The Teleological Argument, 18th Century

The Watch Argument: Paley considers a case where you find a stone. It would not be odd to think that the stone had just occurred naturally, and had always been there. On the other hand, if you found a pocket watch, you would never think that it had just always been there, occurring naturally.

Paley suggests that the reason for this is that the pocket watch shows evidence of some complexity and design for a specific purpose. He notes:

> 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 …, of a different size …, or placed after any other manner or in any other order …, 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.

The watch has some purpose, and the parts are such that, if any slight change were made in their arrangement, the watch would no longer function. We conclude from this that the watch must have had a designer. On the other hand, the stone is not this way and does not require a designer.

Paley notes that you would conclude that the watch had a designer, EVEN IF:

- you had never seen a watch before.
- you had no idea how such a watch might be constructed.
- the watch was imperfect (e.g., it sometimes lost time, etc.).
- the watch had certain parts that didn't seem to be necessary.
- you knew that the watch was just a certain combination of matter, and if you jumbled a bunch of bits of metal together for a long enough time, they might at some point come together as this watch.
- you were told that matter sometimes organizes itself into complex arrangements all by itself without a designer.
- you discovered that the watch was actually a machine capable of gathering materials and producing another watch like itself (i.e., you discovered that the present watch was likely the product of some prior watch before it, and there were possibly a SERIES of prior watches.). [This point was absent in the version of Paley's work in your textbook, but he says this in the unedited version.]

In all of these cases, you would still conclude that the watch (or the series of watches) had a designer. For, "There cannot be design without a designer; contrivance without a contriver; order without choice; arrangement without anything capable of arranging."

The infinite series: [In the unedited version] Paley takes some pains to support his last statement, that, even if it were known that there were a SERIES of watches, we would still infer that the original watch had an intelligent designer. For, if the present watch was the product of some previous robot watch-building watch, the fact of the complexity and purpose would still be unexplained without an original designer.

He goes on to say that, even if the chain of watches extended infinitely back into the past, so that there have ALWAYS been watches making watches, this would not rid us of the need for a designer. If one watch requires a designer, and so do two watches, and one hundred, and one million watches, why would an INFINITE number of watches NOT require a designer? He says, "A chain composed of an infinite number of links, can no more support itself, than a chain composed of a finite number of links."

Therefore, even if there is an infinite series of causes that are the result of the present watch, the entire series that gave rise to this complexity still requires an intelligent designer in order to explain its complexity and structure.

Conclusion: God exists: Paley concludes that, just as the watch is evidence of a designer, so the UNIVERSE is evidence of a designer. Living organisms—indeed, all of nature—show the same sort of complexity and purpose that watch does. He writes,

> Every observation which was made in our first chapter concerning the watch may be repeated with strict propriety concerning the eye, concerning animals, concerning plants, concerning, indeed, all the organized parts of the works of nature.

Therefore, he concludes, a Creator of the universe exists—and this is God.

The Teleological Argument, 21st Century

Paley updated: Robin Collins structures his argument in much the same way as Paley's 18th century argument. Collins notes that anything that shows enough complexity and purpose, we rightly infer that it has a designer—and the universe is just like that. Only, unlike Paley, Collins is able to provide a wealth of scientific data to support this assertion.

Collins lists a series of parameters of our universe that are such that, if they had been altered ever so slightly, life would be impossible. For instance, just to name a few of the MANY parameters, life would be impossible if:

- the universe had expanded slightly faster or slower.
- gravity were slightly stronger or weaker.
- the ratio of the proton's mass to the neutron's mass were slightly different.

He likens these parameters to a set of dials that have to all be set perfectly, or a dart that has to hit an exact spot on a target, in order for life to occur. He argues:

> The fact that the dials are perfectly set, or the dart has hit the target, strongly suggests that someone set the dials or aimed the dart, for it seems enormously improbable that such a coincidence could have happened by chance.

The "Prime Principle of Confirmation": In order to support his argument, Collins offers the following principle—which he calls the Prime Principle of Confirmation—as intuitively true:

- PPC: Whenever there are two competing hypotheses about something (call them H_1 and H_2), then an observation (call it O) counts as evidence in favor of whichever hypothesis would make that observation more likely.

Moreover, the greater the likelihood, the stronger the evidence. In other words, if O is WAY more likely on H_1 than it is on H_2, then O counts as VERY strong evidence in favor of H_1. For instance, consider the following scenario:

- Hiker: You are hiking in the mountains. As you get to the top of the trail, there are a bunch of rocks arranged so that they spell "Welcome to the top!" You form two competing hypotheses about the origin of this message:
  H_1: This message occurred by random chance.
  H_2: Some fellow hiker created this message.

In the Hiker scenario, the observation (the rocks spelling a message) is WAY more probable if the SECOND hypothesis is true (i.e., the hypothesis that some other hiker created the message) than if the FIRST hypothesis is true (i.e., the hypothesis that the message is the result of random chance). Therefore, by PPC, the evidence counts WAY more in favor of the second hypothesis than it does the first hypothesis.

The argument: Using PPC and the evidence that our universe is precariously fine-tuned for life, Collins then constructs the following argument:

1. It is very likely that the universe would be fine-tuned if there were a God.
2. It is NOT very likely that the universe would be fine-tuned if everything was the result of random chance.
3. Therefore, by PPC, the fine-tuning of the universe is evidence that supports the God hypothesis far more than it supports the random chance hypothesis.

Note that this is not a proof that God EXISTS. Rather, it is merely suggesting that a certain observation (namely, fine-tuning) counts in favor of the God-hypothesis, but not in favor of the atheist-hypothesis.

Objections: There are a number of objections to this argument that Collins examines:

1. Observational Selection Effect: When asking the question, "What is the probability that any existing observer will observe that the universe they live in is fine-tuned for life?" the answer seems to be: 100%. This is because, if the universe were NOT fine-tuned for life, there couldn't BE any observers. Therefore, it doesn't seem that odd that our universe is fine-tuned. If it WEREN'T, no one would be around to notice.

Reply: First, this objection only works if the data to be explained is "An observer observes fine-tuning." However, if the data to be explained is simply "life exists," then this is FAR more likely if the God hypothesis is true than if the random chance hypothesis is true. Consider the following scenario:

- Firing Squad: You are in front of a firing squad of 1000 sharp-shooters. You hear them being given instructions to shoot you on the count of three. One! Two! Three! You cower as you hear many guns firing, but you do not feel any bullets hitting you. You take off your blind-fold and look around. There are 1000 bullet holes in the wall behind you, but not one of them has hit you. All 1000 of the sharpshooters missed their mark.

In this scenario, it would be quite reasonable to think that the sharp-shooters has PLANNED to miss their mark. The probability that they all simultaneously missed their mark WITHOUT some pre-arranged agreement or plan is ridiculously small.

Now, if someone said, "There is always a small chance that any sharpshooter will miss their mark. You just got really, really lucky, and happen to have lived through the scenario where they ALL missed their mark. It's not surprising that it seems to you that they must have PLANNED this outcome, however. For, the only circumstances where you would be ALIVE to observe anything at all are ones where it would SEEM as if there was a pre-established plan"—this would not be a very satisfying refutation of the hypothesis that they sharp-shooters had arranged ahead of time to not kill you. And neither should it be satisfying in the fine-tuning case; for, the fact remains, the observation (fine-tuning) is an incredibly IMPROBABLE one, and the theistic hypothesis seems to support the observation better than the atheistic one.

2. Super Laws: It would be very probable that the universe would turn out to be fine-tuned if it were governed by super-laws. These would be more fundamental or basic laws responsible for the present laws, parameters, and physical constants of the universe. Maybe these super-laws are such that they only allow for a set of physical parameters that does permit life.

Reply: This only pushes the question back one level. For, now we may ask, "Who designed the super-laws?"

3. Multiple Universes: It would be very probable that some universe would turn out to be fine-tuned if there were an infinite number of universes. For, if there are an infinite number of universes, each with their own set of physical parameters, surely SOME of them will inevitably be life-permitting. There might be many universes in one of two ways:

(a) Eventually, the universe will collapse back in on itself, in what is known as the Big Crunch. After the Big Crunch, there will be another Big Bang—and this cycle will continue forever, with each successive universe having completely different laws and paramaters.
(b) There is an infinite "sea" of energy, and our own universe is just one tiny "bubble" on that sea. There are many universes, constantly coming in and out of existence all over this sea.

Reply: Again, this only pushes the question back one level. For, now we may ask, "Who designed the multiple universes?" Furthermore, at the very least, it is worth pointing out

that the atheist is now committed to a much more radical hypothesis than they previously were. Now, not only is the atheist committed to ONE universe existing inexplicably, but an INFINITE NUMBER of universes existing inexplicably. Collins gives a number of reasons to reject the Many-Universes Theory:

(a) First, even if the many-universe hypothesis has an explanatory power of the existence of life equal to that of the God hypothesis, there is still this reason to prefer the God hypothesis: In our past experience, we OFTEN observe complexity resulting from intelligent designers, but we have NEVER observed complexity resulting from a universe-generating energy field, or a cyclical Big Bang-Big Crunch series.
(b) We may still ask, what is the source of the complexity of the "universe-generator" or the "cyclycal universe"?
(c) It is not just the case that our universe is life-*permitting*. The fact is that our entire universe seems to exhibit fine-tuning for life. The second law of thermodynamics says that our universe began in a highly-ordered state is getting more and more disorderly. Under the many-universe hypothesis, it seems possible that some universes would have little pockets of organization and complexity, but it would still be incredibly unlikely that, for one of the many universes, the WHOLE universe would be organized in a certain way.

4. Who Designed God?: If the super-laws or the multiple universes require a designer, then so does God. Put simply, who designed God?

Reply: First, theologians typically state that God is "simple." That is, not complex. Thus, God would not require a designer.

A more satisfying response is this: All the theist is claiming is that fine-tuning is more probable on theism than atheism. The claim is that we ought to accept theism because it has incredible explanatory power. The question about God's origin is an entirely different one. The advocate of the Teleological Argument states that God explains fine-tuning better than random chance. Nothing more. After accepting theism, perhaps there ARE further questions to be asked, such as "Who designed God?" But, those questions are beside the point.

5. Other Forms of Life: It seems like the Teleological Argument is only considering life as we know it; i.e., carbon-based, water-dependent, oxygen-dependent, existing at a certain temperature, in certain gravity, etc. Maybe there are lots of other possible forms of life we can't conceive of. In that case, maybe the physical constants of the universe could be a lot different than the theist claims, and still be life-permitting.

Reply: This misses the aim of the theist's argument. The theist is not claiming that, if we altered the physical constants of the universe, the universe would no longer permit CARBON-BASED life forms. Rather, the claim is that all life requires only COMPLEXITY of some sort—and that, if the constants were altered slightly, not even COMPLEXITY would be possible. For instance, consider the rate of expansion of the universe. If the universe had expanded slightly more slowly at the Big Bang, it would have collapsed back in on itself and there would be no universe AT ALL. There can't be life of ANY sort if there is no universe at all.

Conclusion: Collins concludes that the evidence of fine-tuning is much more probable given the existence of God than it is the existence of a single universe and random chance. Though it is true that fine-tuning MAY be likely given the many-universe hypothesis, Collins states that this theory is highly speculative and does not provide an ultimate explanation of the complexity of our universe; the conclusion is that, even if atheism is true, it comes at a much greater cost than was previously thought.

Another Objection: Prior Probability vs. Explanatory Power: The theist seems to focus all of their efforts on hyping up the fact that their theistic hypothesis has explanatory power. That is, if theism is true, it seems to do a really good job of explaining the observation of fine-tuning. However, a good scientific hypothesis actually has TWO virtues. Explanatory power is only one of them. The other is prior probability. That is, if there are two competing hypotheses, the one that posits the sorts of entities and phenomena that are more probable to exist (given what we already know about reality) is considered to be better.

To better illustrate prior probability, consider the following case:

- **Missing Toothbrush:** My toothbrush is missing. I form two hypotheses to explain this fact. The first hypothesis: There is a race of aliens that lack the technology to create toothbrushes, and they have been in my neighborhood abducting toothbrushes and taking them away in their spaceships. The second hypothesis: I misplaced it somewhere earlier.

Now, BOTH of these hypotheses have a lot of explanatory power. If EITHER hypothesis were true, it really would explain why my toothbrush is missing. However, intuitively, one of these two hypotheses is still MUCH better than the other. We think the "I misplaced it" hypothesis is MUCH better than the alien abduction hypothesis because the former has a much higher PRIOR PROBABILITY than the former. That is, given what we know about reality, the event of misplacing a toothbrush seems much more probable than the

event of an alien abduction (that is, the former is much more consistent with what we already know to be true).

Similarly, though theism does a good job of EXPLAINING why the universe would appear to be fine-tuned, it posits a very bizarre entity to do the explaining; namely, an omniscient, omnipotent, morally perfect being. And that sort of being has a much lower prior probability than the sorts of things that the atheist posits; namely, more universes, more laws, more matter and energy, etc.

Reply: Perhaps the SORT of entity that is being posited is odd, but notice the claim that is NOT that odd: Fine-tuning, organization, and complexity are the product of an INTELLIGENT MIND. That claim is VERY consistent with what we already know. We observe it every day. So, theism's prior probability is not really that low.

Actually, it is the ATHEIST hypothesis (that fine-tuning is NOT the product of intelligence) that is the one that is less consistent with what we already know to be true. We NEVER observe radical complexity and organization occurring via random chance.

Below is a list of some of the parameters of our universe that are supposedly fine-tuned for life. The list was compiled by William Dembski.

Fine Tuning Parameters for the Universe

1. strong nuclear force constant
   if larger: no hydrogen would form; atomic nuclei for most life-essential elements would be unstable; thus, no life chemistry
   if smaller: no elements heavier than hydrogen would form: again, no life chemistry
2. weak nuclear force constant
   if larger: too much hydrogen would convert to helium in big bang; hence, stars would convert too much matter into heavy elements making life chemistry impossible
   if smaller: too little helium would be produced from big bang; hence, stars would convert too little matter into heavy elements making life chemistry impossible
3. gravitational force constant
   if larger: stars would be too hot and would burn too rapidly and too unevenly for life chemistry
   if smaller: stars would be too cool to ignite nuclear fusion; thus, many of the elements needed for life chemistry would never form
4. electromagnetic force constant
   if greater: chemical bonding would be disrupted; elements more massive than boron would be unstable to fission
   if lesser: chemical bonding would be insufficient for life chemistry
5. ratio of electromagnetic force constant to gravitational force constant
   if larger: all stars would be at least 40% more massive than the sun; hence, stellar burning would be too brief and too uneven for life support
   if smaller: all stars would be at least 20% less massive than the sun, thus incapable of producing heavy elements
6. ratio of electron to proton mass
   if larger: chemical bonding would be insufficient for life chemistry
   if smaller: same as above
7. ratio of number of protons to number of electrons
   if larger: electromagnetism would dominate gravity, preventing galaxy, star, and planet formation
   if smaller: same as above
8. expansion rate of the universe
   if larger: no galaxies would form
   if smaller: universe would collapse, even before stars formed
9. entropy level of the universe
   if larger: stars would not form within proto-galaxies
   if smaller: no proto-galaxies would form
10. mass density of the universe
    if larger: overabundance of deuterium from big bang would cause stars to burn rapidly, too rapidly for life to form
    if smaller: insufficient helium from big bang would result in a shortage of heavy elements

11. velocity of light
if faster: stars would be too luminous for life support *if slower*: stars would be insufficiently luminous for life support

12. age of the universe
if older: no solar-type stars in a stable burning phase would exist in the right (for life) part of the galaxy
if younger: solar-type stars in a stable burning phase would not yet have formed

13. initial uniformity of radiation
if more uniform: stars, star clusters, and galaxies would not have formed
if less uniform: universe by now would be mostly black holes and empty space

14. average distance between galaxies
if larger: star formation late enough in the history of the universe would be hampered by lack of material
if smaller: gravitational tug-of-wars would destabilize the sun's orbit

15. density of galaxy cluster
if denser: galaxy collisions and mergers would disrupt the sun's orbit
if less dense: star formation late enough in the history of the universe would be hampered by lack of material

16. average distance between stars
if larger: heavy element density would be too sparse for rocky planets to form
if smaller: planetary orbits would be too unstable for life

17. fine structure constant (describing the fine-structure splitting of spectral lines) *if larger*: all stars would be at least 30% less massive than the sun
if larger than 0.06: matter would be unstable in large magnetic fields
if smaller: all stars would be at least 80% more massive than the sun

18. decay rate of protons
if greater: life would be exterminated by the release of radiation
if smaller: universe would contain insufficient matter for life

19. 12C to 16O nuclear energy level ratio
if larger: universe would contain insufficient oxygen for life
if smaller: universe would contain insufficient carbon for life

20. ground state energy level for 4He
if larger: universe would contain insufficient carbon and oxygen for life
if smaller: same as above

21. decay rate of 8Be
if slower: heavy element fusion would generate catastrophic explosions in all the stars
if faster: no element heavier than beryllium would form; thus, no life chemistry

22. ratio of neutron mass to proton mass
if higher: neutron decay would yield too few neutrons for the formation of many life-essential elements
if lower: neutron decay would produce so many neutrons as to collapse all stars into neutron stars or black holes

23. initial excess of nucleons over anti-nucleons
if greater: radiation would prohibit planet formation
if lesser: matter would be insufficient for galaxy or star formation

24. polarity of the water molecule
if greater: heat of fusion and vaporization would be too high for life
if smaller: heat of fusion and vaporization would be too low for life; liquid water would not work as a solvent for life chemistry; ice would not float, and a runaway freeze-up would result

25. supernovae eruptions
if too close, too frequent, or too late: radiation would exterminate life on the planet
if too distant, too infrequent, or too soon: heavy elements would be too sparse for rocky planets to form

26. white dwarf binaries
if too few: insufficient fluorine would exist for life chemistry
if too many: planetary orbits would be too unstable for life
if formed too soon: insufficient fluorine production
if formed too late: fluorine would arrive too late for life chemistry

27. ratio of exotic matter mass to ordinary matter mass
if larger: universe would collapse before solar-type stars could form
if smaller: no galaxies would form

28. number of effective dimensions in the early universe
if larger: quantum mechanics, gravity, and relativity could not coexist; thus, life would be impossible
if smaller: same result

29. number of effective dimensions in the present universe
if smaller: electron, planet, and star orbits would become unstable
if larger: same result

30. mass of the neutrino
if smaller: galaxy clusters, galaxies, and stars would not form
if larger: galaxy clusters and galaxies would be too dense

31. big bang ripples
if smaller: galaxies would not form; universe would expand too rapidly
if larger: galaxies/galaxy clusters would be too dense for life; black holes would dominate; universe would collapse before life-site could form

32. size of the relativistic dilation factor
if smaller: certain life-essential chemical reactions will not function properly
if larger: same result

33. uncertainty magnitude in the Heisenberg uncertainty principle
if smaller: oxygen transport to body cells would be too small and certain life-essential elements would be unstable
if larger: oxygen transport to body cells would be too great and certain life-essential elements would be unstable