems within it. Does God's existence have a sheer origination in time? But then this would be as great a puzzle as the sheer origination of a material world. Or has God existed for ever through an infinite time? But this would raise again the problem of the actual infinite. To avoid both of these, we should have to postulate that God's own existence is not in time at all; but this would be a complete mystery.

Alternatively, someone might not share al Ghazali's worries about the actual infinite, and might rely on an empirical argument--such as the modern cosmological evidence for the 'big bang'--to show that the material world had a beginning in time. For him, therefore, God's existence through an infinite time would be unproblematic. But he is still using the crucial assumptions that God's existence and creative power would be self-explanatory whereas the unexplained origination of a material world would be unintelligible and therefore unacceptable. But the first of these leads us back to the criticism stated in section (a), on page 84 . The notion, embedded in the ontological argument, of a being whose existence is self-explanatory because it is not the case that it might not have existed, is *not* defensible; so we cannot borrow that notion to complete any form of the cosmological argument. The second assumption is equally questionable. We have no good ground for an *a priori* certainty that there could not have been a sheer unexplained beginning of things. But in so far as we find this improbable, it should cast doubt on the interpretation of the big bang as an absolute beginning of the material universe; rather, we should infer that it must have had *some* physical antecedents, even if the big bang has to be taken as a discontinuity so

radical that we cannot explain it, because we can find no laws which we can extrapolate backwards through this discontinuity.

In short, the notion of creation seems more acceptable than any other way out of the cosmological maze only because we do not look hard either at it or at the human experiences of making things on which it is modelled. It is vaguely explanatory, apparently satisfying; but these appearances fade away when we try to formulate the suggestion precisely.

(d) Swinburne's Inductive Cosmological Argument

We might well have anticipated, from the beginning, the conclusion that our discussion in this chapter has thus laboriously reached. We have no general grounds for expecting to be able to demonstrate, by deductively valid arguments, using premises that are known with certainty, conclusions which go far beyond the empirical data on which they are based. And particularly since Hume and Kant philosophers have tended to be very sceptical about such a possibility. On the other hand we do have good general grounds for expecting to be able to confirm, provisionally but sometimes quite strongly, hypotheses that go far beyond the observational data that support them, and to confirm them in a sense that makes it reasonable for us to rely, for practical purposes, on their being either true or at any rate fairly close to the truth. The successful growth of the empirical sciences over the last 400 years justifies such a general expectation, no matter what problems there may still be in developing a satisfactory theory of the confirmation of hypotheses or of the justification of inductive reasoning. Though the theologians of the past wanted much more, many thinkers today would be content if theism were as well confirmed as one of the better-established scientific theories. So we might well consider whether there is a good inductive or hypothesis-confirming variant of the cosmological argument; and this is what Swinburne has tried to present. [15]

Swinburne prefixes to his whole discussion of the existence of a god an account of inductive reasoning in general. The statement that a hypothesis is 'confirmed' by certain evidence is ambiguous: it may mean that the evidence has raised the probability of the hypothesis as compared with what it was, or would have been, apart from that evidence; or it may mean that the evidence makes the hypothesis

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[15]In Chapter 7 of *The Existence of God* (Oxford University Press, 1979). References in the text are to pages in this work.

more likely than not to be true. Swinburne speaks of a 'good Cinductive argument', meaning one in which the premisses or evidence confirm the conclusion or hypothesis in the former sense, and of a 'good P-inductive argument' where they confirm it in the latter sense. As he says, it is harder to tell when we have a good P-inductive argument than when we have a good C-inductive argument. But in either case it is a question of an *argument*: we are concerned with relations of non-deductive support between certain evidence, in the light of some body of background knowledge or belief, and a hypothesis or conclusion. Any judgment that we reasonably make will be provisional, in that further evidence, or a change in the background knowledge or belief, may alter the degree of confirmation or the balance of probabilities, and one important kind of change in the background is the introduction of further, rival, possible explanatory hypotheses, or a change in the initial probability of such hypotheses.

There is an important principle which serves as a criterion for a good C-inductive argument. A hypothesis is confirmed by certain evidence if and only if (apart from or prior to that evidence's being observed) the addition of the hypothesis to the background knowledge or belief makes it more probable that that evidence would occur than it would be in relation to the background knowledge or belief alone. Symbolically, if *'h'* stands for the hypothesis, *'e'* for the evidence, *'k'* for the background knowledge or belief, and 'P(x/y)' for the probability of x in relation to y, then h is confirmed--in the sense of having its probability raised--by e if and only if *P(e/ h&k)> P(e/k)*. Or, equivalently, a hypothesis is in this sense confirmed by evidence if and only if that evidence would have been more likely to occur if the hypothesis had been true than if it had been false: h is confirmed by e if and only if *P(e/h&k)> P(e/~h&k)*. In other words, the evidence raises the probability of the hypothesis if and only if the addition of the hypothesis raises the antecedent probability of the evidence. This holds provided that the initial probability of the hypothesis in relation to the background knowledge or belief is not zero.

This principle may be illustrated by a simple detective story example. The finding, in the dried mud of a path, of footmarks which closely match Fred's shoes in shape, size, and degree of wear, and the distances between which match the ordinary length of his stride, makes it more likely that Fred walked along that path when it was last wet than it would have been without this evidence. Why? Because the hypothesis that Fred walked there then raises the probability that

there would now be just such footmarks as compared with what it would be without that hypothesis, or on the supposition that he did not walk there then. If our background information makes it quite likely that there would be such marks even if Fred had not walked there--for example, if Fred has a twin brother who frequently borrows Fred's shoes and who uses that path--the addition of the hypothesis that Fred walked there does not raise the antecedent probability of the footmarks so much (since it was fairly high without that hypothesis, or even in relation to the denial of that hypothesis), and finding

the marks is no longer so good a confirmation that Fred was there. Again (even if Fred has no twin brother) if our background knowledge makes it impossible that Fred should have walked on the path when it was last wet--for example, if Fred died before the last heavy rain--then although the addition of the hypothesis would raise the antecedent probability of that evidence, the evidence cannot confirm the hypothesis: its zero initial probability cannot be raised.

This principle concerns C-inductive arguments, the conditions for the raising of the probability of a hypothesis by evidence. When we come to P-inductive arguments, to the question whether the evidence makes the hypothesis on balance more likely than not, the initial probability of the hypothesis is very significant. Even if the evidence raises the probability of the hypothesis in comparison with what it was otherwise, it may fail to make it more likely than not, because the initial probability of the hypothesis was low. This was illustrated in our discussion of miracles: because the initial probability of a miracle's occurring is so low, it would need very good evidence indeed to make it more likely than not that one had occurred. Even evidence which the miracle's occurrence would explain and make probable, but which would have been very unlikely to come about without the miracle, may be insufficient to overcome the antecedent improbability of the miracle so as to make it now more likely than not that it occurred. [16]

These can be taken as agreed principles of inductive reasoning; the problem is to apply them to the cosmological argument. Swinburne's first point is an adaptation of one of Leibniz's. Even if the universe has an infinite history in which each event is causally explained by the conjunction of laws and earlier events, that history as a whole is still unexplained. It might have been radically different--either with different laws or with the same laws but different specific situations all the way along--or there might have been nothing at all; no

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[16]Cf. Chapter, 1, above.

explanation has been given to show why neither of these possibilities was fulfilled. But, secondly, Swinburne suggests, the hypothesis that there is a god would to some extent explain the existence and the actual history of the universe. He is claiming that there is a kind of explanation, quite different from causal explanation, which is used when we explain something as the intentional action of a rational being; he calls this 'personal explanation'. On the assumption that there is a god such as traditional theism proclaims, it follows that he could make a physical universe if he chose, and that he might have had some reason to do so. Swinburne does not, indeed, say that the hypothesis (*h*) that there is such a god makes it very probable that (*e*) there should be such a universe as this:

However I do not claim that *P(e/h.k)* is especially high. *P(e/h.k)* measures how likely it is if there is a God that there will be a physical universe. The choice before God among

worlds to create includes a world where there is just God; a world where there are one or more finite non-physical objects (e.g. non-embodied spirits); a world consisting of a simple physical universe (e.g. just one round steel ball); and a world which is a complex physical universe. There are good reasons why God should make a complex physical universe. For such a universe can be beautiful, and that is good; and also it can be a theatre for finite agents to develop and make of it what they will . . . But I cannot see that God has overriding reason to make such a universe . . . Nor can I see that he has overriding reason to make or not to make any alternative world. (pp. 130 -1)

Swinburne is not saying, then, that this is obviously the best of all possible worlds; so *P(e/h&k)* is not high. On the other hand, he thinks that *P(e/k)* is still lower: a complex physical universe is 'very unlikely to come about but for God's agency'. Consequently we do have that *P(e/h&k)> P(e/k)*, and therefore that there is a good C-inductive argument from the existence of a complex physical universe to the existence of the god of traditional theism.

As we have seen, this will hold only if *P(h/k)*, the initial probability of the existence of such a god, is not zero. Let us grant this. Still, all that is being said is that the existence of a complex physical universe raises the likelihood of a god, makes it more probable than it would have been otherwise, that is, if there had been no such universe. But it is hard to see how this helps us. How can we even think about the antecedent probability that there should be a god, given that there was no such universe? Presumably we must think of an initial probability of there being a god, relative only to tautological information, and if we have rejected the ontological argument this will be pretty

low. But there is very little analogy with Fred's case, where it was, perhaps, apart from the footmarks, not very likely that he had walked along that path, but the discovery of the footmarks makes it much more probable. The trouble is that if the evidence, e, is to be that there is a complex physical universe, then the background knowledge or belief k must exclude this, and so will be able to include only logical and mathematical truths. What likelihood could the godhypothesis have had in relation to these?

We may be asking the wrong question, then, if we ask whether there is a good C-inductive argument from the sheer existence of a complex physical universe to the existence of a god. Swinburne's summary puts the issue differently:

There is quite a chance that if there is a God he will make something of the finitude and complexity of a universe. It is very unlikely that a universe would exist uncaused, but rather more likely that God would exist uncaused. The existence of the universe is strange and puzzling. It can be made comprehensible if we suppose that it is brought about by God. This supposition postulates a simpler beginning of explanation than does the supposition of an uncaused universe, and that is grounds for believing the former

supposition to be true. (pp. 131 -2)

We are now comparing the two rival hypotheses, one that there is no further cause or explanation of the complex physical universe, the other that there is a god who created it. That there is this universe is common ground, shared by the two hypotheses. Swinburne is arguing that in relation to our background knowledge--which can now include everything that we ordinarily know about ourselves and the world, though it must exclude any specifically religious beliefs--it is more likely that there should be an uncaused god who created the world than simply an uncaused universe--that is, a universe with internal causal relationships, but no further cause for its basic laws being as they are or for its being there at all. The analogy would be with the reasoning in which we postulate a common ancestor for a group of similar manuscripts, on the ground that their otherwise unexplained and therefore improbable resemblances can be explained as being due to their having been copied, directly or indirectly, from this ancestor; the surviving-manuscripts-pluscommon-ancestor hypothesis is more acceptable than a surviving-manuscripts-with-no-common-ancestor hypothesis.

But now the fact that the uncaused universe would, by definition, have no further explanation does not justify the claim that it is ,strange and puzzling' or 'very unlikely'. The mere fact that it is a

complex physical universe does not mean that it includes anything comparable to the resemblances between our manuscripts that would be surprising if not further explained. (The suggestion that some specific features of the universe are surprising in this way will be considered in our discussion of the argument from consciousness and the argument for design in Chapters 7 and 8.) On the other side, the hypothesis of divine creation is very unlikely. Although if there were a god with the traditional attributes and powers, he would be able and perhaps willing to create such a universe as this, we have to weigh in our scales the likelihood or unlikelihood *that* there is a god with these attributes and powers. And the key power, involved in Swinburne's use of 'personal explanation', is that of fulfilling intentions *directly*, without any physical or causal mediation, without materials or instruments. There is nothing in our background knowledge that makes it comprehensible, let alone likely, that anything should have such a power. All our knowledge of intention-fulfilment is of *embodied* intentions being fulfilled *indirectly* by way of bodily changes and movements which are *causally* related to the intended result, and where the ability thus to fulfil intentions itself has a *causal history*, either of evolutionary development or of learning or of both. Only by ignoring such key features do we get an analogue of the supposed divine action. But even apart from this I see no plausibility in the statement that it is 'rather more likely that God would exist uncaused'. Swinburne's backing for this is that 'the supposition that there is a God is an extremely simple supposition; the postulation of a God of infinite power, knowledge, and freedom is the postulation of the simplest kind of person which there could be', whereas 'There is a complexity, particularity, and finitude about the universe

which cries out for explanation' (p. <u>130</u>). (It is somewhat ironic that whereas God seemed to Anselm and others to be self-explanatory because he is something than which nothing greater can be conceived, he now seems to Swinburne to be relatively self-explanatory because he is simple.) But, first, the 'simplicity' achieved by taking everything to infinity is bought at the cost of asserting a whole series of real actual infinites, about which, as I mentioned, many thinkers, like al Ghazali above, have had doubts. Secondly, the particularity has not been removed, but only shelved: we should have to postulate particularities in God, to explain his choice of the particular universe he decided to create. And the very notion of a non-embodied spirit, let alone an infinite one, is intrinsically improbable in relation to our background knowledge, in that our experience reveals nothing of the sort.

Some of the themes we encountered in dealing with the older forms of cosmological argument recur here. Like Leibniz, Swinburne is looking for explanation and intelligibility. He does not, like Leibniz, demand a complete explanation, a sufficient reason for everything, or intelligibility through and through; but he is trying to minimize the unexplained part of our total picture. But without introducing the concept of something that contains its own sufficient reason, or whose essence includes existence-- unsatisfactory though, in the end, these notions are--he has nothing to support the claim that by adding a god to the world we *reduce* the unexplained element. Although his starting-point is like Leibniz's, his conclusion is more like that of the *kalam* argument, in taking creation by a person as the one satisfactory beginning of things. But when we look hard at it, such 'personal explanation' is not a satisfactory beginning at all, and certainly not one that is given any initial probability by the ordinary information that we have to take as our background knowledge.

The prospects for an inductive or probabilistic or hypothesis-confirming variant of the cosmological argument are, therefore, no better than those for a demonstrative one. However, our criticisms have been directed particularly against a *cosmological* argument in the sense explained at the beginning of this chapter, that is, one whose empirical datum is either the mere fact that there is a world at all or such very general facts about it as that there is change or motion or causation. These criticisms leave open the possibility that the hypothesis that there is a god may be confirmed by evidence of more detailed and specific kinds, for example by the existence of conscious beings, or the presence of what have been seen as 'marks of design'. This possibility will be examined in Chapters 7 and 8; but we shall turn first, in Chapter 6, to evidence of another sort.