

The Anthropic Principle and Intelligent Design

By: Paul Hoiland

Abstract: In this short article I discuss the Anthropic Principle, some of the possible solutions, and focus on the idea of could the Universe or even multiverse be a product of Intelligent Design. I avoid the assumptions used by Christian writers on this subject and simply point out an alternative venue under which this whole idea could be studied in science.

The anthropic principle arose due to Brandon Carter, who articulated the anthropic principle in reaction to the Copernican Principle, which states that humans do not occupy a privileged position in the Universe. Carter said: "Although our situation is not necessarily central, it is inevitably privileged to some extent." "See: B. Carter, IAU Symp. 63 (1974) 291." There has always been a clash between fundamentalists type Christian views with man having a central position and secular views that tend to deny this. In more recent times, given the inability of groups like Christian Science Research to argue around the age of the earth and the Cosmos, they have reverted to the idea that all of our more recent odd observational findings like accelerated expansion show the local galaxy and earth have only recently begun to exist a gravity well. This is again another attempt at turning back the clock of science and going back to us being the center of the universe.

Now the problem with this is that while even under the BB model the universe all started from one point or cosmic egg as it is sometimes called and as such even with expansion would have at least a general center of mass effect via gravity since the expansion is not totally uniform over time even if one knew the exact position at this moment of every body of mass that would at best give a center of mass for the present that is different from the original. There simply is no way to point and say this is the center of the universe and the earth is here in relation to that center and as such all the odd effects are from us exiting a common gravity well.

A couple of hidden "mistakes" or rather assumptions are also buried in their idea:

- 1.) Age of Universe is off because we are only now beginning to exist that gravity well.
- 2.) If Earth was at center of Universe then Bible must be correct.

Instead of actually following established scientific methods they start with an outside assumption of the Bible being correct and then try to turn the evidence science gathers around in their favor while ignoring anything from science usable as disproof of their theory.

There are three different kinds of anthropic principle: The strong version, very weak version and weak version. The very strong version states that everything in our universe has something to do with humankind. But in general even though that idea is unsound it is the one I most often see the Christian community resort too. The very weak version takes the very existence of our humankind as a piece of experimental and observational data. For instance, in order for a person to exist the way we do with the products of radio-decay, the life-time of a proton must be at least 10^{16} years is seen as evidence that life seems to hold an important position. Now the weak version postulates that there are many regions in the universe. This usually is in one form or another the multiverse concept. It can be stated that there are many universes or that our universe is simply part of a greater whole with all sorts of vacuum states and physics being possible. It just happens that in the region we are dwelling all physical laws, physical constants and cosmological parameters are such that clusters of galaxies, galaxies and our solar system can form, and humankind can appear. This is rather we just happen to exist kind of path.

This later approach suffers from an attempt to push the answer far enough off that the question becomes non-answerable while the first approach is based upon pre-assumptions founded in faith, not science. The middle ground idea which allows us to be part of the observation and experimental evidence is more scientific even if it at present does not provide us solid answers. The later also even itself demands a first cause even if that cause is natural processes and as such still involves an origin point and an explanation of why everything is the way it is. The first cannot be considered as science since it violates so many scientific methods with the pre-assumptions to begin with. The later itself fails by its own avoidance of the answer even if there is plenty of theory behind the central idea.

One math based argument against the strong position is: Let z be the red-shift when galaxies form, the matter density is

$$\rho_m(z) = (1 + z)^3 \rho_m^0 \sim 100 \rho_m^0$$

This requires

$$\rho_\Lambda \leq 100 \rho_m^0$$

For a time scale to occur. Since we already know that expansion of the cosmos is not everywhere uniform then certainly earth does not hold a central place in the cosmos even if life may on the surface seem to and the age of the universe is no less than that required to have the proper energy density and the start of the universe requires at least that type of over all energy density. We generally assume a primordial energy density variance of

$$\delta\rho/\rho \sim 10^{-5}$$

But if we let

$$\delta\rho/\rho$$

Be a variable we usually find

$$\rho_{\Lambda} \leq X \rho_m^0 \text{ and } X \gg 100,$$

Under which dark energy is not a result of life or us. Adding to this

$$\rho_{\Lambda}/\rho_m^0 = 9 \text{ then } T = 1.1H_0^{-1}$$

For the age of the universe in itself does not dictate a central place for us on the surface. Our time scale is but a brief instant of the whole time scale in a Universe of variables with our position in that universe not being a provable central one. Even presupposing a Creator which I have no argument with the evidence that exists does not simply show that Creator to have created everything for the purpose of us alone. So I simply must reject that form of the whole principle to begin with.

The central problem is Creationists want science to prove God exists. By definition God is external to his or her's creation. Science can only study nature or by definition what God created. It cannot nor does it have the means to study something outside of nature. Yes, one would suppose if there is a Creator that creator left his signature in that creation. The problem is that signature if it exists can be said at this point not to support the type of Creator most Creationists believe in.

In the same token, science can only use the evidence it has to make conclusions. Going beyond the evidence even if there is that lack of a signature requires assuming something beyond the evidence we can study. This is where the Atheist crowd wrongly assumes science supports their position and in a

fashion takes the same path the Christians do. They started with a pre-assumption and try to force the evidence to support them.

I am what I am. A scientist at heart. I am at best by science limited at present to an agnostic position by science. However, as an individual I can think outside the box of science. I would note that at a quantum level our Universe in which we exist acts very much like a giant quantum computer. It also has aspects similar to a holographic system. The question that always comes to my mind is who programmed the computer? Given, in our limited knowledge all computers no matter the scale require an outside programmer that question seems a valid one. Yes, I could simply postulate it programmed itself through natural means. The problem is that is as bad as the multiverse solution. It avoids the answer via attributing an unknown process for self-programming. Even if the origin is natural one still is required to account for that natural process.

There have been a number of attempts over the years to account for the fine tuning required by the universe we live in. One is *Supersymmetry with broken symmetry being the cause or origin of the primary fine tuning*. The second is *Modifying gravity to somehow account for the fine tuning*. The third major approach is that of the wave function of the Universe.

The third solution lacks any precise answers. For one, if we do live in a multiverse, if there are interconnections between all the different universes, if gravity from one effects the other then the whole simplistic wave function itself requires modification. It would be the case of pre-built in geometry at play. The first instead of providing one solution provides too many solutions none of which have exactly matched our current vacuum state to even begin to account for such fine tuning. At best it only points towards a possible mechanism. Modifying gravity while a valid path is itself only part of the solution. In fact, the other two paths rather modify gravity to begin with.

The first actually gave rise to the multiverse approach. String theory, derived from it showed a multitude of vacuum states. The argument was that perhaps the whole universe is populated with all these states. In other words, one needs a mechanism to produce different universes in a multiverse. The mechanism supplied was first string theory and later extended into Brane theory where our universe is but one possible brane connected via hyperspace or the bulk to other possible branes. It was found that two branes via boundary conditions could provide fine tuning. However, a stability problem occurs in this simple picture requiring its own fine tuning.

Men like Steven Hawking pointed out that the wave function of the universe is one populating method. Different observers live in their different histories, and they are summed over in the no boundary path integral. In other words, observers in different universes live in different decohered branches of a single

wave function. Under this given certain conditions required for life we happen to exist in one branch capable of life. It has in challenge been pointed out that a universe with conditions all the same as our universe except the CMB temperature is higher is more likely, the probability of its occurrence is higher than for our type. So it leaves an unanswered question in itself concerning why with the odds higher for that type of space-time do we find ourselves in a de Sitter space which is a resonant state in the multiverse. That resonant state seems itself to require more than one vacuum state to produce the resonance against. That being the case it could be proposed that the mechanism is simply that ours is the natural resonant state of a multiverse of possible vacuum states. It is then as if all the quantum probability conspires to produce this type of universe in which life is possible. This is where I have often found the answer to Einstein's does God play with dice question to be that He does play with dice,. They are just a loaded set of dice with a predictable outcome.

One thing that can be said is space-time's life time can not be longer than the Poincare recurrence time if we view this space-time has finite dimension of the Hilbert space. That remains one solid ground from science we already know. So the question is valid on what existed before the beginning of those finite dimensions?

If we follow the Bayesian statistics approach we find

$$P(\text{theory } x|\text{selection}) = \frac{P(\text{selection}|\text{theory } x)P(\text{theory } x)}{\sum_y P(\text{selection}|\text{theory } y)P(\text{theory } x)}$$

Basically suggesting it's own version of the original question.

The whole core of the problem is we as observers alter what we observe. If there was no observer would the outcome be the same? It all becomes rather like if a tree falls in the woods and no one is there to hear it does it make a sound sort of question.

The simplest solution is usually the correct one. That being the case I find it just as valid if not even more valid to assume there must have been a first cause. The idea of a first cause can be seen as either intelligent or mechanical depending upon your preference. Given the lack of Scientific grounds to prefer the type of Creator of classical Christianity one could simply assume that this first cause being outside of nature cannot be directly studied.

However, given the fact that our universe seems to include in its program a gearing towards life that in itself seems to require Intelligent design. As such, the idea that our Creator could be a being or group of beings of intelligence is not that far fetched. But what is far fetched is the assumption that all of this was

set up so human's could evolve. The assumption that it was geared so life could evolve is acceptable. But, again the central position of man has to be rejected simply because of the fact that the geological preserved record shows us to be rather late arrivals as far as life goes.

The question then becomes could we find evidence in the biology of life itself that shows that program at work? At this point I have derived the whole idea of Intelligent Design without having to assume either a Creator or any aspects of that Creator. I have not derived this path by prior assumptions as the current type of Intelligent Design tends to follow. I can then on a much firmer scientific basis begin to look closer at the evidence from biology to see what can be gleaned.