

**Anthropic Reasoning about Fine-Tuning, and Neoclassical Cosmology:
Providence, Omnipresence, and Observation Selection Theory**

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Abstract

Anthropic reasoning about observation selection effects upon the appearance of cosmic providential fine-tuning (fine-tuning that provides for life) is often motivated by a desire to avoid theological implications (implications favoring the idea of a divine cosmic provider) without appealing to sheer lucky-for-us-cosmic-jackpot happenstance and coincidence. Cosmic coincidence can be rendered less incredible by appealing to a multiverse context. Cosmic providence can be rendered non-theological by appealing to an agent-less providential purpose, or by appealing to less-than-omnipresent/local providers, such as alien intelligences creating life-providing baby universes. Instead of choosing either cosmic coincidence or cosmic providence, as though they were mutually exclusive; it is better to accept both. Neoclassical thought accepts coincidence and providence, plus many local providers and one omnipresent provider. Moreover, fundamental observation selection theory should distinguish the many local observers of some events from the one omnipresent observer of all events. Accepting both coincidence and providence avoids classical theology (providence without coincidence) and classical atheism (coincidence without providence), but not neoclassical theology (providence with coincidence). Cosmology cannot avoid the idea of an all-inclusive omnipresent providential dice-throwing

living-creative whole of reality, an idea essential to neoclassical theology, and to neoclassical cosmology.

Keywords: anthropic cosmological principle, cosmic fine-tuning, cosmic coincidence, cosmic providence, universe, multiverse, observation selection effects, observation selection theory, omnipresent provider, omnipresent observer, cosmological theology, neoclassical theology, neoclassical cosmology.

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1. Avoiding Two Sharp Horns: Coincidence (chance, happenstance, luck) and Providence
(purposeful life-providing design)

In contemporary cosmology, much reasoning about observation selection effects upon the appearance of cosmic fine-tuning has been motivated by a desire to avoid—metaphorically speaking—being impaled by either of two sharp horns. The appearance of a finely tuned universe emerging from the big bang is like a charging bull—a cosmological Taurus—that seems to require choosing between, on the one horn, believing in cosmic providence (that the universe *is* finely tuned/designed to provide for life), and, on the other horn, believing that this *apparently* finely tuned cosmic habitat is the result of sheer happenstances, random chance events, and highly improbable coincidences. The dilemma is by which horn does one choose to be impaled: coincidence or providence?

Accepting cosmic providence (the teleological horn, cosmos over chaos by purposeful design) as the explanation for the appearance of cosmic fine-tuning impales because the idea of cosmic providence is so fundamentally consistent with so many religious claims that it threatens to transform cosmology into theology. And if one chooses not to accept cosmic providence, one is speared by the other horn—cosmic coincidence.

Accepting cosmic coincidence (the non-teleological horn, cosmos over chaos by chance alone)

as the fully sufficient explanation for the appearance of cosmic fine-tuning impales insofar as it requires confessing belief in the nearly unbelievable [credo the incredible] claim that against astronomical odds, we repeatedly-coincidentally, and always by no purposeful design, happened to have hit “the cosmic jackpot” (Davies, 2006). What astonishing luck! For scientists, “appealing to luck, like appealing to miracles, is not a very satisfactory explanation” (Davies, 2008, p. 262).

Accepting one or the other impales. The most popular impalement avoidance strategy is to blunt at least one of the two horns.

2. Cosmic Coincidence Blunted by Appealing to a Multiverse Context

For many of us, the sharp horn of having to accept coincidence as the explanation (for the appearance of a finely tuned universe) has been blunted by appealing to the hypothesis that our universe is only one universe among a vast ensemble of universes within a multiverse context. When we are given a theoretical infinity of variously tuned universes, it is no longer incredible or surprising to conceive that some universes *appear* to have been (though they were not) finely tuned to our needs, and that we happen to live in one such universe. That there are habitable universes is explainable in terms of probabilities relative to an infinite variety of universes; and our ability to live only in a habitable universe explains why we happen to be observing a habitable universe.

Our cosmic happenstance is rendered unsurprising in such an infinite multiverse context. Martin

Rees says:

In an infinite ensemble, the existence of some universes that are seemingly fine-tuned to harbor life would occasion *no surprise*; our own cosmic habitat would plainly belong to this unusual subset. Our entire universe is a fertile oasis within the multiverse. (Rees, 2001, p. xvii, italics added; also p. 158)

In addition to facilitating the development of a blunted account of our cosmic happenstance, and in addition to offering a “consistent” explanation for the famous double-slit experiment [the Everett solution of splitting into all possible universes] (Leslie, 1983, p. 576), a multiverse context helps with avoiding appeals to cosmic providence. Rees appreciate this. He says:

... how should we react to the apparent fine-tuning? We seem to have *three choices*: we can dismiss it as *happenstance*; we can acclaim it as the workings of *providence*; or (my preference) we can conjecture that our universe is a specially favored domain in a still vaster *multiverse*. (Rees, 2001, p. 161-162, italics added)

Similarly, the multiverse-given opportunity to avoid embarrassing appeals to providence is appreciated by Paul Davies:

Scientists have long been aware that the universe seems strangely

suiting to life, but they mostly chose to ignore it. It was an embarrassment—it looked too much like the work of a Cosmic Designer. Discussion of the anthropic principle was frowned upon as being quasi-religious. . . . Today the mood has changed. What made a difference was the idea of a *multiverse*, which offers the opportunity to explain the weird bio-friendliness of the universe as a straightforward selection effect, without invoking divine providence. (Davies, 2008 [2006], p. 151)

By appealing to “conjecture” (Rees, 2001, p. 162) about a multiverse context, the appearance of cosmic fine-tuning can be explained without appealing to surprising good luck/coincidence, and “without invoking divine providence” (Davies, 2008 [2006], p. 151). Today, with no reason for surprise or gratitude, we can explain that the appearance of cosmic fine-tuning is merely the observational outcome of “a selection principle operating in the context of the multiverse” (Helge Kragh, 2011).

3. Cosmic Providence Blunted by Appealing to Agent-less Providential Purpose

One way of accepting cosmic providence without accepting *divine* cosmic providence is to posit a *natural* cosmic providence with no corresponding cosmic provider, agent, or designer; no cosmic individual to which a theological claim might attach. For instance, in *Biocosm* (2003) James N. Gardner accepts the idea that cosmic life-providing “design” is “no mere illusion” (p. 8) without accepting the idea of a cosmic designer. Instead of attributing cosmic design to a

cosmic designer, Gardner attributes cosmic design to “the predisposition of the cosmos to breathe life and intelligence into inanimate matter,” a predisposition that is “deeply embedded in the organizing principles of nature” (Ibid). Gardner quotes Michael Polanyi as speaking of a “still dead” universe having “the capacity of coming to life” (Ibid, p. 9). And in *Intelligent Universe* (2007) Gardner’s summary of the idea of “Biocosm” is that “the universe is coming to life, *purposely* and in accordance with a finely tuned cosmic code that is the precise functional equivalent of DNA in the terrestrial biosphere” (p. 157, italics added).

The now prevailing [classical/modern] cosmological theory that in the beginning—from the big bang—all that was real was totally dead—totally inanimate, and that all life and mind emerged from lifeless-mindless reality, is a theory that allows for a *future* “intelligent universe” (Gardner, 2007), but not a past intelligent universe. According to such “cosmogonic” theory (Charles H. Long, 1963, p. 18), although there can be cosmic agency in the future—when the universe comes to life, there could have been no such cosmic agency in the remote past because there were no living-experiencing agents. [For a panexperientialist criticism of the idea of totally dead “vacuous actualities” (Alfred North Whitehead)—“meaning entities that are fully actual and yet wholly devoid of experience,” see *Whitehead’s Radically Different Postmodern Philosophy* (David Ray Griffin, 2007, p. ix). Similarly, according to Charles Hartshorne’s “universal psychicalism,” it is eternally true that all actualities are “in some sense life-like,” and “there is no absolutely new principle of life that comes in at some point in cosmic evolution” (1984, p. 62-63). Moreover, claiming to observe the absolute zero of life entails committing “the zero fallacy” (Hartshorne, 1997).] If in the beginning all that was real was totally dead, cosmic life-providing-providential purpose was held by no living mind or agent.

Similarly, with regard to cosmic agency; in explaining why the universe is “just right for life” in *The Goldilocks Enigma* (2008) Davies appeals to a cosmic “life principle” by which to build “purpose” into “the workings of the cosmos at a fundamental (rather than an incidental) level, without positing an unexplained preexisting agent to inject purpose miraculously” (p. 266). Davies accepts cosmic life-providing-providential “purpose” and design “without positing” a living preexisting cosmic agent or designer.

4. Cosmic Providence Blunted by Appealing to Local Providers

Alternatively, within a multiverse context—where “universe” is only a small part of reality, instead of avoiding theology by accepting no intelligent designer; theology can be avoided by appealing to the possibility of intelligent designers located in another universe. For example, Ray Kurzweil says:

One thing we may do is to engineer new universes. Similarly, our universe may be the creation of some superintelligences in another universe. In this case, there was an intelligent designer of our universe—that designer would be the evolved intelligence of some other universe that created ours. Perhaps our universe is a science fair experiment of a student in another universe. (Kurzweil, 2007, p. 15)

Since the “Participatory Anthropic Principle (PAP)” and the “Final Anthropic Principle (FAP)” were added to Brandon Carter’s “Weak Anthropic Principle (WAP)” and his “Strong Anthropic Principle (SAP)” (John D. Barrow and Frank J. Tipler [with John A. Wheeler], 1986), there have been many speculations about humanoid or other creaturely-created and alien or artificial intelligences participating in and gaining control of cosmological processes, and creating finely tuned universes.

Cosmic providence, meaning the universe actually *is* (not just *appears* to be) finely tuned/designed to provide for the flourishing of life, is then explained without appealing to a divine cosmic provider. By such speculations, the divine-omnipresent cosmic provider—implied by accepting cosmic providence as actual—is replaced with less-than-omnipresent/local providers.

5. Local in Contrast to Omnipresent

Here, when conceiving of local providers (and of local observers), the meaning of local is derived from contrast with omnipresent, rather than from [1] “classical physics”—where locality refers to nearby continuous contact interactions limited by the speed of light (Stapp, 2007, p. 169-70), or from [2] “the new physics”—where quantum “nonlocality” witnesses to *The Non-Local Universe* (Robert Nadeau and Menas Kafatos, 1999). When defined by contrast with omnipresent, local here means located/present anywhere (near or far, even in another universe) distinct from everywhere-present/omnipresent (and contradicting nowhere-present/nonexistent). As such, locality applies to *any* presence(s) less than omnipresence.

Omnipresence includes spatial nonlocality (non spatial location-specific instead of general/everywhere), temporal nonlocality (non temporal location-specific instead of general/every when), and a third type of nonlocality “which represents the unified whole of space-time” existing “*outside* the framework of space and time” (Kafatos and Nadeau, 2000 [1990], p. 127, original emphasis on outside). If “*outside* the framework of space and time” (Ibid) means includes, unifies, and transcends all that is real throughout all spaces and times; then this third type of nonlocality is equivalent to omnipresence.

Less than omnipresence (locality) is less than fully divine. The divine provider is the one and only omnipresent provider. All other providers are lesser/local providers.

The mutually defining contrast between locality and divine omnipresence also applies in a multiverse context. For example: if a “cosmic consciousness” emerged from a bubble and created our universe or “our sub-universe” (Yew-Kwang Ng, 2011), our light-speed limited observations will not enable us to distinguish our sub-universe from our universe, or our universe from the multiverse. The distinction between very largely present (encompassing our light cone or sub-universe) and omnipresent (all-encompassing) is not a distinction we can make by observation. Nevertheless, the distinction is conceptually clear and decisive. Divinity requires omnipresence. Universe or multiverse; any and all less-than-omnipresent creators, designers, and providers are only local parts of the omnipresent eternally-universally creative and providential divine whole of reality.

6. Kill the Bull with a Wholly Determinative Final Theory of Everything.

For many researchers, anthropic reasoning about the appearance of cosmic fine-tuning is an unhelpful distraction from proper scientific work. Instead of generating untestable hypotheses about other universes and science fictional conjectures about controlling cosmic processes, researchers should continue working toward a final theory of everything. Many researchers hope and expect that when a final theory of everything is developed, it will describe a universe that was wholly determined by fundamental natural law(s). Accordingly, there was no “fine-tuning” from among an ensemble of alternatives. There were no alternatives, no free parameters—no freedom at all (Einstein); and hence, there was no tuning at all. A final theory of everything will kill the bull by exposing all *appearances* of cosmic tuning as functions of not knowing, or of knowing only in part, the presumed fully deterministic law(s) that wholly determined the one wholly necessary universe.

Such hope for a wholly determinative theory of everything is acknowledged by John D. Barrow when he says, “The fact that we can conceive of so many alternative universes, defined by other values of the constants of Nature, may be simply a reflection of our ignorance about the strait-jacket of logical consistency that a Theory of Everything demands” (2002, p. 277). However, contrary to this hope for a wholly determined universe, and recognizing that there is more to the contingent causal order than just logical consistency, Barrow predicts a successful theory of everything will show that the universe is somewhat open and free. He says:

Our deepest theories of the forces and patterns of Nature suggest

that a Theory of Everything will have an openness about it. Not everything will be pinned down by the dead hand of logical consistency. There are some constants that have the freedom to be different; that are chosen at random; and that could render the Universe devoid of life and light forever if they fell out wrong rather than right. (Barrow, 2002, p. 291).

7. Take the Bull by Both Horns: Coincidence and Providence

Rather than choosing to accept either cosmic coincidence or cosmic providence, as if they were mutually exclusive explanations for the appearance of cosmic fine-tuning, and in accordance with Barrow's expectation of finally finding that the universe is somewhat free even though largely determined (not wholly determined); cosmologists should accept both cosmic coincidence and cosmic "providence" (Hartshorne, 1953, p. 107; also Charles M. Wood, 2008). These are complementary, though not equal, influences upon reality. The somewhat determinative influences of cosmic coincidence combined with the largely determinative influences of cosmic providence explain the life-providing preponderance of order/cosmos over disorder/chaos.

8. One Omnipresent Provider and Many Local Providers

Also, accepting both coincidence and providence does not require choosing between omnipresent and local providers. Again, these are not mutually exclusive alternatives. To explain cosmic

providential fine-tuning (fine-tuning that provides for life) requires recourse to partly determinative influences from both the one and the many, from both the one omnipresent provider and the many local providers. The local providers are variously many, and variously located, even remotely located.

Within a multiverse context, the same requirement (for one omnipresent and many local providers) obtains. For example, if we could observe that an alien science student created our universe (Kurzweil, 2007, p. 15), that student would be a remotely located (in another universe) provider, a far distant local provider. And for the sake of explaining this observation, we would require recourse to partly determinative influences from the one omnipresent provider of the multiverse and the many local providers located within the multiverse, plus a less-than-overwhelming measure of coincidence.

9. One Omnipresent Observer (of All Events) and Many Local Observers (of Some Events)

Like reasoning about providence and providers, reasoning about observation and observers benefits from distinguishing the omnipresent one from the less-than-omnipresent/local many. Many of the local parts of reality, including ourselves, are observers of some events. No one of this many observes all events. Distinct from (though not separate from) the many local observers of some events, there is the one omnipresent observer of all events. Necessarily, the one universal-all-inclusive-always-everywhere-present/omnipresent whole of reality is the only observer of all events.

Throughout the history of scientific inquiry, again and again, we find that what was taken to be “the universe” was only a portion of some yet larger universe. To this historical feature, we should add a metaphysical component concerning what any one of us local observers (observers located anywhere—near or far—distinct from everywhere [and nowhere]) should always expect to observe. For each and every one of the many observing parts of reality, the following necessarily applies:

Because only the whole of reality is omnipresent, no part of reality can ever observe all parts of reality, or the whole of reality. Hence, *any part of reality observing anything real must be observing only some part(s) of the whole of reality*. In deference to Steve Johnston’s “Very Weak Anthropic Principle”—“Intelligent beings will only find themselves existing in a universe capable of sustaining self-replicating information, and self-replicating information will only be found in a universe that begins in a low-entropy initial state” (Johnston, 2011); this might be called the “Very Very Weak Anthropic Principle” (VWVAP), or better—the necessary observation selection effect. Necessarily, the observer self-selection effect of being any one of the many local/less-than-omnipresent observers is that any such observer must observe only some events, only some parts of the whole of reality.

Also, quantum mechanics indicates observers are “participating” observers (Stapp, 2007). To observe is to participate. Accordingly, the omnipresent observer of all events participates in all events (in partly determinative and partly determined ways), and the local observers of some events participate in some events (in partly determinative and partly determined ways).

Within a multiverse context, some conceptions of temporal aspects of observer participation would be changed by conceiving of universes caused by quantum splitting. Nevertheless, the necessary observation selection effect still applies. Even within a multiverse, any part of reality observing anything real must be observing only some part(s) of reality. Universe or multiverse; only the omnipresent observer can observe/experience all that is real.

Furthermore, the idea of an omnipresent observer avoids the problem of unobserved universes. Given an omnipresent observer, an unobserved event or an unobserved universe is not possible, and therefore never actual. Recall the Latin phrase employed by George Berkeley (1685 – 1753)—“esse est percipi,” meaning “to be” is “to be perceived” [see *Three Dialogues between Hylas and Philonous* (1713) in *The Works of George Berkeley* (1901) edited by Alexander Campbell Fraser; and note Brandon Carter’s appreciation for Berkeley’s insight (Carter, 2011)]. Similarly, “to be actual” is “to be observed”—or felt or experienced, perhaps in every instance by some one or more of the many less-than-omnipresent/local observers, and certainly in every instance by the one omnipresent observer.

Anthropic reasoning has taught us to better appreciate observation selection effects. Confusion has been followed by progress. We have learned to appreciate corrections to Brandon Carter’s 1973-1974 inaugural misnomer—“anthropic”—wrongly indicating, contrary to Carter’s meaning, exclusively human observers (Carter, 1974; Carter, 1993; Carter, 2007; Bernard Carr, 2007; Kragh, 2011) [corrections reminiscent of *Beyond Humanism* (Hartshorne, 1975 [1937])]. And there have been significant advances in observation selection theory, including, for examples: John Leslie’s account of “Observership in Cosmology” (Leslie, 1983), an account of

how quantum entanglement contributes to “the Observation Problem in Cosmology” (Kafatos and Nadeau, 2000 [1990], p. 123-125), Henry P. Stapp’s quantum mechanical account of “the participating observer” (Stapp, 2007), and Nick Bostrom’s “*Strong Self-Sampling Assumption: (SSSA)*”—“One should reason as if one’s present observer-moment were a random sample from the set of all observer-moments in its reference class” (Bostrom, 2002, p. 162).

And, as we have seen, a fundamental reference class is the set of all less-than-omnipresent observers (observer-moments/events). Accordingly, observation selection theorists should recognize a fundamental distinction between the many less-than-omnipresent/local observers of some events and the one universal-eternal-omnipresent observer of all events.

10. Avoiding Classical Theology, Not Neoclassical Theology

Cosmologists should accept both cosmic coincidences and cosmic providences. Accepting both witnesses against classical theology (providence without coincidence), and against classical atheism (coincidence without providence), and for neoclassical theology (providence with coincidence).

Though we can avoid affirmative uses of the explicitly theological G-word, we cannot avoid all theology and metaphysics because “cosmology” as such is about “existence in its totality” (journalofcosmology.com/About.html, 2009) or reality as an all-inclusive whole. David Bohm rightly argued that the classical scientific procedure of dividing reality into separate parts without an associated whole “cannot be maintained consistently,” and that cosmology must unite life and

“consciousness” with “reality as a whole” (Bohm, 2007 [1980], p. xi-xii; also: Kafatos and Nadeau, 2000 [1990]; Chris King, 2011; Kafatos, Rudolph E. Tanzi, and Deepak Chopra, 2011). Even without the G-word, conceiving of a fully integrative whole of reality is doing conceptual work essential to distinguishing neoclassical theology (deity as the living whole of reality) from the many varieties of classical theology (deity as part(s), often purely spiritual part(s), of reality).

The providential dice-throwing deity affirmed by neoclassical theology is “the one universal individual” (Charles Hartshorne, 1953, p. 176), “the one all-inclusive whole of reality” (Schubert M. Ogden, 1984, p. 21), the one omnipresent observer (experience-r) of all events, the one participant in all events, and the one participant that is partly determinative of all events and partly determined by all events (Ogden, 1979, pp. 75-82). Both <partly-determinative-of-all events> and <partly-determined-by-all events> are essential to the neoclassical conception of omnipotence (Hartshorne, 1984); unlike the classical conception of omnipotence as <wholly-determinative-of-all events> and <wholly undetermined/immutable>.

Avoiding the G-word in cosmology is almost always about avoiding classical theology, not neoclassical theology. In the modern and contemporary North Atlantic world, classical monotheistic theology is so overwhelmingly dominant that it is usually treated as the only theology (distinct from classical Greco-Latin polytheism); and hence, refuting classical theology is treated as refuting all theology. For instance, Stephen W. Hawking appears to believe his “no boundary” proposal contradicts all theology (1988, pp. 140-141, 174; 1994 [1993], p. 98; 2003 [1996], p. 126); though in fact the idea of “no [absolute] boundary” (no absolute beginning, no absolute ending) contradicts classical theology and classical cosmology while agreeing with

neoclassical theology (Walker, 2006a, 2006b). Similarly, Rhawn Joseph's criticism of classical theology fused with classical big bang cosmology (Joseph, 2010) fails to treat neoclassical theology (Walker, 2010, also 2009). Moreover, even some theologians have been forced to consider discarding G-word language because the use of such language is so frequently taken to be an endorsement of classical theology and associated oppressions [for instance, see the fourth chapter of James H. Cone's *A Black Theology of Liberation* (1970)].

When cosmology transcends long-range astronomy by attending to the whole of reality instead of only parts of reality, unavoidably, cosmology becomes cosmological theology. Avoiding the G-word favors implicit cosmological theology over explicit cosmological theology.

11. Biology and Cosmology Converging Toward Neoclassical Theology

Biology teaches us that a whole living individual animal/creature includes and is greater than—transcends—the sum of its cellular parts (and that a corpse includes and equals the sum of its departing cellular parts), that a living inclusive whole includes living parts that influence and are influenced by the living whole, and that life comes from previous life. When we apply these lessons from biology to the one transcendent all-inclusive whole of reality, we require new non-classical cosmologies.

For instance; unlike the old standard Λ CDMHC cosmology, the new HGD—hydro-gravitational-dynamics—cosmology founded by Carl H. Gibson and Rudolph E. Schild (Gibson, 1996; Schild, 1996) supports Fred Hoyle's and Nalin Chandra Wickramasinghe's "panspermia and an

extraterrestrial origin of life” and Richard B. Hoover’s evidence for extraterrestrial cyanobacterial life (Hoover, 2011) in ways indicating that life is “statistically inevitable, early and widespread” (Gibson and Schild, 2011). Instead of holding to the old classical cosmological theory that life originated on planet Earth, this new cosmology holds that life is “a cosmic phenomenon” (Hoyle and Wickramasinghe, 1986; also Hoyle, 1980). Such cosmic-life affirming cosmologies are often implicitly theological, and occasionally explicitly theological.

For explicit theology in cosmology (cosmological theology) related to biology, see: [1] “Observership in Cosmology: the Anthropic Principle” where in explaining the existence of life without appealing to sheer coincidence, for reasons of simplicity, Leslie favors a divine creator hypothesis over “the Many Worlds hypothesis” (Leslie, 1983, p. 579); and see [2] the chapter on “convergence” toward deity (chapter 9, pp. 129-145) in *Evolution from Space: A Theory of Cosmic Creation* where Hoyle and Wickramasinghe show that “classical methods fail” to produce plausible-probable answers to questions about the origins of life (Hoyle and Wickramasinghe, c1981 [1982], p. 3), and that plausible-probable answers require recourse to a cosmic influence exercising an “exceedingly high” “measure of intelligence” to control life-providing properties mathematically described by “coupling constants” (Ibid., p. 141; also Hoyle, c1983 [1984]). These biology-related cosmological theologies are consistent with neoclassical theology, yet inconsistent with classical theology, inconsistent with classical materialism, inconsistent with classical dualism, inconsistent with classical physics [“completely nonclassical” (Nadeau and Kafatos, 1999, p. 63)], and inconsistent with classical cosmology. Astrobiology and “new cosmology” (Gibson and Schild, 2011) are converging (Hoyle and Wickramasinghe, c1981 [1982]) toward neoclassical theology.

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