

Fine-tuning & design

First 5-7 page paper

PHIL 10100

Due: in discussion sections, Friday, October 17 (the Friday before fall break)

Below are four topics for your first paper. You are welcome to come up with your own topic, though you must get the written approval of your TA by email first. If you do this, the question that your TA approves should be on the first page of your essay. The papers should be at most 5-7 pages in length, double-spaced and with reasonable margins and font.

A late penalty of 3 points per day, including weekends, will be assessed for any papers which are handed in late.

Plagiarism is a serious and growing problem at Notre Dame and other universities. It is your responsibility to acquaint yourselves with the University's honor code, as well as with the philosophy department's guidelines regarding plagiarism. Both are linked from the course description, which is available on the course web site.

1. Is it possible to survive teletransportation of the sort discussed in class? Suppose that you woke up on Mars in the teletransportation machine. Could you know whether or not you were the same person as got into the teletransporter on earth? Defend your answers, and explain how the issue is related to different views of the nature of persons. Which view or views of the nature of persons is supported by reflection on these examples?
2. Explain what you take to be the most convincing argument discussed in this class for the existence of God. Say, in the end, whether you think that it is a good argument, and why. Be sure to consider some objections to the argument, as well as ways in which a proponent of the argument might respond to these objections.
3. John Mackie argues that the existence of evil in the world shows that God does not exist. Explain why he thinks this, and consider a few objections to Mackie's argument. Say how you think that Mackie should respond to these objections, and whether these responses are convincing. In the end, do you think that there is a good argument against the existence of God of the sort that Mackie gives? Why or why not?
4. Must a physicalist believe that there is some percentage of cells which is such that persons can survive replacement of that percentage of their cells, but no more? Why or why not? If there is such a percentage, what should the physicalist say that it is? If there is not such a percentage, what should the physicalist say about the conditions for persons to continue to exist? According to the version of physicalism which you think is best, is it possible in principle to survive brain replacement surgery? Why or why not? Does this sort of example pose problems for the physicalist?

Some tips on writing this paper:

- Check out Jim Pryor's guide to writing a philosophy paper, which is linked from the course web site.
- Be sure to read the philosophy department's guidelines on plagiarism, which are also linked from the course web site.
- Avoid reliance on outside sources, especially internet sources, when writing this paper. There are two reasons for this. First, the internet is an incredibly rich source of terrible philosophy. Second, all of the paper topics ask for you to form and defend your own view. This is harder to do if you are spending most of your time regurgitating someone else's view.
- Forget most of what you learned in high school English (other than grammar and spelling). Your paper is one long argument. If a sentence or paragraph is irrelevant to your argument, delete it.
- Your overriding aim in setting forth your argument should be clarity of expression. One good way to make your writing clearer is to simplify it. Use simple sentences. Avoid using technical or obscure vocabulary when clear and simple vocabulary will do.
- Given the foregoing, should you or should you not....
 - ▶ use "I" in your paper?
 - ▶ avoid repeating words?
 - ▶ begin with the words, "Since humankind has existed..." or "From the time dinosaurs roamed the earth..."?
 - ▶include lots of learned asides, like "most philosophers think..." or "Descartes, widely regarded as the founder of philosophy..."

Last time we discussed the argument from analogy, and discussed several serious problems with the argument. But the argument from analogy is not the only version of the design argument.

The design argument begins by noticing certain features of the universe, and argues that these features provide strong evidence for the existence of God. One such feature, Cleanthes says, is the “adapting of means to ends” throughout the universe. Historically, the most prominent example of this is the suitability of environments to the living things which inhabit those environments. The central question facing someone who wants to defend a design argument is: **why** does this feature of the universe provide strong evidence for the existence of God?

One response to this question -- the response given by the proponent of the argument from analogy -- is that these features provide such evidence because they are analogous to human artefacts. The eye is suited to the task of vision in just the way that the gears of a watch are suited to the task of telling time. This gives us the argument from analogy.

A second response to this question is that these features of the universe are quite unlikely to have arisen purely by chance and that, for this reason, their having been created by God is the **best explanation** of their existence. This idea can be used to formulate a different version of the design argument, which we can call the ‘best explanation design argument.’

One simple way to think about this ‘best explanation’ argument is as follows:

1. Living creatures are well-suited to the environments in which they live.
2. God’s having created living creatures and their environments is the best explanation of the fact that living creatures are well-suited to the environments in which they live.

C. God created living creatures.

Here we are saying that a certain theory --- the theory that God created living creatures --- is the best explanation of certain facts that we can observe. This is a form of reasoning familiar from science. We observe some data, and believe that theory which best explains the data. But what does it mean to say that a theory is the best explanation of something?

This is a difficult question, to which we will return later. But here’s one thing that it involves. Often we say that a theory T best explains some fact if the following is true: if T were true, we would expect the fact in question to obtain; but if T were not true, the fact in question would be extremely unlikely to obtain.

Can you think of any examples of cases in which we would believe a theory on the basis of this being true?

Collins gives the following example of this sort of reasoning: “Or consider another case, that of finding the defendant’s fingerprints on the murder weapon. Normally, we would take such a finding as strong evidence that the defendant was guilty. Why? Because we judge that it would be *unlikely* for these fingerprints to be on the murder weapon if the defendant was innocent, but *not unlikely* if the defendant was guilty.”

Let’s suppose that this is what we mean by ‘best explanation.’ Then is the argument above valid?

What does this show about the argument? Does it show that it is a bad argument?

It seems that the 'best explanation argument' is a pretty good argument, if its premises are true. But are they? Is creation by God really the best explanation of the suitability of living creatures to their environments?

A plausible reply to this question is that if the only alternative is something like chance or coincidence, then creation by God might well be the best explanation of this observed fact. But, given the theory of evolution, it is not the only alternative. And perhaps, when we better understand what makes something the best explanation, we'll see that the theory of evolution is a better explanation of the observed facts than creation by God.

This is the main reason why the theory of evolution is thought to undermine belief in God. It is not that there is an argument from evolution to the conclusion that God does not exist; rather, it is that one otherwise promising argument for the existence of God appears to be undermined by the theory of evolution.

How should a proponent of the ‘best explanation’ design argument respond? A natural thought is that he should try to find some feature of the universe which is such that (1) it seems to be much more likely to obtain if the universe was intelligently designed than if it was not, but (2) the fact that the universe has this feature cannot be explained by the theory of evolution, or any similar theory.

This is the strategy pursued by Robin Collins in the article we read for class today. The features of the universe on which Collins builds his design argument are examples of the ‘fine-tuning of the universe’: ways in which the universe is well-suited for the existence of life which seem quite unlikely to have arisen by chance.

Here’s one example from Collins (for others, see the optional reading from the physicist Martin Rees):

“There are other cases of the fine-tuning of the constants of physics besides the strength of the forces, however. Probably the most widely discussed among physicists and cosmologists ... is the fine-tuning of what is known as the cosmological constant. The cosmological constant was a term that Einstein included in his central equation of his theory of gravity – that is, general relativity -- which today is thought to correspond to the energy density of empty space. A positive cosmological constant acts as a sort of anti-gravity, a repulsive force causing space itself to expand. If the cosmological constant had a significant positive value, space would expand so rapidly that all matter would quickly disperse, and thus galaxies, stars, and even small aggregates of matter could never form. The conclusion is that it must fall exceedingly close to zero, relative to its natural range of values, for complex life to be possible in our universe.

Now, the fundamental theories of particle physics set a natural range of values for the cosmological constant. This natural range of values, however, is at least 10^{53} – that is, one followed by fifty three zeros – times the range of life-permitting values. That is, if 0 to L represent the range of life-permitting values, the theoretically possible range of values is at least 0 to $10^{53}L$. To intuitively see what this means, consider a dartboard analogy: suppose that we had a dart board that extended across the entire visible galaxy, with a target on the dart board of less than an inch in diameter. The amount of fine-tuning of the cosmological constant could be compared to randomly throwing a dart at the board and landing exactly in the target!”

How, exactly, can we use facts such as this one to construct a version of the design argument?

Remember the idea about explanation mentioned above: perhaps how well a theory explains some piece of data is at least partly a matter of how likely that data would be if the theory were true. We can formulate this idea in the following principle:

The prime principle of confirmation: if we are comparing two theories, T1 and T2, a fact F favors T1 over T2 if F would be more likely to obtain if T1 is true than if T2 is true.

To this we might add the following: if F is *much* more likely given T1 than given T2, then F favors T1 a great deal; and in general, the difference in degrees of likelihood corresponds to strength of relative confirmation.

Using this principle, we can give the following argument, following Collins:

The fine-tuning argument

1. If theism is true, then a fine-tuned universe is not at all improbable.
2. If atheism is true, then a fine-tuned universe is very improbable.
3. The prime principle of confirmation.

C. The fine-tuning of the universe favors the theism over atheism. (1,2,3)

If we think that the difference in probabilities varies with strength of confirmation, we might further conclude that the fine-tuning of the universe provides very strong evidence in favor of the existence of God.

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Let's consider some objections to this argument. Most serious objections to this argument are objections to premise (2); these include the following:

- The universe had to be some way --- the cosmological constant had to have *some* value --- and none of these values are more probable than any other. So there's nothing especially improbable about the value that it actually has.
- If the universe were not fine-tuned, we would not be here to observe it. So it is hardly surprising that we observe fine-tuning in the universe!
- Ours is just one of very, very many universes. Given the vast number of universes that there are or have been, it is not improbable at all that one should satisfy the conditions necessary for the emergence of life.

It's worthwhile noting a few things about the limitations of this argument, even if the foregoing objections are overcome.

First, as Collins notes, it is not a *proof* of the existence of God. It is an argument that the fine-tuning of the universe supports the theory that God exists as against the theory that God does not exist.

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

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

What this kind of case shows is that an observation might count in favor of a certain theory, but that, because the theory was antecedently so improbable, the theory remains quite improbable, even given the observation.

Some atheists might take this attitude to the fine-tuning argument: that it significantly raises the probability that God exists, but that theism is still quite improbable, all things considered. They might think this because they think that there are good arguments against the existence of God; we'll begin discussion of the most important of these next time.

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