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The Atheist Trap, or the Argument from Design and Scientific Falsification

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THE ATHEIST TRAP,

OR

THE ARGUMENT FROM DESIGN AND SCIENTIFIC FALSIFICATIONISM

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THESIS ABSTRACT

The argument from design is one of the most widely debated arguments for the existence of God. There has been much written in support of and in criticism of the argument's basic structure and conclusion. I shall attempt to clarify these positions, and to argue that the theistic account provides a more rationally justified explanation of human life on earth than the atheistic account.

Many philosophers think that any proof for the existence of God is mere "metaphysical speculation." Many times these philosophers use the criteria of scientific empiricism as the standard for an "acceptable" scientific theory, regardless of the subject matter.

I shall formulate the argument from design as an empirical scientific theory according to the school of scientific falsificationism as stated by Karl Popper.

The principal literature to be investigated in this study will be the most recent articles and texts which discuss relevant scientific data, and their philosophical implications for the argument from design.

The results of this investigation demonstrate that it is possible to formulate an argument for the existence of God which meets all of the criteria of the falsificationists school of scientific empiricism.

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INTRODUCTION

St. Paul in his letter to the Romans states, "For since the creation of the world God's invisible qualities - his eternal power and divine nature - have been clearly seen, being understood from what has been made, so that men are without excuse" (NIV. Romans 1:20). Is this religious dogma or scientific fact?

The argument from design, also referred to as the teleological argument, is one of the most widely debated arguments for the existence of God[1]. Much has been written in support of and in criticism of the argument's basic structure and conclusion. I shall attempt to clarify these positions, and to argue that the theistic account provides a more rationally justified explanation of natural order than the atheistic account.

I shall begin by discussing the classical statements of the argument from design. The classical statements which will be discussed are those by Plato, Thomas Aquinas, and William Paley. This will give us a firm foundation upon which to proceed.

I shall then discuss the critiques of the classical statements. The critiques of the classical statements of the argument from design which will be discussed are those by David Hume, Immanuel Kant, and Charles Darwin. This

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[1] For recent discussion in a public forum see Bryan Appleyard, "Science had better watch its language," which appeared in the Providence Journal Bulletin, April 15, 1993; Robert Wright, "Science, God and Man," which appeared in Time, December 28, 1992.

discussion will expose the possible weaknesses of the classical statements.

I then proceed to investigate the possibility of establishing the argument from design as a scientific theory. Finally, I shall assess how the scientific restatement of the argument from design responds to the critiques of the classical statements of the argument from design.

For the purposes of formulating the argument from design as a scientific theory, I shall adopt the criterion established by Karl Popper. Popper was the leading exponent of scientific falsificationism.[2] I argue that the argument from design can be stated in such a way that it fulfills Popper's criterion of falsification.

It is within the context of establishing the argument from design as a scientific theory that I hope to prove that the theistic account of instances of natural order is more reasonable than the atheistic account.

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[2] For a similar discussion regarding The Cosmologial Argument see Galen A. Johnson, "Harshorne's Argument Against Empirical Evidence For Necessary Existence: An Evaluation," Religious Studies. Vol. 13, pp. 175-187.

CHAPTER 1

THE CLASSICAL STATEMENTS

Plato

The earliest statement of the argument from design is found in Book X
of Plato's Laws. In the context of discussing possible penalties for those who
violate religious laws, the interlocutors, Cleinias and the Athenian Stranger,
raise the question of how the existence of the gods might be proven to
atheists.

It is agreed by both Cleinias and the Athenian that before punishment
under the law should be administered to these people, they have the right to
question the basis of these laws which they are supposed to have violated,
namely, the existence of the gods. Anticipating the questions of these people,
the Athenian represents them as saying,

> Gentlemen of Athens, of Sparta, and of Crete, you are quite right.
> Some of us are indeed absolute atheists, whereas others do believe in
> such gods as you describe. So we demand of you what you yourselves
> demanded of the laws, that before you resort to threats and bullying,
> you should try to convince us by argument and cogent proofs that gods
> do exist, and that they are in fact above being seduced by gifts into
> turning a blind eye to injustice. (Plato 1970, 885-886).

It is in response to this demand that we are given the first statement of
the argument from design. Cleinias' response to his potential situation as
expressed by the Athenian is that surely there is no difficulty in proving the
existence of the gods. When the Athenian asks Cleinias to explicate this proof,
Cleinias replies,

Well, just look at the earth and the sun and the stars and the universe in general; look at the wonderful procession of the seasons and its articulation into years and months! (Plato 1970, 886-887).

Here we see Plato arguing that the undeniable fact of the existence of order in the heavens and in the world obviously proves the existence of the gods. Plato continues his argument to conclude that all physical movements are finally dependent upon the motions of soul or mind and not due to either a natural mechanism or chance. Regarding the question of proving the existence of the gods, Plato concludes,

> Now consider all the stars and the moon and the years and months and all the seasons: what can we do except repeat the same story? A soul or souls - and perfectly virtuous souls at that - have been shown to be the cause of all these phenomena, and whether it is by their living presence in matter that they direct all the heavens or by some other means, we shall insist that these souls are gods. (Plato 1970, 899 - 900).

It is interesting to note here that Plato is employing the argument from design as a proof for the existence of the gods to counter a familiar atheistic argument.

This familiar atheistic argument is that all things have come into existence by either nature or chance. Plato stating this argument says,

> They maintain that fire, water, earth, and air owe their existence to nature and chance, and in no case to art, and that it is by means of these entirely inanimate substances that the secondary physical bodies - the earth, sun, moon, and stars - have been produced. These substances moved at random, each impelled by virtue of its own inherent properties, which depended on various suitable amalgamations of hot and cold, dry and wet, soft and hard, and all other haphazard combinations that inevitably resulted when the opposites were mixed. This is the process to which all the heavens and everything that is in them owe their birth, and consequent establishment of the four seasons led to the appearance of all plants and living creatures. The cause of all this, they say, was neither intelligent planning, nor a deity, nor art, but - as we've explained - nature and chance. (Plato 1970, 889-890).

For Plato, the world was unintelligible in terms of mechanical natural laws and chance. Order of the kind that was clearly observable in the heavens

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could only originate through mind or soul. Plato did not accept the idea that matter could be self-ordering or self-moving. The world was to be viewed as an organism or a work of art.

As we shall see, this type of atheistic argument is still very much alive today.

St. Thomas Aquinas

The argument from design was also utilized[3] by the medieval philosopher, Thomas Aquinas (1225-1274). In his works entitled Summa Theologica (1a, 2, 3) and Summa Contra Gentiles (1, 13), Aquinas offers his statement of the argument from design. These passages are relatively short and worth quoting in their entirety. In Summa Theologica, Aquinas says,

> 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 behavior 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 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" (Aquinas 1964, 17).

In Summa Contra Gentiles Aquinas says,

> Another proof, taken from the governance of things, is introduced by Damascene and mentioned by Averroes. Contrary and discordant elements, it runs, cannot always, or nearly always, work harmoniously together unless they be directed by something providing each and all with their tendencies to a definite end. Now in the universe we see things of diverse natures conspiring together in one scheme, not rarely or haphazardly, but approximately always or for the most part. There must be something, therefore, whose providence directs the universe (Aquinas 1956, 63).

Here we see that, according to Aquinas, some things, such as natural

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[3] See A. Kenny, The Five Ways.

bodies, act for an end despite the fact that these natural bodies have no knowledge or awareness. These different things co-operate in maintaining a stable order or system. It is not that these natural bodies intentionally act as human beings do with definite purposes in mind, but rather, that different kinds of things, such as earth and water, unconsciously co-operate in such a way that there is a stable order or system. F.C. Copleston, in his work entitled Aquinas says,

> And his argument is that this co-operation on the part of heterogeneous material things clearly points to the existence of an extrinsic intelligent author of this co-operation, who operates with an end in view. If Aquinas had lived in the days of the evolutionary hypothesis, he would doubtless have argued that this hypothesis supports rather than invalidates the conclusion of the argument. (Copleston 1963, 122).

Aquinas held that this co-operation is demonstrated in ordinary experience. It should also be noted that Aquinas avoids sweeping generalizations. He does not say that all natural bodies always co-operate in an established world order, but approximately or for the most part.

Aquinas has also framed this argument within the context of means end analysis. It is the observed means by which natural things realize certain ends. These means are activities of being which can only be explained in relation to an end not yet realized. Implied in this argument is the notion that means cannot be directed toward a specific end without an intelligent cause. Since we clearly observe inanimate objects directed toward specific ends, there must be an intelligence directing these objects.

There are two implications of this argument as stated. The first is that all activities of being do not completely capture the essence of their end individually, or severally taken as separate individual constituents, but only as part of a greater whole. The second is that "agere est propter finem," activity is for an end. If all activity is for an end, then the end of the activity

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can be viewed as he reason for the activity. Reasons for activity presuppose some sort of intelligence where the reason resides.

William Paley

Probably the best known statement of the argument of design was that put forth by William Paley (1743-1805) in his work entitled Natural Theology, or Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature published in 1802.[4] In the first chapter of this work, Paley argues from a now famous analogy referred to as "The Watch and the Watchmaker." Here Paley argues that just as we would infer an intelligent designer from our inspection of a watch accidentally found on the ground during a leisurely stroll, we are justified in inferring an intelligent designer from our inspection of the universe. As Paley says,

> In crossing a heath, suppose I pitch my foot against a stone, and were asked how the stone came to be there; I might possibly answer, that, for anything I knew to the contrary, it had lain there forever: nor would it perhaps be very easy to show the absurdity of this answer. But suppose I had found a watch upon the ground and it should be inquired how the watch happened to be in that place; I should hardly think of the answer which I had before given, that, for anything I knew, the watch might have been always there. Yet why should not this answer serve for the watch as well as for the stone? For this reason, and for no other, viz. that, when we come to inspect the watch, we perceive (what we could not discover in the stone) that its several parts are framed and put together for a purpose, e.g. that they are so formed and adjusted as to produce motion, and that motion so regulated as to point out the hour of the day; that, if the different parts had been differently shaped from what they are, or placed after any other manner, or in any other order, than that in which they are placed, either no motion at all would have been carried on in the machine, or none which would have answered the use that is now served by it (Paley 1856, 5).

Paley reasons that as the existence of order and purposefulness in a

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[4] For other discussion of Paley's argument see Richard Swinburn, The Existence of God, pp. 133-136; John Hick, Arguments for the Existence of God, pp. 2-7.

watch is proof of an intelligent designer, so the manifest order and purposefulness in the universe is proof of an intelligent designer of the universe. Paley says that this inference is inevitable and justified.

> This mechanism being observed, the inference, we think, is inevitable, that the watch must have had a maker; that there must have existed, at some time, and at some place or other, an artificer or artificers who formed it for the purpose which we find it actually to answer; who comprehended its construction, and designed its use (Paley 1956, 6).

Louis Pojman in his work entitled <u>Philosophy: The Quest For Truth,</u> summarizes Paley's formulation as follows:

1. Human artifacts are products of intelligent design
2. The universe resembles these human artifacts.
3. Therefore, (probably) the universe is a product of intelligent design.
4. But the universe is much greater than a human artifact.
5. Therefore, the intelligent designer of the universe is much greater than humans (Pojman 1992, 42).

At the end of Chapter 1, (Paley 1856, 6-8) Paley makes eight further assertions which he feels are justified. These assertions are:

(1) The fact that we have not actually seen the watch being made does not in itself deter the conclusion that it is in fact the result of some sort of intelligent design. This conclusion seems to be justified by the watch itself without further reference to anything.

(2) The watch's failure to function exactly as designed or our inability to determine all the correct functions of the individual parts of the watch does not provide compelling evidence that the watch is not the result of intelligent design.

(3) Our inability to determine the function of all the individual parts of the watch would still not cast doubt upon the inference that the watch had been made by a watchmaker.

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(4)   No one would accept as an adequate explanation for the existence of the watch, with its specific parts functioning for its determinate end, that it was the result of some possible combination of material forms simply because whatever one had found in place of the watch must have some material form. Here the explanation of the internal configuration of the watch is simply chance. The fact that all objects must possess some form does not adequately explain the existence of this particular form, especially in light of its ordered parts. Here it might be conjectured that Paley was responding to the criticisms of Hume published twenty-three years earlier in Hume's <u>Dialogues Concerning Natural Religion</u>. There is no direct evidence that Paley was directly familiar with Hume's work, but it would seem likely that he was aware of this criticism.

(5)   No one would accept as an answer for the existence of the watch the explanation that it was created by "a principle of order." Here Paley is referring to self-ordering matter which disposed the different parts of the watch into their present form and configuration. Again, Paley may be responding to Hume's criticism. As Paley says,

He never knew a watch made by the principle of order, nor can he even form to himself an idea of what is meant by a principle of order, distinct from the intelligence of the watchmaker (Paley 1856, 7).

(6)   Does not the fact that some sort of mechanism is demonstrable prove that in fact a designer exists, and not simply an imagination of a designer?

(7)   Attempting to explain the existence of the watch by means of

referring to the idea of "laws of metallic nature" or the like is based upon an incorrect understanding of the idea of "laws." All laws presuppose a law giver or agent. It is understood that any reference to laws implies that these laws were in fact created by an agent(s) for whatever ends these agent(s) were trying to accomplish. The expressions such as "the law of vegetable nature," or the law of nature" are colloquialisms and should not be misunderstood to refer to more than is proper.

(8) Finally, no one would be satisfied by being told that because we cannot understand everything and are not capable of comprehending the totality of things, we understand nothing at all about this matter with the watch. Clearly we know what we know and ignorance on other things does not diminish this.

At the beginning of Chapter 3, entitled "Application of the Argument," Paley summarizes his argument very eloquently:

> Every indication of contrivance, every manifestation of design, which exists in the watch, exists in the works of nature; with the difference, on the side of nature, of being greater and more, and that in a degree which exceeds all computation. I mean that the contrivances of nature surpass the contrivances of art, in the complexity, subtlety, and curiosity of the mechanism; and still more, if possible, do they go beyond them in number and variety; yet in a multitude of cases, are not less evidently mechanical, not less evidently contrivances, not less evidently accommodated to their end, or suited to their office, than are the most perfected productions of human ingenuity...(Paley 1856, 13).

Two other notable works which discuss the argument from design in great depth are the "Boyle Lectures" which were a series of lectures on Christian apologetics founded by a bequest from Robert Boyle (1627-1691), and the "Bridgewater Treatises on the Power, Wisdom, and Goodness of God as Manifest in the Creation" which includes 8 volumes written between 1833-1840.

In the nineteenth and early twentieth centuries, the argument from design had come under ever increasing scrutiny, due in large part to a renewed interest in the criticisms of David Hume, Immanuel Kant, and Charles Darwin. I shall discuss these criticisms next.

CHAPTER 2

CRITICISM OF THE ARGUMENT FROM DESIGN

Introduction

In this section, I shall discuss the three most influential criticisms of the argument from design. These three criticisms are those developed by David Hume (1711-1776), Immanuel Kant (1724-1804), and Charles Darwin (1809-1882).

Hume's criticism is from his famous Dialogues Concerning Natural Religion, which was published posthumously in 1779. Immanuel Kant's Critique of Pure Reason, written in 1781, provides us with the second critique of the argument from design. Specifically Kant discusses the impossibility of such a proof for the existence of God in the second division, book 2, chapter 3, section 6 entitled "The Impossibility of the Physico-theological Proof."

The final criticism of the argument from design which will be discussed is found in Charles Darwin's book entitled The Origin of the Species. In this work Darwin's theory of evolution provides the basis for the criticism of the design argument.

It is only by careful study of the criticisms of the argument from design that one can understand the weaknesses of the argument. Do these criticisms uncover an inherent weakness in the structure and claim of the proof for God's existence from the design of the universe, or are these weaknesses simply a result of particular formulations of an otherwise sound argument?

The Criticism of David Hume

In his work entitled, <u>Dialogues Concerning Natural Religion,</u> the Scottish empiricist and skeptic David Hume states what has been referred to as the classical critique of the argument from design.[5]

Hume wrote this work in dialogue form, modeled after Cicero's <u>De Natura Deorum.</u> It has been speculated that Hume employed this technique to conceal his true personal attitudes. As a respected member of the distinguished Edinburgh circle, Hume's devastating criticism of the most popular argument for the existence of God would have had grave effects upon his life style. Hume, in fact, finished this work at least fifteen years earlier, but was convinced by his close friends not to publish it then. They reasoned that even though he tried to mask his true opinion behind the characters in the dialogue, the repercussions would be most unpleasant. The <u>Dialogues</u> were published posthumously in 1779 by his nephew.

The <u>Dialogues</u> have three characters: Cleanthes, who represents the natural theological position; Demea, who represents the orthodox position; and Philo, who represents the skeptical position. It is the character of Philo who, most scholars believe, voices Hume's true attitude on this subject.

Hume's first criticism is that the comparison between the universe and human artifacts is unjustified. The similarity between these is not sufficient for the conclusion which the argument from design attempts to draw. Hume says,

> But whenever you depart, in the least, from the similarity of the cases, you diminish proportionably the evidence; and may at last bring to a very weak analogy, which is confessedly liable to error and uncertainty (Hume 1947, 144).

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[5] See Alvin Plantinga, <u>God and Other Minds,</u> pp. 95-111; J.P. Moreland, <u>Scaling the Secular City,</u> pp. 62-67.

Although this is a direct criticism of the argument from design, it is a criticism which can be leveled at any form of argument which relies upon analogy as a basic proof. Analogies by their nature are not perfect. There are always some elements from each of the items being compared that do not correspond exactly to one another. This is the reason why the analogy is being used. Unfortunately, analogies are never strong enough as the basis for a proof.

Just as Paley compared the universe to a watch, Hume's character Philo compares the universe to a house. Although there are indeed some similarities, Philo concludes by saying,

> The dissimilitude is so striking that the utmost you can here pretend to is a guess, a conjecture, a presumption concerning a similar cause; and how that pretension will be received in the world, I leave you to consider (Hume 1947, 144).

Hume here is referring to the difference in <u>species</u> between Cleanthes' analogy of a house and the universe. Hume correctly points out that when we repeatedly experience a species of effect to proceed from a species of cause, we conclude "with the greatest certainty" (Hume p. 147) that our inference is justified. But the justification for the inference is based upon the experience of exactly the same kind of cause and effect relationships. I am indeed justified in concluding that an architect or builder designed a certain house that I might see precisely because I have experienced all previous houses to have been designed by an architect or builder. The cause and the effect in these instances are the same. The cause is the architect or builder and the effect is a house. This is not the case with the analogy between a house and the universe. In this instance, both the causes, God and human architects different. Philo says,

> Unless the cases be exactly similar, they repose no perfect confidence

in applying their past observation to any particular phenomenon. Every alteration of circumstances occasions a doubt concerning the event; and it requires new experiments to prove certainly that the new circumstances are of no moment or importance (Hume 1947, 147).

Hume also argues that it is the principle of repetition which justifies our belief in similar effects from similar causes within a species. Therefore, the more we experience this relationship, the more justified we will be in our belief. Philo says,

> When two species of objects have always been observed to be conjoined together, I can infer, by custom, the existence of one wherever I see the existence of the other; and this I call an argument from experience (Hume 1947, 149).

Since it is by repetition that the inference is justified, one would have to experience many universes in order to be in a position to make a reasonable conjecture about the origin of our universe. This argument is reflected in Philo's words,

> But how this argument can have place where the objects, as in the present case, are single, individual, without parallel or specific resemblance, may be difficult to explain. And will any man tell me with serious countenance that an orderly universe must arise from some thought and art like human because we have experience of it? To ascertain this reasoning it were requisite that we had experiences of the origin of worlds; and it is not sufficient, surely, that we have seen ships and cities arise from human art and contrivance (Hume 1947, 149).

Another of Hume's criticisms of the teleological argument is the traditional argument against the inability of the inductive method to ascertain certain or necessary knowledge about the world. Hume argues that it is an illusion to think that investigation of any specific part of a larger whole is a sufficient foundation for judgements about the whole, especially the whole's origin. Hume says,

> But allowing that we were to take the operations of one part of nature upon another for the foundation of our judgment concerning the origin of the whole (which never can be admitted), yet why select so minute, so weak, so bounded a principle as the reason and design of animals is

found to be upon this planet? What peculiar privilege has this little agitation of the brain we call "thought", that we must thus make it the model of the whole universe? Our partiality in our own favor does indeed present it on all occasions: But sound philosophy ought carefully to guard against so natural an illusion (Hume 1947, 148).

We also see Hume point out that because we are automatically prejudiced to think that human reason is the perfect model of how the universe works, we should be on our guard against this.

According to Hume, if we are to conjecture anything about the whole of the universe from the small part that we happen to inhabit, we should think the whole is extremely diverse in composition and not simply similar to a copy of the earth. Hume says,

> When nature has so extremely diversified her manner of operation in this small globe, can we imagine that she incessantly copies herself throughout so immense a universe?...Nature, we find, even from our limited experience, possesses an infinite number of springs and principles which incessantly discover themselves on every change of her position and situation (Hume 1947, 148).

Hume also points out that even if one were to grant the argument from design its premises which state that the universe is analogous to human artifacts, one could not logically conclude that the designer of the universe had any claim to infinite qualities because the effect is not sufficient to justify such a description of the cause.

> First, by this method of reasoning you renounce all claim to infinity in any of the attributes of the Deity. For, as the cause ought to be proportioned to the effect, and the effect, so far as it falls under our cognization, is not infinite; what pretensions have we, upon your suppositions, to ascribe that attribute to the divine Being? You will still insist, that by removing him so much from all similarity to human creatures, we give in to the most arbitrary hypothesis, and at the same time weaken all proofs of his existence (Hume 1947, 166).

A further criticism made by Hume is that again, even if the premises stated by the argument from design are granted, the desired conclusion of only one designer is no more probable than the conclusion that the universe

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was designed by several designers. Are not many human artifacts the result of the efforts of several individuals? As Philo says,

> And what shadow of an argument can you produce from your hypothesis to prove the unity of the Deity? A great number of men join in building a house or ship, in rearing a city, in framing a commonwealth; why may not several deities combine in contriving and framing a world? (Hume 1947, 167).

But it is not Hume's intention to grant the proponents of the argument from design their stated premises. Hume can grant that our part of the universe does exhibit instances of order, as the theist says, but the larger problem which must be addressed by the proponent of this argument is how to account for the disorder and the "many inexplicable difficulties in the works of nature" (Hume, 167). Alvin Plantinga, in his work entitled God and Other Minds, argues that in this criticism Hume is referring to the problem of evil in the world and the inability of the argument from design to support empirically premises which logically conclude the omniscient, omnipotent, and omnibenevolent attributes of God (Plantinga, 108-111). Hume acknowledges that if we argue on a priori grounds, (ontological argument) to these further attributes of God, then these limitations can be accounted for.

Finally, Hume does not think it is enough for the proponents of the argument from design to demonstrate instances of order as proof for their conclusions. Rather, as John Hick states in his work entitled Arguments for the Existence of God,

> In other words, it is not sufficient, as warrant for an inference from the world to God, to show that the world is an orderly and self-sustaining system. It must also be shown that this order could not have come about except by divine activity (Hick 1971, 10).

According to Hume, this is exactly what cannot be done. He considers such an attempt to be begging the question because perhaps matter is self-ordering. Hume says:

To say that all this order in animals and vegetables proceeds ultimately from design is begging the question; nor can that great point be ascertained otherwise than by proving a priori, both that order is, from its nature, inseparably attached to thought, and that it can never, of itself, or from original unknown principle, belong to matter (Hume 1947, 179).

A further conjecture that Hume voices is one which will later be echoed by Nietzsche's idea of recurrence. Given a finite amount of matter and an infinite amount of time, all possible combinations of matter will not only occur as simply the result of probability, but occur an infinite number of times.

Instead of supposing matter infinite, as Epicurus did; let us suppose it finite. A finite number of particles is only susceptible of finite transpositions: And it must happen, in an eternal duration, that every possible order or position must be tried an infinite number of times. This world, therefore, with all its events, even the most minute, has before been produced and destroyed, and will again be produced and destroyed, without any bounds and limitations. No one, who has a conception of the powers of infinite, in comparison of finite, will ever scruple this determination (Hume 1947, 182).

The Criticism of Immanuel Kant.

Immanuel Kant discusses his critique of the teleological argument in his work The Critique of Pure Reason in the section entitled "The Impossibility of the Physico-Theological Proof."

Kant is attempting to determine if it is possible that

[a] determinate experience, the experience of the things of the present world, and the constitution and order of these, does not provide the basis of a proof which may help us to attain to an assured conviction of a supreme being (Kant 1965, 518).

Kant does not think it possible that the transcendental (universal and necessary) idea of a necessary and all-sufficient original being can be derived from a pure empirical investigation. According to Kant, the idea is so overwhelmingly great that nothing in our immediate experience can ever supply the necessary link to such a concept.

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Kant asks whether, if we try to derive the concept of this being by postulating that this being is itself part of the world, would it not have to be contingent upon other beings as all beings in this world are. We do not have any experience in this world of any other type of beings. Therefore, if we hold that this supreme being exists in this great continuum of being, then experience shows that contingency must be part of its nature. If we try to postulate that this supreme being is not part of this world, but separate from it, what determinate experience can we look to for evidence in favor of this? As Kant says,

> For all laws governing the transition from effects to causes, all synthesis and extension of our knowledge, refer to nothing but possible experience, and therefore solely to objects of the sensible world, and apart from them can have no meaning whatsoever (Kant 1956, 519).

Kant summarizes the chief points of the physico-theological proof as follows;

(1) Everywhere in the world we see evidence of order in accordance with a determinate purpose, carried out with great wisdom. The world displays great variety of content and is unlimited in extent.

(2) The purposive order is not intrinsic to the things of the world but only belongs to them contingently, having this purposive order imparted to them by an ordering rational principle in conformity with underlying ideas.

(3) Therefore there exists an intelligent cause that works through freedom.

(4) The unity of this cause may be inferred from the unity of the reciprocal relations existing between the parts of the world as members of an artfully arranged structure inferred with

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certainty in so far as our observation suffices for its verification, and beyond these limits with probability, in accordance with principles of analogy (Kant 1956, 512).

Kant concludes that for the proponents of the argument the main inference from the unity of the world to that of an intelligent designer is,

> [inferred] with certainty in so far as our observation suffices for its verification, and beyond these limits with probability, in accordance with the principle of analogy (Kant 1956, 521).

Kant points out that the most this argument can hope to prove is the contingency of the form of the world, not the contingency of the substance of the world. In other words, the determinate form that any particular substance of this world happens to possess at any one time may indeed be contingent upon some prior determination the substance happened to possess. But, to prove that the matter of the world was contingent we would have to,

> demonstrate that the things in the world would not themselves be capable of such order and harmony, in accordance with universal laws, if they were not in their substance the product of supreme wisdom (Kant 1956, 522).

According to Kant , this would require a different basis of proof than that provided from analogy with human art which he thinks the teleological argument employs. Therefore, the most this argument can prove is that there is,

> an architect of the world who is always very much hampered by the adaptability of the material in which he works, not a creator of the world to whose idea everything is subject (Kant 1956, 522).

Kant thinks that to prove the contingency of matter one would have to employ a transcendental argument by means of concepts which are above and beyond anything empirical to which the teleological argument is restricted to. One might argue that the cosmological argument is able to prove the contingency of matter.

Kant sees the inference from the determinate experiences of order and purposiveness of nature to that of an omnipotent, necessary and all-sufficient being as employing concepts advancing beyond empirical grounds which the teleological argument deals. As he says,

> Now no one, I trust, will be so bold as to profess that he comprehends the relation of the magnitude of the world as he has observed it (alike as regards both extent and content) to omnipotence, of the world order to supreme wisdom, of the world unity to the absolute unity of its Author, etc. Physico-theology is therefore unable to give any determinate concept of the supreme cause of the world, and cannot therefore serve as the foundation of a theology which is itself in turn to form the basis of religion (Kant 1956, 523).

Kant states that this proof always deserves respect because it is the oldest, clearest and most appealing proof for the existence of God that mankind has reasoned. Although he holds this proof in high regard, he thinks that it is impossible to prove the existence of God on empirical grounds alone. In order to achieve what the theist wants, Kant says that one must ultimately employ means beyond those available to a strictly empirical proof. He says,

> The physico-theological argument can indeed lead us to the point of admiring the greatness, wisdom, power, etc., of the Author of the world, but can take us no further. Accordingly, we then abandon the argument from empirical grounds of proof, and fall back upon the contingency which, in the first steps of the argument, we had inferred from order and purposiveness of the world. With this contingency as our sole premiss (sic), we then advance, by means of transcendental concepts alone, to the existence of an absolutely necessary being, and (as a final step) from the concept of the absolute necessity of the first cause to the completely determinate or determinable concept of that necessary being, namely, to the concept of an all-embracing reality (Kant 1956, 523).

Charles Darwin and the Theory of Evolution

In the latter half of the 19th century, the argument from design came

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under increasing attack from the proponents of the theory of evolution.[6] Although the idea of evolution did not originate with Darwin, there having been evolutionary theories since early Indian and Greek times, Darwin was the first to present a clear proof for the explanation of how evolution actually worked. According to Darwin's doctrine of natural selection, the great variation in and among species type is not due to some act of special creation or supernatural intervention, but by the generational descent of modified species better adapted to changing environmental conditions. As species die off, the more suitably adapted species reproduce and survive. In his work entitled, The Origin of Species, Darwin says,

> Owing to this struggle for life, any variation, however slight and from whatever cause proceeding, if it be in any degree profitable to an individual of any species, in its infinitely complex relations to other organic beings and to external nature, will tend to the preservation of that individual, and will generally be inherited by its offspring. (Darwin 1988, 114).

Inspired by the five - year voyage on the Beagle (1831-1836), Darwin was convinced that natural selection was the only explanation for the variation in species. In conjunction with sexual selection and the inheritance of acquired characteristics, Darwin's doctrine of natural selection was able to account for the transmission of the required survival characteristic through generations. This was a superior explanation to those which tried to account for the mutation by means of spontaneous changes in the adult organism.

Although the laws of inheritance were for the most part unknown in Darwin's time, there were a number of phenomena of inheritance that were known and Darwin used these as evidence for natural selection. It is a fact that although progeny resemble their parents, they are slightly varied in some

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[6] See Kenneth V. Nelson, "Evolution and the Argument From Design," Religious Studies. Vol. 14, pp. 423-443.

degree. Darwin held that some of these variations are better survival adaptations.

According to Darwin, nature was the product of blind chance and a blind struggle for survival. Man was a mutation, albeit intelligent, which struggled with other organisms for survival. It was the operation of natural selection upon random variation which launched the attacks upon the argument from design. These attacks are probably best summed up by Richard Dawkins in his book entitled The Blind Watchmaker when he says,

> All appearances to the contrary, the only watchmaker in nature is the blind forces of physics, albeit deployed in a very special way. A true watchmaker has foresight: he designs his cogs and springs, and plans their interconnections, with a future purpose in his mind's eye. Natural selection, the blind, unconscious, automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of all life, has no purpose in mind. It has no mind and no mind's eye. It does not plan for the future. It has no vision, no foresight, no sight at all. If it can be said to play the role of watchmaker, in nature, it is the blind watchmaker (Dawkins 1986, 6).

Natural selection rules out design in the following way: variations in offspring are either useful or not useful. (Darwin did say that evolution is not necessarily progressive). The only reason for the survival of one variation and the individual possessing it is that the alternative variation and individual possessing it are eliminated by the struggle for survival of the fittest. There is no reason beyond this brute fact of nature.

In his book entitled Charles Darwin and the Problem of Creation, Neal Gillespie claims that it is generally agreed that Darwin's doctrine of natural selection effectively demolished William Paley's classical design argument for the existence of God. He says,

> By showing how blind and gradual adaption could counterfeit the apparently purposeful design that Paley, the Bridgewater writers, and others had seen in the contrivances of nature, Darwin deprived their argument of the analogical inference that the evident purpose to be seen

in the contrivances by which means and ends were related in nature was necessarily a function of mind (Gillespie 1979, 83-84).

Further evidence that the "contrivances" are not the result of design is the fact that not all variations promoted survival. Most mutations are harmful and cause death to their possessors. Unknown to Darwin, the ultimate source of genetic mutation is DNA, which is the genetic material. Due to its structure, the DNA molecule is intrinsically vulnerable. Spontaneous changes occur frequently and are considered to be random in that these mutations do not necessarily serve the animal's needs. Mary Maxwell, in her book entitled Human Evolution: A Philosophical Anthropology, makes an interesting point when she says that Darwin's case against teleology is strengthened when one consults the actual historical record which she thinks is merely the outcome of immense series of chances. She says,

> ...we should see it against a whole inventory of other possible histories which could very well have taken place instead. I believe that part of the reason why we assume that there is a design in Nature is that we see only the final results, for example the aerodynamic perfection of the hummingbird, as mentioned earlier. But in fact evolution is messy. There were many blind alleys in phylogenetic history; indeed, the vast majority of species which evolved over time (some say 99 per cent) have become extinct. Furthermore, even the genes we carry today do not all seem to be used; it is not known what their function is (Maxwell 1970, 41).

The argument from evolution which is used against the argument from design is based upon the argument that the apparent design one sees in nature is really the result of random variations which spontaneously occur in nature. The variations which continue to exist are simply those which are more adapted to the ever changing environment. The proponents of this argument point to natural history as evidence.

CHAPTER 3

THE TELEOLOGICAL ARGUMENT REVISITED

Introduction

Many philosophers think that any argument for the existence of God is "mere metaphysical speculation." Many times these philosophers use the criteria of scientific empiricism as the standard for an "acceptable" scientific theory, regardless of the subject matter. While acknowledging Kuhn's work, The Structure of Scientific Revolutions, and the insights it gives us regarding how the nature of scientific theories and paradigms change, it is still appropriate to ask whether any argument for the existence of God can be formulated in such a way so as to fulfill the currently acceptable criteria of scientific empiricism. I shall explore the possibility of formulating the argument from design as an empirical scientific theory.

There are currently several schools of thought regarding the criteria of scientific empiricism.[7] Rudolf Carnap argued in Philosophical Foundations of Physics that scientific empiricism should proceed according to verificationists methodology (Chapter 2). Imre Lakatos in his work entitled Criticism and the Growth of Knowledge discusses several schools of scientific methodology including conventionalism, sophisticated methodological falsificationism, and justificationism (Sect. 1, 2, and 3 of "Falsification and Methodology of

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[7] For an anthology on this subject see the essays included in Janet A. Kourany, Scientific Knowledge, Part 3, "The Validation of Scientific Knowledge," pp. 112-227.

Scientific Research Programs").

One major school of thought regarding the criteria of scientific empiricism is that of falsificationism. Karl Popper was one of the leading exponents of falsificationism, and presented and defended that position in his works entitled <u>Science: Conjectures and Refutation</u> and <u>The Logic of Scientific Discovery</u>. For the purposes of this paper, I will adopt Popper's criteria of falsification.

Revised Teleological Argument

I shall consider a form of the argument from design which infers the existence of God from our experience of instances of natural order. I shall discuss the notion of natural order in greater detail later in this paper. I shall not count as instances of natural order those patterns which appear randomly in nature from time to time.

Consider the following formulation of the argument from design in <u>modus ponens</u> argument form:

(1)   If there are instances of natural order (NO), then there is intelligent design of these instances of natural order (D).

(2)   There are instances of natural order (NO).

(3)   Therefore, (by modus ponens) there is intelligent design of these instances of natural order (D).

The acceptance of the truth of the conclusion that there is intelligent design depends upon the strength of the evidence for the antecedent-consequent relation in premise (1) between natural order (NO) and the existence of a designer (D). The evidence for the truth of the antecedent, required for premise (2), is provided in section 3.4 and I shall

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argue in section 3.6 for the acceptance of the truth of the antecedent-consequent relation.

The Scientific Criterion

Recall Popper's method of empirical falsification. According to Popper, for a claim to qualify as empirical, a minimal requirement is that there be some evidence from experience which would indicate the claim to be false. Popper writes in The Logic of Scientific Discovery,

> But I shall admit a system as empirical or scientific only if it is capable of being tested by experience. These considerations suggest that not the verifiability but the falsifiability of a system is to be taken as a criteria of demarcation. In other words: I shall not require of a scientific system that it shall be capable of being singled out, once and for all, in a positive sense; but I shall require that its logical form shall be such that it can be singled out, by means of empirical tests, in a negative sense: it must be possible for an empirical scientific system to be refuted by experience. (Popper 1959, 40-41).

It is important to point out that Popper argued that what differentiated empirical science from pseudo-science was that the "objectivity" of scientific statements lay in the fact that they can be inter-subjectively tested. Popper says,

> Kant was perhaps the first to realize that the objectivity of scientific statements is closely connected with the construction of theories - with the use of hypotheses and universal statements. Only when certain events recur in accordance with rules or regularities, as in the case with repeatable experiments, can our observations be tested - in principle - by anyone. We do not take even our own observations quite seriously, or accept them as scientific observations, until we have repeated and tested them. Only by such repetitions can we convince ourselves that we are not dealing with a mere isolated "coincidence", but with events which, on account of their regularity and reproducibility, are in principle inter-subjectively testable (Popper 1959, 45).

It is clear that Popper defines an empirical test as a repeatable experiment under controlled conditions. The procedure is deductive. Singular statements, known as predictions, are deduced from the general theory and

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are then tested. As Popper says,

> Next we seek a decision as regards these (and other) derived
> statements by comparing them with the results of practical applications
> and experiments. If this decision is positive, that is, if the singular
> conclusions turn out to be accepted, or verified, then the theory has,
> for the time being, passed its test: we have no reasons to discard it.
> But if the decision is negative, or in other words, if the conclusions
> have been falsified, then their falsification also falsifies the theory from
> which they were logically deduced (Popper 1959, 33).

Although a theist would argue that the derived statements asserting

instances of natural order fulfill this criterion, she might also object to the

narrow and somewhat arbitrary nature of this criterion. Thomas Kuhn

recognized this problem as well, but held that it was an inevitable condition

for the existence of science. In The Structure of Scientific Revolutions he

says,

> Ought we to conclude from the frequency with which such instrumental
> commitments prove misleading that science should abandon standard
> tests and standard instruments? Paradigm procedures and application
> are as necessary to science as paradigm laws and theories, and they
> have the same effects. Inevitably they restrict the phenomenological
> field assessable for scientific investigation at any given time (Kuhn
> 1970, 60).

Popper argued that empirical strict universal statements are falsifiable

and cannot be verified, and empirical strict existential statements are

verifiable and are not falsifiable.[8] Again Popper writes,

> Strict or pure statements, whether universal or existential, are not
> limited to space and time. They do not refer to an individual,
> restricted, spatio-temporal region. This is the reason why strict
> existential statements are not falsifiable. We cannot search the whole
> world in order to establish that something does not exist, has never
> existed, and will never exist. It is for precisely the same reason that
> strict universal statements are not verifiable. Again, we cannot search
> the whole world in order to make sure that nothing exists which the law
> forbids. Nevertheless, both kinds of strict statements, strictly

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[8] For further information on the formalization of universal and existential
statements and logical derivations see Merrie Bergmann, James Moor and Jack
Nelson, The Logic Book, "Predicate Logic: Symbolization and Syntax," pp.
233-310.

existential and strictly universal, are in principle empirically decidable; each, however, in one way only: they are unilaterally decidable. Whenever it is found that something exists here or there, a strictly existential statement may be verified, or a universal one falsified (Popper 1959, 70).

Popper argued that the only "acceptable" method for scientific empiricism to employ is that of <u>modus tollens</u> (denying the consequent) argument form. Popper says,

Consequently it is possible by means of purely deductive inferences (with the help of the <u>modus tollens</u> of classical logic) to argue from the truth of singular statements to the falsity of universal statements. Such an argument to the falsity of universal statements is the only strictly deductive kind of inference that proceeds, as it were, in the 'inductive direction'; that is, from singular to universal statements (Popper 1963, 41).

In this way, Popper tried to avoid the problem of induction which occurs when scientists employ the <u>modus ponens</u> form and commit the fallacy of affirming the consequent.

Modern analysis of the problem of induction begins with Hume and his celebrated analysis of causation in his work entitled <u>Enquiry Concerning the Human Understanding</u> (Sec 5, Part 1). The problem of induction is that it is impossible to derive a universal statement from any number of existential statements. That is, no amount of specifically confirming instances can verify a universal law. For example, P (universal law) cannot be experimentally verified by particular instances of Q (P holding). The fallacy is shown as follows:

(4)   If P (universal law), then Q (particular instance).

(5)   Q (particular instance of P holding).

(6)   Therefore, P (universal law).

Thus Popper says in <u>Conjectures and Refutations</u>, "Every genuine test of a theory is an attempt to falsify it, or to refute it" (Popper 1963, 63). In

other words, only one instance of a weight not falling when dropped from a tower disconfirms the universal law of gravity, while no number of instances of a weight actually falling from a tower when dropped can confirm the universal law of gravity. Popper does allow for corroboration of universal laws based upon confirming instances.

The argument from design as stated fulfills Popper's falsification criterion. All experiences of natural order may be taken as falsification of the negative hypothesis that a designer does not exist. In this case, the <u>modus ponens</u> argument may be translated via the rule of replacement known as transposition[9] into the <u>modus tollens</u> form:

(7)   If there is not intelligent design (-D), then there are no instances of natural order (-NA).

(8)   There are instances of natural order (NA).

(9)   Therefore, (by modus tollens), there is intelligent design (D).

The experience we have of instances of natural order falsifies God's non-existence.

Instances of Natural Order

The term "natural order" refers to instances in nature of repeating patterns. These repeating patterns exhibit uniformity, symmetry and predictability.[10] It is precisely because these instances of natural order are predictable and repeating that the theist argues they fulfill Popper's criterion of inter-subjectivity and can be verified.

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[9] See Bergmann et al., <u>The Logic Book</u>, p. 189.

[10] See Moreland, <u>Scaling the Secular City</u>, p. 43-56; Swinburne, "The Argument From Design," <u>Philosophy</u>, Vol 43, 1968, pp. 199-212.

I would like to discuss three types of natural order which are evident in this world. The three types are spatial order, temporal order, and informational order.

Spatial Order

I shall refer to instances of spatial order as instances of co-presence and distinguish co-presence from co-incidence by repetition. Co-presence is characterized by the repeating arrangement of a certain structure. I shall discuss the instances of atomic co-presence and anatomical co-presence.

The simplest and most striking example of co-present order is that of the atom. Every electron that revolves around its nucleus does not revolve at just any distance from the nucleus. These orbits or shells have specific energy levels and can only contain a certain number of electrons. When any atom has more electrons than a specific shell can hold, the additional electrons begin to fill up the next shell. The atomic orbits of all electrons for each of the specific elements are identically spatially ordered. The electronic structure of even the most complex atoms can be viewed as a succession of filled levels increasing in energy, with the outermost electrons primarily responsible for the chemical properties of the element. Niels Bohr won the Nobel Prize in 1922 for this discovery. One of the basic ideas of quantum theory and quantum mechanics is that as these electrons jump from one shell or orbit to the next they move in discrete jumps exhibiting only a certain specific amount of energy. While studying blackbody radiation in 1900, Max Planck discovered that energy is absorbed and emitted in specific amounts. He called these amounts "quanta." In other words, these jumps from different orbits are not gradual but discrete. There is no in between position. The periodic table of

elements is based upon this spatial order.[11]

I distinguish the spatial order (co-presence) present in atomic structure from mere co-incidence by appeal to the universality of the structure. If this structure occurred only sparingly or at random, then there might be an argument for referring to these incidences as coincidences. But, this is not an acceptable explanation of the atomic structure because it is an identically repeated pattern for each specific element.

Another instance of natural spatial order is that of the anatomical structure of animals and plants. The philosophers of the eighteenth century almost exclusively discussed this instance of co-presence. William Paley, in his work entitled Natural Theology, discussed the details of the anatomical structure of the eyes and ears and marveled at the minute precision which yielded high efficiency of operation.

It is possible to formulate an argument from the instance of anatomical order which is immune to Darwin's criticisms.[12] Evolution can only occur given special natural laws. These laws include the chemical laws which specify how under certain conditions organic molecules combine, and subsequently how these combine to make organisms. There are also biological laws of evolution which govern offspring and the transference of those characteristics which are advantageous for survival. Those organisms that survive will be so structured that they will be able to more easily adapt to the changing environment than competitors. These organisms will exhibit greater anatomical spatial order than their competitors. Under these circumstances, nature

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[11] See Raymond A. Servay, Modern Physics, "Atomic Structure," pp. 216-241.

[12] See Swinburne, The Existence of God, pp. 134-136.

guarantees that these instances of spatial order cannot be co-incidental.

Temporal Order

The instances of natural temporal order in our world are even more obvious than those of spatial order. These instances of order refer to the simple patterns of non-conscious behavior of physical objects. The regularity of day and night, the changes of the seasons, the succession of growth in plants and animals are all examples of temporal order. Any example of a physical object acting in accordance with the laws of nature and the laws of physics, such as the laws of gravity and motion, provide experimentally testable evidence of temporal order. Richard Swinburne in his article entitled "The Argument from Design," says "Almost all regularities of succession are due to the normal operation of scientific laws" (Swinburne, 200). One need only look up in the sky to see examples of the predictable, uniform temporal paths that the heavenly bodies follow. The fact that we are able to predict any natural occurrence is evidence of temporal order. The universe could have naturally been chaotic.

Kant's criticism notwithstanding, the idea that temporal order is the result of human beings imposing their order on an otherwise chaotic world can be countered by arguing that since human beings can discriminate between order and disorder, this discrimination must be in response to something independent of human beings. The argument from design holds that the temporal order in the world is independent of human being's recognition of it. As such, temporal order has been, is, and will continue to be regardless of any human being present to observe it. Temporal order is a basic feature of the structure universe.

There has been much discussion of the many interpretations and definitions of the anthropic principle.[13] In 1974, Brandon Carter coined the phrase in his book entitled Confrontation of Cosmological Theories with Observations (Carter 1974). Essentially the anthropic principle refers to the self-evident and trivial fact that human beings can observe only a universe orderly enough to maintain human life. It is not my point to argue the validity of this principle. I would only like to provide a response to the potential objections which might be raised by this principle. The mere fact that order is a necessary condition for human beings to observe the universe does not dismiss the existence of order as less extraordinary and less in need of explanation. True, there would need to be a certain amount of order for human being to exist, but there could be chaos outside the earth, so long as the planet earth was unaffected by it. As Richard Swinburne says in his book entitled The Existence of God,

> 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... The Teleologist's starting point is not that we perceive order rather than disorder, but that order rather than disorder is there. (Swinburne 1969, 136).

Informational Order

The final instance of natural order in our world that I would like to consider is that which I refer to as informational order or order exemplified as information. Donald M. MacKay[14] in his article entitled "The Wider Scope of

[13] See Ian Hacking, "The Inverse Gambler's Fallacy: the Argument From Design. The Anthropic Principle to Wheeler Universe"; John Leslie, "Observership in Cosmology: The Anthropic Principle"; Joseph M. Zycinski, "The Anthropic Principle and Teleological Interpretations of Nature."

[14] See J.P. Moreland, Scaling the Secular City, pp. 51-52.

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Information Theory" said,

> Information theory, in the more general sense it has developed over the past forty years, is concerned with all processes in which the spatio-temporal form of one set of objects or events (at A) determines the form of another set (at B) without explicit regard for the energetics involved. These are situations in which we say that information flows from A to B. In the operational context, then, we can define information as that which determines form, in much the same way as force is defined in physics as that which produces acceleration (Machlup 1983, 486).

Both energy and information are operationally defined by what they do. Mackay differentiates the two as follows,

> Whereas the work done by energy is physical in character, the work done by information is logical work. In talking about information, there is always a suppressed reference to a third party, since, as in the physical theory of relativity, we have to relate our definitions to an observer, actual or potential, before they become operationally precise" (Machlup 1983, 486).

The relation between information and order is that the spatio-temporal sets must be ordered sets. The individual members of these sets are arranged in an ordered pattern which determine form. Whereas the formation of a snowflake, in which a simple structural pattern is repeated, involves high order but little information, the DNA and protein formation involve both high order and great information.

One instance of natural informational order is genetic material. Carl Sagan in his book entitled The Dragons of Eden writes,

> But complexity can also be judged by the minimum information content in the organism's genetic material. A typical human chromosome has one very long DNA molecule wound into coils, so that the space it occupies is very much smaller than it would be if it were unraveled. This DNA molecule is composed of smaller building blocks, a little like the rungs and sides of a rope ladder. These blocks are called nucleotides and come in four varieties. The language of life, our hereditary information, is determined by the sequence of the four different sorts of nucleotides ...The genetic instruction of all the other taxa on Earth are written in the same language, with the same code book (Sagan 1977, 23).

It is an accepted idea that information is transmitted between genetic

material. Most introductory textbooks in modern genetics devote entire chapters to the topic. A typical example of this is seen in <u>An Introduction To Modern Genetics</u> by Donald Patt and Gail Patt. Chapter 4 of this book is entitled, "Transmission of Genetic Information" (Patt, 51-78) and is devoted entirely to the discussion of information transfer between genetic material.

All books on genetics also make use of linguistic terms. In the 12th volume of <u>Frontiers of Biology</u> which is entitled "The Biological Code", editors A. Neuberger and E.L. Tatum make this point explicitly when they say, "A sequence of nucleotides or amino acids in a nucleic acid or a protein is a <u>text</u> and the residues are <u>letters. Reading</u> is a general term for any process which uses the sequence information in one polmer to produce a defined sequence in another" (Neuberger, 7).

How much information is contained in a single human chromosome if this information were written down in ordinary printed book form in a modern human language? Carl Sagan in his book <u>The Dragons of Eden</u> addresses this question. To summarize Sagan's explanation: A single human chromosome contains twenty billion bits of information. Assuming that human language has no more than 64 individual characters (letters, numbers, and punctuation marks), and that it would take no more than 6 bits (6 questions) to determine any specific character, twenty billion bits are about equivalent to three billion characters. If we assume that there are 6 letters in the average word and 300 words on the average page of a book, and 500 pages in the average book, the information content of a single human chromosome would be roughly equivalent to 4000 five hundred page books. (Sagan 1977, 25).

Corroboration

Let us recall the formulation of the argument from design in <u>modus ponens</u> argument form:

(1)   If there are instances of natural order (NO), then there is intelligent design of these instances of natural order (D).

(2)   There are instances of natural order (NO)

(3)   Therefore, there is intelligent design of these instances of natural order (D).

We have seen that this argument, when restated in its <u>modus tollens</u> form, fulfills Popper's criterion of falsifiability and thus qualifies as a scientific theory. We now must shift our focus from falsifiability to corroboration. The question which we are now engaged in is that given that our theory in question has passed the test of falsifiability, to what degree, if any, can we accept it as representing the truth of the matter to which it offers explanation.

According to Popper, if a hypothesis has survived continual and serious attempts to falsify it, then the hypothesis can be provisionally accepted. In <u>The Logic of Scientific Discovery</u>, Popper says,

> It should be noticed that a positive decision can only temporarily support the theory, for subsequent negative decisions may always overthrow it. So long as a theory withstands detailed and severe tests and is not superseded by another theory in the course of scientific progress, we may say that it has "proved its mettle" or that it is "corroborated" (Popper, 1959, 33).

After having rejected the verificationist ideas of Carnap and others because of the problem of induction, it is clear why Popper stresses the provisional nature of accepting any scientific theory.

This having been said, Popper does offer some criteria by which we may speak of the degree of corroboration of a theory. It is not simply the number

of corroborating instances which determines the degree of corroboration, although this is taken into consideration, but the severity of the tests and the degree of testability of the theory in question. The degree of testability is directly proportional to the degree of falsifiability. Popper says, "In appraising the degree of corroboration of a theory we take into account its degree of falsifiability. A theory can be the better corroborated the better testable it is" (Popper 1959, 269).

At no point does Popper equate corroboration with probability. In a letter to Carnap in 1939 after Carnap's translation of Popper's term "degree of corroboration" as "degree of confirmation" in his article "Testability and Meaning" which appeared in Philosophy of Science (Vol.3, 1936), Popper expressed his displeasure because of the association of the idea of probability and verification with Carnap's translation. (Popper 1959, 251).

In his essay entitled "The 'Corroboration' of Theories", Hilary Putnam addresses Popper's idea of corroboration. Putnam says,

> Although scientists, on Popper's view, do not make inductions, they do "corroborate" scientific theories. And although the statement that a theory is highly corroborated does not mean, according to Popper, that the theory may be accepted as true, or even as approximately true, or even as probably approximately true, still, there is no doubt that most readers of Popper read his account of corroboration as an account of something like the verification of theories, in spite of his protests (Schilpp 1974, 223).

Putnam points out that Popper's account of corroboration is not so different from the standard inductivist account of confirmation. Recall Popper's method of science. One is to derive certain basic statements (predictions) and experimentally test them. If the prediction is false, then the theory is falsified. If sufficiently many predictions are true and certain boundary conditions are met, then the theory is highly corroborated. Putnam says, "Popper does say that the 'surviving theory' is accepted - his account

is, therefore, an account of the logic of accepting theories" (Schilpp 1974, 224).

Inference to the Best Explanation

The statement of the argument from design that we have been concerned with here is intended to show that belief in the existence of intelligent design is the most experimentally acceptable hypothesis which attempts to account for the instances of natural order in the world. At this point we need to investigate the logic of accepting theories.

Implicit in the spirit of the scientific method is the principle of sufficient reason. According to Gottfried Leibniz, the principle of sufficient reason holds for all truths, especially contingent truth, such as we have been concerned with here. Leibniz expressed this principle simply as, "There must be a sufficient reason for anything to exist, for any event to occur, for any truth to obtain". The argument from design relies upon this principle that there must be a sufficient reason which explains the instances of natural order in the world.

In the case of competing hypotheses, appeal to the principle of sufficient reason will not resolve the dilemma. We need to appeal to another principle of reasoning, the inference to the best explanation.

Although the formulation of the argument from design that we have been discussing is stated in deductive logical form, the truth of premise (1) is not derived through deduction. Premise (1) is not derived through induction either. We could never conclude that instances of natural order require intelligent design from analysis of any number of individual instances of natural order. This is not a problem because, as we have seen, if the truth

of premise (1) were arrived at through induction, we would be faced with the problem of induction. So how is the truth of premise (1) arrived at? I submit that the truth of premise (1) is arrived at through the principle known as "inference to the best explanation."

We have established the fact that there are many instances of natural order in the world. These instances of natural order are confirmed not only in our daily experiences, but also in the strictly controlled environment of scientific experimentation. We must now address the question of competing hypotheses because, as we have seen, in modus ponens argument form, the conclusion of the argument will deductively follow if premise (2) is accepted.

Many times several different hypotheses claim to be the best explanation to some accepted set of observations. Under these circumstances, we employ the method of the inference to the best explanation in order to determine which of the competing hypotheses is in fact, the best explanation.

What makes one hypothesis a better explanation than another? There are four criteria which logicians and scientists have traditionally cited in their attempt to clarify what makes one explanation of observed phenomena better than others.[15] These are:

(1) Do any of the competing hypotheses conflict with established background knowledge?

(2) Is there more evidence supporting one hypothesis than the others?

(3) Is there less evidence against one than the others?

(4) Which hypothesis is simpler?

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[15] See Emmett Barcalow, Open Questions: An Introduction to Philosophy, Chapter 1, pp. 1-12.

There are two major competing hypotheses that are usually argued to be better explanations for the existence of natural order in the world than intelligent design. These two hypotheses are:

(10)　If there are instances of natural order in the world, then these instances of natural order are the result of chance.

(11)　If there are instances of natural order in the world, then these instances of natural order are the result of self-ordering matter.

I will now argue that the instances of natural order in the world are better explained by intelligent design than by either of these two competing hypotheses.

Chance

Regarding premise (10), there are several reasons which indicate the weakness in this explanation.

First, recall the definition of order as repeating patterns exhibiting uniformity, symmetry and predictability. Premise (10) stands in contradiction with this definition of natural order. The Encyclopedia of Philosophy distinguishes chance events from other events "on the basis of whether or not men can predict their occurrence" (vol. 1, 73). The notion of an absolutely random pattern that predictably repeats is self-contradictory.

Second, premise (10) conflicts with the established background knowledge of scientific laws based upon repeatable scientific experiments. Recall Popper's notion of inter-subjectivity. Chance explanations, by their very nature, could not possibly fulfill this requirement. There is no chance regarding Newton's law of motion (force = mass X acceleration).

Third, theories of chance lead to theories of probability that, it is

claimed, provide an explanation of chance. Recall that only universal

statements fulfill Popper's criterion of falsifiability. Carl Hempel, in his book

entitled <u>Aspects of Scientific Explanation and Other Essays in the Philosophy</u>

<u>of Science</u> writes,

> But the distinction between law-like statements of strictly universal
> form and those of probabilistic form pertains, not to the evidential
> support of the statements in question, but to the claims made by them:
> roughly speaking, the former attribute (truly or falsely) a certain
> characteristic to all members of a certain class; the latter, to a specific
> proportion of its members (Hempel 1948, 376-386).

Regarding natural spatial order, the explanation of chance or

co-incidence fails on two accounts. First, as I mentioned earlier when

discussing atomic structure, there are instances of natural spatial order that

are all-pervasive. No doubt chance arrangements of physical objects do occur

in nature, but when these arrangements continually recur the explanation of

chance fails because we are able to formulate laws and make predictions as to

their recurrence. No doubt that by mere chance there could exist a lake such

that there could be a row of trees around the lake that alternated in a pattern

of maple, oak, and pine. Were we to come across such a lake with such an

arrangement of trees, one acceptable explanation could be that this

arrangement occurred by mere chance. But if we continually observed similar

lakes with a similar arrangement of trees around them, the explanation of

chance would cease to be an acceptable explanation in light of other possible

explanations, such as intelligent design. Therefore the explanation of chance

in this instance conflicts with the established background knowledge of

predictability.

Self-ordering matter

Regarding premise (11), there is a major reason which indicates the weakness of this explanation.

First, quantum physics has discovered that all elementary particles, atoms, and even molecules are identical. In his book entitled <u>The Emperor's New Mind</u>, Roger Penrose says,

> According to quantum mechanics, any two electrons must necessarily be completely identical, and the same holds for any two protons and for any two particles whatever, of any one particular kind. This is not merely to say that there is no way of telling the particles apart: the statement is considerably stronger than that. If an electron in a person's brain were to be exchanged with an electron in a brick, then the state of the system would be exactly the same as it was before, not merely indistinguishable from it. The same holds for protons and for any other kind of particle, and for whole atoms, molecules, etc. (Penrose 1989, 25).

The significance of this is clear. If all elementary particles of atoms and molecules are identical in kind, how does premise (11) explain the fact that some of these elementary particles become orderful patterns, i.e. atoms and molecules, and some do not? Quantum physics does not recognize order and disorder as intrinsic properties of elementary particles. There is no recognized property in physics known as self-ordering matter. Clearly these unconscious entities do not possess the capability within themselves of creating order. If they did, then they would all be orderful.

The objection might be raised regarding the previous discussion of spatial order in reference to atomic structure. It is true that atoms exhibit order, but there is no evidence that this order is due to some intrinsic property of the elementary constituents of the atoms. Therefore, premise (11) conflicts with established background knowledge.

Intelligent Design

In contrast to premises (10) and (11), premise (1) of the argument from design does have supporting evidence which qualifies it as the best explanation. I shall now discuss this evidence.

The strongest evidence a theist could provide in favor of intelligent design being the best explanation for the instances of natural order is that there is, in fact, a class of order which we know is the result of intelligent design, namely human order. Natural order and human order are not different in kind, but only origin. This is not an argument from analogy. The theist is not saying that human order and natural order are merely similar or resemble one another. The theist can make the stronger claim that natural order and human order are identical in kind, but only differ in origin.

There are many examples of spatial human order. Books arranged in a library, streets arranged in a city, and even traffic lights are instances of spatial human order. Examples of temporal human order are any regularly scheduled event, such as train, bus or airline schedule. Music also is an example of temporal human order. Examples of informational human order are also numerous. Any human language or communication is an example. Street signs and books are examples of human informational order. The list goes on and on. All these instances of human order are the result of intelligent design. Therefore the inference to the explanation that instances of natural order are also the result of intelligent design at least has more corroborating evidence than the others we have discussed.

What is important to notice about all instances of human order is that they all involved reference to some purpose or goal. Up to this point in the discussion I have purposely not introduced any notion whatsoever regarding

purpose or intention.[16] Regarding instances of human order, the elimination of purpose or intention is impossible.

I agree that the introduction of specific motives and desires pertaining to the intelligent design of the universe does employ the argument from analogy, but not the general notion that some motivation, though we may never know specifically what it is, does play a part in the design of the universe. This does not violate the scientific nature of the explanation. Carl Hempel and Paul Oppenheim wrote in their work entitled Studies in the Logic of Explanation, "The determining motives and beliefs, therefore, have to be classified among the antecedent conditions of a motivational explanation, and there is no formal difference on this account between motivational and causal explanations" (Hempel 1948, 45).

In conclusion, I submit that intelligent design is the best explanation for the instances of natural order in the universe. According to the criteria of inference to the best explanation, intelligent design (1) does not conflict with established background knowledge; (2) has more evidence supporting it; (3) has no evidence against it; (4) is simpler than any competing explanation.

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[16] For further discussion of intention and the Design Argument see Swinburne, The Existence of God, pp. 54-64, 84.

CHAPTER 4

CONCLUSION

<u>Response to the Classical Criticisms</u>

Given that intelligent design is the inference to the best explanation of natural order, how does this account of the argument respond to the classical criticisms of the argument from design?

Consider first Hume's initial criticism that the comparison of the universe with human artifacts is unjustified because of the difference in species between the universe and human artifacts. We can see that our argument from natural order is not affected by this criticism. Although we can distinguish natural order from human order, when considering order <u>qua</u> order, both satisfy the conditions for being order and therefore can be considered of the same species. They only differ in origin. All instances of order require intelligent design. Therefore, the cause and effect relationship is of the same type.

Since it is by repetition that any inference to a generalization is justified, and a generalization is needed to infer back to particular instances, Hume said that one would have to experience many universes in order to make a reasonable conjecture about the origin of our universe. This is of course the problem of induction. This same idea is repeated by Hume when he speaks of the illusion in concluding anything about the whole from any specific part of the whole, and further when he argues against the inference that the designer

possesses infinite qualities. A similar point is discussed by Kant when he speaks of the impossibility of deriving a necessary and all-sufficient being from a pure empirical investigation. More recently we have seen this problem discussed in reference to verificationism. No scientific theories are immune to this criticism, including the competing explanations for natural order which we have considered. Given these states of affairs, we have seen that intelligent design is the best explanation of natural order.

Is there any more that can be reasonably expected from applying scientific criteria in establishing the argument from design? I think the answer to this question is negative. I do think, however, that a theist could argue for a wider notion of acceptable evidence beyond that currently accepted by scientific strictures. It is precisely these types of situations which expose the narrow and arbitrary limiting nature of "acceptable" empirical evidence.[17]

If, for example, one were to consider as admissible other evidence for a creator and sustainer of the universe, such as personal religious experience or revelation, then there is a great deal more one could reasonably conjecture about the nature and origin of the intelligent design of the universe without having experienced many other universes as Hume suggests is necessary. We could conclude that if we desire to have our theory remain scientific, then we must accept this limitation, as must all scientific theories.

Consider next Hume's criticism that even if the premises of the argument from design are granted, the conclusion of only one designer is no more probable than the conclusion of several designers. Again I think that the theist could argue that given the constraints of "acceptable" empirical

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[17] See Peter A. Bertocci, Introduction to the Philosophy of Religion, p. 82-120, 322-346; Galen Johnson, "Hartshorne's Argument Against Empirical Evidence For Necessary Existence: An Evaluation, pp. 180-187.

evidence perhaps Hume is correct, but, given other arguments, such as an appeal to Occam's Razor, a theist could argue on grounds that there is only one designer.

How does the revised argument from design account for the instances of disorder? The theist could argue that Hume's criticism to the effect that disorder counts against the perfection of the designer does not preclude the possibility of the co-existence of intelligent design and disorder. Since we do not know the purpose for the disorder, this does not rule out the perfection of the designer, so long as disorder serves a divine purpose.

Hume considers the alternative explanations of natural order as the result of self-ordering matter or probability. As has been argued in section 3.6, these alternative hypotheses fail according to the criteria of inference to the best explanation.

Regarding Kant's criticism that the most the argument from design could prove is the contingency of the form of the world, not the contingency of the substance of the world, I think that the theist would have to agree. But, as has been mentioned before, this is as much an indictment of scientific theories in general as it is the argument from design.

Regarding Darwin's theory of evolution and the criticisms which it levels at the argument from design, I think that a theist could argue the following points. First, there is strong evidence that the theory of evolution does not fulfill Popper's requirement of falsification and therefore is not a scientific theory.[18] Thus far in its history, the proponents of the theory of evolution, when dealing with falsification instances, have chosen either to incorporate ad hoc hypotheses, which ultimately leads to a priorism, or ignore

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[18] See Phillip E. Johnson, Darwin on Trial, pp. 145-154.

such instances until such time as suitable <u>ad hoc</u> hypotheses are found. But in the spirit of philosophical inquiry, I will address the notion of natural selection, even if it is couched in a pseudoscientific theory.

Many have argued that the idea of natural selection has not destroyed the argument from design. In his article entitled "Did Darwin Destroy the Design Argument?" James A. Sadowsky provides an argument in which natural selection can be interpreted as evidence of intelligent design,

> With the arrival of man there is another use for unselected variations. Where the selection occurs directly or indirectly as the result of human choice, it is not up to God which variation gets selected. The provision of many variations each of which could survive in a different environment improves the possibility of survival for a species despite man's ability to produce a different environment from what was in the original program (Sadowsk 1988, 100).

Because man has free will and therefore is not subject to the original environmental program, the greater the repertoire of potential variations, the greater the chance for survival given the freedom of human actions.

When viewed in this manner, even the most potent criticism offered by the theory of evolution fails to render the argument from design impotent.

As I argued in section 3.4.1, it is also possible to formulate an argument from instances of anatomical order which is immune to Darwin's criticisms.

Intelligent Design and God

What is the relationship between intelligent design of natural order and the God of theism? Within the confines of scientific empiricism any conclusions regarding this relationship must be tentative and minimal. Tentative because of the problem of induction and currently acceptable empirical evidence, and minimal because of the natural gulf between creator and creation.

If we employ the method of analogy, we might conclude, on the basis of

the identity of all order, that the designer of natural order is like a human designer in some way. I stress "in some way" because we only have the instances of natural order to determine the similarities. The employment of analogy brings more problems than it solves. Beyond this, I shall not speculate.

The other alternative, one which I have argued for, is to realize that the argument from design, as an empirical scientific theory concludes the most that can be concluded within such a paradigm. With this understanding we clearly see that these limitations are not intrinsic to the argument but the specific paradigm we have chosen.

If we chose to include other types of evidence in addition to the currently acceptable empirical evidence as per scientific empiricism, then our conclusion will support the theist's position even better.

This paper began by asking whether all arguments for the existence of God are "mere metaphysical speculation." In my attempt to argue that there is an argument for the existence of God which is not "mere metaphysical speculation," I have offered a reformulation of the argument from design such that it fulfills the criteria of one of the major schools of scientific empiricism, that of falsificationism. I therefore submit that not only is there a proof for the existence of God which is not "mere metaphysical speculation," but the stronger claim that St. Paul was correct in his letter to the Romans when he said that there is clear evidence for the existence of God such that men are "without excuse."

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