

LIVING GOD PANDEISM: EVIDENTIAL SUPPORT

by William C. Lane 

Abstract. Pandeism is the belief that God chose to wholly become our Universe, imposing principles at this Becoming that have fostered the lawful evolution of multifarious structures, including life and consciousness. This article describes and defends a particular form of pandeism: living God pandeism (LGP). On LGP, our Universe inherits all of God's unsurpassable attributes—reality, unity, consciousness, knowledge, intelligence, and effectiveness—and includes as much reality, conscious and unconscious, as is possible consistent with retaining those attributes. God and the Universe, together “God-and-Universe,” is also eternal into the future and the past. The article derives testable hypotheses from these claims and shows that the evidence to date confirms some of these while falsifying none. Theism cannot be tested in the same way.

Keywords: consciousness; cosmology; Charles Hartshorne; Imre Lakatos; G. W. Leibniz; pandeism; Pierre Teilhard de Chardin; theism; theology and science

The map is not the Territory.
Alfred Korzybski

“God” is the title we give to “something ... than which a greater cannot be conceived.” This is Anselm’s dictum, and theists say it describes their God. Yet, if God was separate from the created Universe, God and the Universe would be parts of a larger system. This system, “the Whole,” would be greater than God in at least one respect: it would be more inclusive (Shults and Sandage 2003, 161–64). It seems, therefore, that God cannot be separate from the Universe, nor a part of it either. Either God must include the Universe or the Universe must be God in another guise. But does the latter concept preserve the idea of God or leave us only with “sexed up atheism” (Dawkins 2006, 40)?

William C. Lane is an independent researcher in Fairfax, Virginia, USA; e-mail: lane2125@yahoo.com .

These questions challenge three traditional maps of God's relation to the Universe: theism, deism, and pantheism. Pandeism offers an intriguing alternative. It depicts God as choosing to wholly become our Universe, imposing principles at this "Becoming" that have resulted in the continuing, lawful evolution of multifarious structures, including forms of life and consciousness. Against theism, pandeism argues that miracles in Hume's sense do not exist; against deism, it argues that God is more than an absentee Creator; against pantheism, it argues that any account of God must explain our world's existence.

Pantheism and pandeism offer other maps. On each of them, God exceeds the Universe; the Universe exists *in* God. But though the word "in" holds different meanings for different writers (Mullins 2016, 334–38), in no case does God wholly become the world. God therefore retains power to intervene in the world "from outside."

The first scholarly use of "pandeist" (Ger. *Pandeisten*) to denote a doctrine distinct from deism and pantheism came only in the mid-nineteenth century (Mapson 2016, 27), and its use remained sporadic until the turn of the twenty-first century. But pandeism the concept has a longer history and a wider reach than "pandeism" the name.¹ Throughout Polynesia, a lone God chose to become the world. In the Georgia and Society Islands, his story took this form (Tylor 1871, 312–13):

He was; Ta'aroa was his name; he abode in the void.

No Earth, no sky, no men.

Ta'aroa calls but nought answers; and alone existing, he becomes the universe.

The props of the world are Ta'aroa; the rocks are Ta'aroa; the sands are Ta'aroa.

God (under various names) became the world in India as well. "In the beginning," the *Chandogya Upanishad* (Krishnananda 1984) tells us, "there was only one Being, and that Being thought, 'I want to be many so I will create.'" Therefore, "all this universe is Brahman." In the Mayan *Popul Vuh*, the Colorless God made humans out of his own flesh (Bierlein 1994, 69). In Chinese myth, Pàngu (or P'an-Ku) created the universe and died; his body parts became features of the natural world (Lataster 2016, 175). This *mythos* became *logos* in the Taoteching, where the Tao becomes One, then Two, and finally "the ten thousand things." An early twentieth-century commentator wrote, "Even if only by one English letter (d as opposed to th), there is a fundamental distinction between Pandeism and Pantheism. The latter is considered to belong with the metaphysical approaches, while the former is thought to maintain a share in religion" (Weinstein 2019, 83).

Interest in pandeism has grown in the twenty-first century,² in part because of its coherence with science. Evolution explains biological complexity (Prothero 2007). Life's origin remains a puzzle. It may be bound to originate whenever conditions for it are right (Deamer 2019), or it may be a highly improbable accident (Smith 2016, 504–506). But even the most improbable accidents are virtually certain to happen in a Universe as vast as ours (see Dawkins 2006, 165–66 and discussion below). On either understanding, no miracles are needed. There is, however, no accepted, naturalistic explanation for cosmological fine-tuning, the reality that even minor changes to our laws and initial conditions would destroy the capacity of our Universe to support life (Lewis and Barnes 2016).

A world in which life originates and evolves without miraculous intervention is incompatible with theism (Coyne 2015, 26–96). Efforts to resolve this incompatibility fall into an epistemic no-man's land between revelation and methodological naturalism (Dilley 2017). By contrast, the pattern described above fits pandeism, which allies itself with science both substantively and methodologically.

Pandeism also resolves questions about God's conceivability. One is the problem of the Whole, noted above. Pandeism holds that God and the Universe, together *God-and-Universe*, is the Whole, and that this Whole is wholly God. Another tangle of problems surrounds the doctrine of *creatio ex nihilo* (see Oord 2015). Pandeism's *creatio ex deo* requires only a change in an ongoing process, a form of creation for which we have many precedents.

This article's aim is to describe a particular form of pandeism and to assert its evidential advantages as against theism. Part I describes this new map of God, *living God pandeism* ("LGP"), mostly by comparing it to classical theism. Part II offers empirical evidence for it.

THEISM AND LIVING GOD PANDEISM

Ryan Mullins (2016, 327) suggests a way to compare competing understandings of God. "In contemporary philosophy of science," he writes, "it is common to speak of competing research programs. Each research program will have a set of hard-core theses that are not subject to revision, as well as a set of auxiliary hypotheses that are subject to revision." Understandings of God have a similar structure. Within theism, Mullins identifies classical, neo-classical, and open theism as distinct research programs.

In science unlike theology, the research program method (devised by Imre Lakatos) incorporates Popper's hypothetico-deductive method; its hypotheses can be falsified. But when a Lakatosian hypothesis is falsified, its hard core does not necessarily fall. So long as a replacement hypothesis can be found, the program can repair itself. Researchers cannot, however,

adopt just any replacement. A new hypothesis can be called “progressive” only when it both explains the anomaly that defeated its predecessor and correctly predicts one or more new facts. If a program keeps adding progressive hypotheses and forging fresh links to other fields of knowledge—increasing in consilience—it is also “progressive” and can continue. If its replacement hypotheses add nothing new, it is “degenerating” and ought to be abandoned. Using this approach, this article will put LGP’s map of God on the same footing as scientific theories and will show why the same cannot be done for theism.

All three theistic research programs interpret Anselm’s dictum to mean that God possesses every genuine great-making attribute and possesses each to an unsurpassable degree (Morris 1987, 7). LGP agrees. The question is what these attributes are and how they should be described. For expository reasons, this article will use classical theism as its comparator, most often omitting the “classical” modifier.

(Classical) theism’s hard core includes the claims that God is an “*a se*, timeless, strongly immutable, simple, impassible, omnibenevolent, omniscient, omnipotent, and omnipresent substance” (Mullins 2016, 327). This substance is not the Universe but pervades and transcends it; God created the Universe and maintains it in existence. It follows that God has plenary power to shape its detailed history.

LGP also has a hard core. Its signature claim that God chose to wholly become our Universe entails a belief that God changes, but not entirely. Bernardo Kastrop (2016, 45) likens its Becoming to a caterpillar’s metamorphosis into a butterfly. “When the caterpillar weaves its cocoon, it encloses itself in an isolated environment. ... Within this self-contained system ... the *essence* of the caterpillar *reconfigures itself* into the butterfly. ... What we call a butterfly is simply a different *configuration* of the original essence.”³

Caterpillar, chrysalis, and butterfly are a single continuing process; and so, on LGP, is God-and-Universe. The Becoming was the moment this process entered a new, metastable state, with initial conditions and governing laws imposed by God on Godself. These conditions and laws have fostered (and continue to foster) the evolution of multifarious subprocesses, including forms of life and consciousness.

God’s essence encompasses God’s great-making attributes. LGP derives these from Anselm’s dictum and its understanding of the Becoming. First, since God chose to become this world, God must have been capable of choosing and effectuating that choice. This implies sufficient knowledge and intelligence to design the Universe, sufficient power to produce it, and a reason for doing both. A word, however, on “power.” Theistic traditions liken their God to a king. “His command when He desires a thing,” the *Qur’an* (36:82) teaches, “is only to say to it ‘Be!’ and it is.” In pandeism, there is nothing extrinsic for God to command; God governs only Godself.

Instead of kingly power, we can speak of God's supreme causal power or effectiveness. God's effectiveness includes God's capacity and willingness to steadfastly effectuate the choice made at the Becoming.

Second, the word "choice" implies a conscious choice, requiring pandeism's God-as-God to be conscious. Third, on Anselm's dictum and prior to the Becoming, God must have possessed the attributes described above—causal power, knowledge, intelligence, and consciousness—to an unsurpassable degree. Finally, Anselm's dictum alone implies that God is both One (a unity) and basically real. God's unity strongly conditions but does not preclude variety within that unity (see Hartshorne and Reese 2000, 3). God's basic reality means that God's existence depends on nothing other than God and that our existence depends on God's ontologically prior existence.

As these are the only great-making attributes one can confidently derive from Anselm's dictum plus the claim that God chose to become the Universe, Ockham's razor instructs us to invent no more. One can, however, add eternal existence (into the future and the past) as a great-making attribute of God-and-Universe. *Ceteris paribus*, an eternally existent reality would be infinitely greater than one that was only finitely existent, for the former would be great on infinitely more occasions. Neither God nor the Universe can, on pandeism, be eternal into both the future and the past; the Becoming bars that possibility. But God-and-Universe can be eternal in both temporal directions. This cannot be a timeless eternity, for God-and-Universe changes, notably at the Becoming. Nor can we describe it as everlasting eternity *through* time. On LGP, nothing exists except God-and-Universe; time can therefore have no independent existence. Instead, God-and-Universe exists everlastingly in a state of change. Time is the way we measure those changes.⁴

God's Reason for Becoming

Theists have never agreed on God's reason for creating. Maimonides held that we cannot know why God created the world; Al-Ghazali taught that God created "to reveal his power..." (Hartshorne and Reese 2000, 107). We sometimes find different emphases in the same source. The *Catechism of the Catholic Church* teaches both that "God has no other reason for creating than his love and goodness" and that "the world was made for the glory of God."⁵ This diversity suggests that God's reason for becoming is not central to theism; Mullins does not include it in classical theism's hard core. It is, however, central in pandeism.

Linda Zagzebski usefully distinguishes two types of reasons: purposes and motives. One has a purpose when one acts for an end; one's motive is the core emotion or desire that pushes one to seek an end. A purpose-based explanation tells us that an agent acts to achieve a certain end or goal, but

a further explanation is then needed to explain why the agent has that end or goal. The agent's motive provides it. "The most basic explanation for both an act and the end of an act is the motive of the act" (Zagzebski 2004, 99).

To explain God's Becoming, LGP needs a motive, and there are fewer rational motives for becoming a world than for creating one. The two most plausible candidates are a desire for experience and love. A preference for one over the other is a preference for an auxiliary hypothesis; it does not alter this research program's hard core.

A desire for experience also motivates God in a different research program. On this alternate map, call it *death of God pandeism* ("DGP"), God ceases to exist at the Becoming, and our world consists of "God's debris" (Adams 2001). Both LGP and DGP claim that God became the Universe, but on DGP God becomes the world in much the way a crystal goblet becomes broken shards of glass, not in the way a caterpillar becomes a butterfly. A consideration I will call the *priority condition* distinguishes LGP from DGP. I will explain and defend it below.

We turn now to God's plausible motives on LGP.

Desire for Experience: A pandeist website asks:

Can a being that is alone in existence experience fear, much less conquer fear through courage? Can it overcome grief, anger, despair, and experience comfort, contentment, triumph? It can do so only through existence as a Universe which may come to be populated by beings capable of having these feelings, with no portion of the Creator reserved outside the Creation to assuage these beings to any degree.⁶

Becoming a world would, in principle, let God experience everything that world has to offer. God could "feel the rain on His petals, and His fruit being eaten by a bird; and he could taste the fruit like a bird. He could make love as a badger and as an elephant; make love as a man and as a woman." If motivated by a desire for experience, God would become a variegated world that "He could take part in and experience first-hand" (Dawe 2016, 113–16).

Alan Watts (1966, 14) identifies Brahman's reason for becoming the world as a desire for experience:

God likes to play hide-and-peek, but because there is nothing outside God, he has no one but himself to play with. But he gets over this difficulty by pretending that he is not himself. ... He pretends that he is you and I and all the people in the world, all the animals, all the plants, all the rocks, and all the stars. In this way he has strange and wonderful adventures, some of which are terrible and frightening. But these are just like bad dreams, for when he wakes up they will disappear.

This understanding of God's motive aligns with the notion that the world is *māya*; the ocean of God may be real but its creaturely waves are not.

Love. Or God could become a world out of love: Not selfless *agape*, as that word is defined by some Protestant theologians, but something closer to what Thomas Oord (2010, 121–22) calls “multidimensional love.” Gabriele Taylor (1976, 154) describes love this way: “If x loves y we have on the one hand x 's wants to benefit and cherish y , on the other his wants to be with y , to communicate with y , to have y take an interest in him, to be benefited and cherished by y .” Gustavo Ortiz-Millán (2007, 137) is more succinct: “Love is about benefiting and being with the beloved....”

The idea that God would benefit possibilities by bringing them into existence has deep roots in the western tradition (Lovejoy 1964). As John Hick (1977, 77) explains, “Throughout medieval theology, the love of God tends to be thought of ... as the inexhaustible creative divine fecundity, expressed in the granting of being to a dependent universe with its innumerable grades of creatures.” We find the same idea in Islam. “The lover,” wrote Muhyiddin ‘Ibn ‘Arabi, “loves to bring the non-existent thing into existence...” (Chittick 1995).

For recent writers, God's love must also include a “being with” component. Stephen Post (1988) calls selfless love “inadequate.” Charlene Burns (2002) interprets the Incarnation as evidence of God's desire to be with us through suffering and death. When love is intense, its “being with” aspect drives a desire to unite with the beloved. Love wants, Bennett Helm (2012, 37) explains, “to share [the beloved's] identity—to identify with her—intimately....” Freud (1930, 10–11) agreed: “The man in love declares that he and his beloved are one, and is prepared to behave as if it were a fact.”

This combination of ideas fits LGP (Lane 2010, 65–67). Wishing to benefit all possibilities, God would seek to actualize them.⁷ Wishing to be with them, God would seek to become them. Merely creating them could not bring the requisite closeness. In mathematics, when two points are infinitely close there is no difference between them. Theism casts God as a very close observer, but no observer can be infinitely close to created reality. No observer can think creaturely thoughts, experience creaturely experiences, or feel creaturely emotions as particular creatures do. If love was God's motive, we would each be real for a time, as a changing aspect of God.

God's effectiveness ensures that the Universe will fully realize God's motive, subject only to the condition (the priority condition) that God's great-making attributes remain unsurpassable. Desire for experience would only be fully satisfied in a world that was maximally rich in diverse phenomena, including diverse conscious beings whose experiences God could share.

The same sort of world would satisfy love, which would seek both to benefit possibilities (by bringing them into existence) and to be with them (by becoming them). Thus, if either of these motives was fully realized, the world that God becomes would be unsurpassably rich in diverse phenomena, yet retain God's great-making attributes.

For Leibniz, who wanted to systematize the *Timaeus*, structural richness was the most inclusive, neutral way to describe the best-of-possible-worlds' "quantity of reality" or "plenitude." Reality, he wrote, "is not to be located in matter alone, that is, in something filling time and space, whose quantity would in any way have been the same; rather, it is to be located in form or variety. So, it follows that matter is not everywhere alike, but is rendered dissimilar by its forms; otherwise, it would not obtain as much variety as it can" (Leibniz 1973, 146). The conscious beings in a rich, high variety world would, as Leibniz said of his monads, multiply physical reality "perspectively" (Rescher 1991, 200). From their diverse points of view, there would be as many different universes as there are experiencers. God would experience all of this.

How do these motives differ? Watts's explanation of God's reason for becoming describes a God who *simulates* a world, as we do in playing virtual reality ("VR") games. The analogy suggests that God can stop "playing" at any time. But Jelaluddin Rumi wrote, "Love is the flame that, when it blazes up, consumes everything else but the beloved" (Chittick 2005, 12). Love would lead God to become each of us for our duration. Even after that, our passing existence would affect God in some lasting way, however slight.

Is either motive preferable? God's motive would evince God's essential nature, and ought to come forth in any true experience of God. Many mystics and religious traditions have said that love comes forth. John tells us that "God is love"; Rumi writes that love is "the astrolabe of the divine mysteries"; the *Bhagavad Gita* calls Brahman "the lover of all that lives."⁸

Finally, to the priority condition: Why must God-as-Universe preserve all of God's great-making attributes, even if that would thwart complete satisfaction of God's motive? Why not assume that God's motive would prevail, even at the expense of God's attributes? Two arguments support the priority that LGP gives to God's attributes. First, letting God's motive supersede God's attributes would be self-defeating. On each motive explored here, it is *God* who seeks to experience or to be with the created phenomena. But an entity lacking God's great-making attributes would, *per* Anselm's dictum, no longer be God. DGP simply ignores this objection. Second, the assumption, fundamental to DGP, that God could not fully experience creaturely life while retaining God's unsurpassable attributes (including unity and knowledge) is unfounded. As will be explained below, the Universe as a whole could retain those attributes while its various aspects (including its conscious creatures) lack them. Yet, those

creatures, and through them God-as-Universe could still fully experience creaturely life.

If LGP is true, the Universe ought to be unsurpassable on each attribute mentioned above: reality, unity, consciousness, knowledge, intelligence, effectiveness, and (with God) eternity. Its principled effectiveness ought to produce an unsurpassable plenitude of diverse structure and experience. Note, however, that in a theology of becoming, God can be unsurpassable in either of two ways: *absolutely* or *relatively* (Hartshorne 1941, 7–9). Attributes that cannot be surpassed even by God (reality, unity, effectiveness, and eternity) are absolutely unsurpassable. Attributes that can be surpassed only by God in a future state (knowledge, intelligence, and consciousness) are relatively unsurpassable.

With this account of God’s attributes and possible motives in hand, we can consider how theism and LGP stack up as research programs.

Competing Research Programs

Theological research programs prioritize self-consistency, tradition, and religious experience, but they cannot ignore the world that science discloses. “A theology,” writes Sallie McFague (1992, 50), “that is not commensurate with reality as culturally understood is not credible.” To create the appearance of consistency, many traditions appeal to natural theology. But the research program approach used in science differs fundamentally from the approach usually taken by natural theologians. The latter starts from the world—typically asking why it is and why it is as it is, then offer God as the answer. But their best arguments, the cosmological argument and the argument from the fine-tuning of nature’s laws, even were they to succeed, would only point to a creator of some sort, not to theism’s God (Palmqvist 2020, 25–28).

Here, that approach will be reversed. Starting with a concept of God, we will ask what sort of world that concept implies. The answer will imply specific claims (hypotheses) that empirical data can confirm or falsify. Note, however, that this approach can work only for a God concept that has specifiable implications for the natural world. Theism has few of these for two reasons:

- A. On theism, God’s attributes belong only to God; one cannot infer the world’s nature or structure from them.
- B. Many reasons for creation that theists attribute to God have nothing to say about the created world. Even when theism claims that love or goodness led God to create, those motives cannot specify the world’s nature or structure. To do that, they would have to hold that our world *optimally* manifests God’s reason for creation. But no major theistic tradition makes that claim. The resulting indefiniteness of what theism’s

God might create negates any possible use of God's motive to frame predictions about the world.

The canonical objection to the claim that God should and therefore would create "the best of worlds"—read: "the world that best effectuates God's motive"—is this:

Premise 1: No created world can be optimal in any way, for the infinite God could always do better.

Premise 2: Since no optimal world can exist, even God cannot create one.

Conclusion: God can only create a less-than-optimal world and chose to create ours out of grace.

This argument's first and crucial premise is that an unbridgeable gap exists between God's power of creation and the capacity of any created world to receive the result. Bonaventure described that gap in terms of creatures, but his logic applies equally to worlds: "[N]o matter how big or how good a creature [world] may be, there is always a point at which one must stop, because any creature [world] is finite. And what God does with regard to that creature [world] is good within that limit, so that He does not do anything more. But I think that it is never the case that God could not do something more" (Pini 2009, 287).

Contrast LGP:

- A. The Universe that God wholly becomes must possess each of God's great-making attributes, and each to an unsurpassable degree. For if any great-making attributes were lost or diminished in the Becoming we could then conceive of something greater than God: namely, a Reality whose greatness would not diminish upon Becoming. Another way of saying this: if the Becoming diminished God's greatness, whatever became the Universe would not still be God; nor would God-and-Universe comport with Anselm's dictum.
- B. The claim that God wholly became the world instead of creating it defeats Bonaventure's premise. For (on A) the Universe that God becomes would retain God's unsurpassable causal power/effectiveness and with it the capacity to optimally realize God's motive.

If God wholly became the world, a clear statement of God's nature and motive would give us a basis for making testable predictions. Darwin's research program offers an analogy. Darwin knew that natural selection would require at least hundreds of millions of years to produce all existing forms of life. So, it came as a blow when William Thomson (later Lord Kelvin) calculated the Sun's age to be far less than that. But Darwin's program answered many biological questions, so scientists kept trying to reconcile these findings. In 1895, geologist Thomas Chamberlain

suggested, “No careful chemist would affirm either that atoms are really elementary or that there may not be locked up in them energies of the first order of magnitude.”⁹ A decade later, Einstein wrote down the equation that showed how energy locked up in atoms lets the Sun shine for billions of years. The special theory of relativity made natural selection consilient with physics. Just as Darwin and his supporters could not say how the Sun could shine so long but knew that, *in some way*, it had to, LGP’s predictions about the world must, if its claims are true, be satisfied *in some way*, though not necessarily in a foreseeable way. To this extent, LGP makes testability possible. Theism and other maps of God do not.

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This part offers hypotheses describing how our Universe may be unsurpassable on each of God’s attributes. Each hypothesis is a live scientific claim that may or may not turn out to be true. If one of them fails it will need to be replaced or the research program will degenerate.

Reality and Unity

If God became a universe, it ought to be basically real and unified. But because pandeism posits real change, no world that God becomes could be a changeless block; it would have to be a changing, unified system. And this is the standard monistic view: “The core tenet of historical monism is not that the whole has no parts, but rather that the whole is prior to its parts” (Schaffer 2010, 33). On LGP, this view (“priority monism”) should be true. By contrast, theism sees the Universe as a collection of ontologically distinct substances (Mullins 2016, 330–32). The truth of priority monism, if confirmed, would support pandeism as against theism.

To see how a world of diverse phenomena might still be One, start by asking how anything can be one. We take a cat to be a unified reality because its diverse pieces and parts interact in a systematic way—the cat stalks and leaps together—and because the whole brings its parts into being: the cat evolves from a single cell; its paws and ears do not join up to form their owner. The standard contrast is with a heap of sand. It has no structure to speak of, no diverse pieces or parts that systematically interact; and the heap does not create the sand grains: it comes into being when grains are swept together. A cat is a unified system; a sandpile is an aggregate. If God became our world, it should be catlike.

Like a cat, our world did not begin by combining constituents. They all came into being through the operation of its physical laws. Our Universe originated at what physicists call a “time-like singularity”: When one follows the histories of its structures backward, they appear to converge at a singular point in the past (Mithani and Vilenkin 2012).

Our world's physical laws govern the Universe, not its pieces or parts. To minimize noise from the environment, physicists try to isolate the systems they study. But noise always creeps in, for no physical system other than the Universe evolves in exact conformity to the laws of physics, as if those laws applied to that system alone. "Newton's first law of motion," explains physicist Lee Smolin, "asserts that all free particles move along straight lines. It has been tested and confirmed in numerous cases. But each test involves an approximation, for no particle is truly free. Every particle in our universe feels a gravitational force from every other" (Smolin 2013, 100). This "principle of no isolated systems," as Smolin calls it, is a core feature of the physical world (Smolin 2013, 110). The Universe is the only truly isolated system. "Being the one system for which nothing is 'outside' [it] is the one system immune to disruption. This means that the cosmos is the one and only thing that evolves by strict laws" (Schaffer 2013, 75).

Priority monism's main competitor is priority atomism. Following Democritus, priority atomists focus on the smallest "uncuttable" instances of matter, whatever they may be. They say the Universe is a collection of things composed of simpler things, and ultimately of these philosophical "atoms,"¹⁰ which might be quarks and electrons or something smaller. If this were true, the Universe would be further removed from basicness than anything in it.

This idea once gained support from the "wave-particle" metaphor often used to explain quantum physics. According to this metaphor, quarks, electrons, photons, and so on (call them all "quanta") sometimes behave as particles and sometimes as waves, depending on the way they are measured. The notion that quanta are in some sense particles let atomists take them to be their "atoms." But quanta are no longer seen even partly as "particles"; many physicists want to ban that word entirely (Zeh 2003; Hobson 2013). "In quantum theory," writes Euan Squires (1994, 93), "what we thought was a particle, a tiny object following a well-defined path in space, is really a wave." Each wave owes its existence to the universal quantum field in which it metaphorically "waves"; the fields do not owe their existence to their many quanta. Nobelist Steven Weinberg calls this the "central dogma of quantum field theory: *the essential reality is a set of fields* subject to the rules of special relativity and quantum mechanics; all else is derived as a consequence of the quantum dynamics of those fields" (Pagels 2011, 269).

A "particle" would be real if it both existed as a separate entity and was "always present somewhere in the three-dimensional Euclidean physical space" (Sassoli de Bianchi 2011, 7, 15). But owing to Heisenberg's uncertainty principle, a quantum does not always have a definite location in space; and owing to quantum entanglement (discussed below) it does not exist as a separate entity. "[O]ur widespread belief in the existence of microscopic particles is only the result of a cognitive illusion, as microscopic

particles are not particles, but are instead the ephemeral spatial and local manifestations of non-spatial and non-local entities” (Sassoli de Bianchi 2011, 1). That is, of the quantum fields. If we consist of quanta and they are waves in quantum fields, the fields are more basic than we are. Our reality depends on their ontologically prior reality. But the fields are interconnected and fill the Universe, so the Universe is basic and prior to its contents (see Le Bihan 2018).

Three further points on this front:

Entanglement. If “atoms” were basic realities, quanta would act only in response to pushes or pulls felt locally. Since they are not basic, this principle does not hold. Instead, quanta are “entangled.”

The set of properties that describes a quantum is called its quantum state. On a standard understanding, no quantum is in any state until it interacts with a measuring device; before that, it exists in a superposition of all its possible states. Only when it is measured—when it is metaphorically asked, “Is your property p in state 1 or state 2?”—does the quantum answer one way or the other. But two quanta can be placed in an “entangled” state. When either entangled quantum is measured it answers in the usual way, but if the second is then measured it always exhibits the opposite state. No local cause can explain this behavior, nor can it be explained by assuming the quanta were created in opposing states, so that learning the state of one would disclose the state of the other (Bell 1966). Entanglement is a property of the entangled system.

Entanglement has been demonstrated only in quanta created together, but Schaffer argues that all elementary quanta are entangled, for all were created together at the Big Bang. “This initial entanglement is then preserved thereafter on the assumption that the world evolves via Schrödinger’s equation.... In fact, Schrödinger evolution tends to spread entanglements, so that even without initial entanglement, ‘eventually every particle in the universe must become entangled with every other’” (Schaffer 2010, 25, quoting Penrose 2004, 591). Physicists Robert Nadeau and Menas Kafatos (2001, 4) argue that entanglement evinces “an undivided ... wholeness [that] exists on the most basic and primary level in all aspects of physical reality....”

Holographic Universe. Many physicists now suspect a still deeper unity: the world of our experience may be a holographic image. Holograms work this way: Light waves leaving a three-dimensional target object are deconstructed and recorded on a surrounding two-dimensional surface (the hologram). Later, a three-dimensional replica of the target object, a holographic image, is reconstituted from this record. Because each region of the hologram (down to its pixilation limit) contains information about

the whole target object, removing a section does not remove a part of the image; it only makes the whole image fuzzier and less detailed.

In a holographic universe, everything would have its real existence on the interior of a closed, two-dimensional hologram. Much as every air molecule in a concert hall holds information about every instrument in the orchestra, every “pixel” on the hologram’s surface would hold information about the whole universe. The hologram would specify the “cosmic holographic image” that we perceive as our world.¹¹

The “holographic principle,” discovered by Jacob Bekenstein and others, holds that the maximum information content of a region of space depends not on its three-dimensional volume but on its two-dimensional surface area (with the Planck distance squared as its pixilation limit; see Bekenstein 2003). Fit six rigid spheres into a single large sphere and interstices will be left unfilled. This shows that the large sphere has a greater volume than the six small spheres combined. Yet, their greater total surface area lets the six small spheres hold more information.¹² This seems impossible if three-dimensional space is real; but it follows directly from the claim, now otherwise evidenced, that our world is holographic (Afshordi 2017).

If the Universe is holographic, are we still real? In one sense, no: I am not *really* sitting at a table typing these words (see Hoffman 2019). But our experiences, thoughts, and emotions are wholly real, and they compose the world as we know it (see Strawson 2006).

God-as-God. If God-as-Universe can exhibit “variety-in-unity” (Hartshorne and Reese 2000, 3), God-as-God can as well. A kabalistic text describes *Ein Sof* (“Infinite One”) this way: “*Ein Sof* is unified oneness. Down to the last link, everything ties to everything. So, divine essence is below as well as above, in heaven and on Earth.”¹³ There is no compelling reason, either logical or historical, to believe that God-as-God must be more unified than God-as-Universe, though it could be.

Consciousness

“Consciousness is experience” (Koch 2019, 1). For a being to be conscious there must be “something it is like” to be that being, to have its experiences. A pinprick and the taste of cheese are just two of the limitless things that consciousness can be “like.”

The claim that the Universe is conscious has gained credibility for several reasons. First, decades of thought and research have failed even to hint at how consciousness might emerge from chemistry and physics. The idea that they do looks increasingly like a category mistake (see Goff 2017, 23–132). Water’s liquidity is a textbook example of emergence. It only becomes a liquid when millions of water molecules collocate at certain

temperatures and pressures. But for water's liquidity to emerge, each molecule must already have a *potential* for it, a structure that lets it slip around but cohere with others. "If," writes Galen Strawson, "it really is true that Y is emergent from X then it must be the case that Y is in some sense wholly dependent on X and X alone, so that all features of Y trace intelligibly back to X... *Emergence can't be brute*" (Strawson 2006, 18). As Leibniz's famous thought experiment of the mill already suggested, the electrochemical interactions that occur between and within neurons have no apparent potential for consciousness. A growing acceptance of this conclusion—"There will," writes neuroscientist Christof Koch (2012, 3), "never be a reductionist, mechanistic account of how the objective world is linked to the subjective one."—has prompted a search for other explanations.

The prejudice against widespread animal consciousness has also faded. "The apparent restriction of the phenomenon of consciousness to the higher forms of life," Père Teilhard de Chardin (1959, 55) wrote, "has long served science as an excuse for eliminating it from its models of the universe." Today, that excuse no longer serves. It seems increasingly likely that, perhaps to varying degrees, nearly all animals are conscious (see Barron and Klein 2016; Feinberg and Mallatt 2016; Medeiros 2021).

These developments have fueled interest in panpsychism, the modern version of which comes in two flavors: constitutive and nonconstitutive. Constitutive panpsychism is the claim that, just as each of us has an interior conscious self, every *ultimate* (i.e., basically real) physical reality has an interior nature that instantiates experiential properties. Ultimacy is the key. To say that consciousness began with the first cell or the first brain would, on this view, be arbitrary. Why should it begin there and not somewhere else? If consciousness exists at reality's basic level, that question does not arise. We "only" have to explain how this base quality becomes our variegated experiences.

So long as elementary "particles" were thought to be basically real, they were the primary locus of speculation. Panpsychists theorized that our consciousness derived from theirs by way of combination. But this view has obvious problems. First, quanta are not basically real; they therefore cannot, by panpsychism's own logic, be the ultimate sources of creature consciousness. Second, no one has explained how the tiny sparks of consciousness that quanta purportedly possess could combine into sensations like that of riding a bike downhill. The difficulty of this "combination problem," Barbara Montero (2017, 223) writes, suggests "that panpsychists should think of the fundamental nature of the world as comprising, not discrete particles, but rather a continuous expanse of consciousness ... the underlying experiential, nondiscrete nature of the universe."

There are also affirmative arguments for *priority cosmopsychism*, the version of constitutive panpsychism that says the Universe is the ground

of conscious experience (see Nagasawa and Wager 2017). If some brain activities depend in part on quantum effects (see, e.g., Jedlicka 2017) the quantum connection could favor a holistic ground of experience. “The simultaneous unity and complexity of subjective experience is very difficult to understand from a classical physics perspective,” writes Christof Simon (2020, 204). “In contrast, quantum entanglement is naturally both complex and holistic.” And if priority monism is true, priority cosmopsychism logically follows from constitutive panpsychism’s core premise:

Premise 1: Consciousness must be grounded at reality’s most basic level.

Premise 2: The Universe is the only basic reality.

Conclusion: The Universe must be the ground of conscious experience.

Another alternative is nonconstitutive panpsychism (“NCP”), the notion that structures, not ultimate physical realities, instantiate consciousness. A leading neuroscientific theory of consciousness, the integrated information theory (“IIT”), is an NCP theory (see Tononi 2016; Koch 2019). “[I]n line with the central intuitions of panpsychism, IIT treats consciousness as an intrinsic, fundamental property of reality” (Tononi and Koch 2017, 1). Yet, it also holds that creature consciousness can only arise in entities (living or nonliving) with the right causal structure. In particular, systems doing a lot of recurrent processing—those whose information processing is strongly causally integrated—are more conscious than systems doing less. Structures not integrated in the requisite way do not instantiate consciousness.

IIT has empirical support, but Anthony Peressini (2013, 192) poses two conceptual challenges to it and other NCP theories. First, “why and how is it that [causally integrated] neuronal complexes ... have something it is like to be them as opposed to nothing at all?” Constitutive panpsychism claims to rest on the interior nature of physical reality, but structures *qua* structures have no interior nature. What makes them conscious? Second, what links particular causal structures to particular experiences? Why is one causal state of an integrated structure a “red” experience and another a “salty” one?

Gregg Rosenberg (2017, 172) says the missing piece could be a universal ground or “base quality” that is “simple only in the way that, say, white noise or white light is simple.” White noise and white light are relatively simple qualities, but each masks a complex structure that superposes all possible sounds or colors. Similarly, cosmic consciousness may be a multiply superposed wave structure (a field) that includes *in potentia* all possible experiences but appears simple in its totality. The right sort of structure could then actualize individual experiences by reshaping cosmic consciousness, much as a radio transmitter reshapes a carrier wave in the electromagnetic field. At each conscious moment, “it is as if the intrinsic qualities behave as though they were waves, and a Fourier transform on

the shape of the input waves occurs, resulting in a wave of a new shape” (Rosenberg 2017, 173).

If Rosenberg’s idea was true, the underlying field (Keppler and Shani 2020 call it the “ubiquitous field of consciousness” or “UFC”) would include every possible gradation of sensation. Brain structures—perhaps of the sort that IIT postulates—would modulate this field, creating localized patterns of experience in the UFC.

Complexity Objection. Nagasawa and Wager (2017, 125) mention this objection to cosmopsychism: the “brain can instantiate phenomenal properties because it has the right structural complexity. Yet ... the cosmos is not comparable to the brain in terms of structural complexity.” There is, to begin with, an ambiguity here. Consciousness in the sense of a UFC or equivalent does not seem to require structural complexity. The UFC may have no structure beyond its individual waves. These may, as Hartshorne (1934) argued, form an “affective continuum,” in which every emotion and sensation, whatever its modality, has its place in an unbroken continuum of phenomenal qualities.¹⁴ If so, the complexity objection would not weigh against the possibility that the Universe could be the ground of consciousness.

Consciousness in the sense of instantiating discrete experiences may require complexity, but it need not require the Universe as a whole to be complex. The complexity might reside only in structures or regions that serve as cosmic counterparts to a brain’s neural correlates of consciousness. This could include the neural correlates of consciousness in the brains of sentient creatures. It could also include the cosmic web: a filament-like structure of thin, swirling gas that stretches across and among the world’s galaxies and galaxy clusters. This largest of all baryonic structures equals the human brain in morphology and memory capacity, but on a scale of a few hundred thousand light years rather than millimeters (Vazza and Feletti 2020). The striking resemblance between these vastly different structures (see the illustrations in their article) does not mean the web is a cosmic correlate of consciousness. It does, however, suggest that the complexity objection is too quick.

Sharing Consciousness. Could multiple structures, many of them in brains but perhaps including one that extends across the Universe, share the same conscious substrate? Dissociative identity disorder (“DID”) offers some insight here. DID occurs when two or more distinct personalities inhabit the same person (see Morton 2018).¹⁵ One of these is the person’s “core” personality; the others are “alters.” The same memory can be a conscious recollection of a personal happening (“It happened to me”) to one personality; a memory of something that happened to someone else (“It happened to Eve White”) to another personality; or unremembered

(“It never happened”) to a third (Dorahy 2001). In general, the core personality has access to more memories than the alters.

In a similar way, the Universe could have a core personality, while each of its sentient creatures could be an alter. Mystical or religious experience could then occur when an alter encounters universal consciousness or is briefly absorbed by it, perhaps through prayer or meditation. These encounters could occur in various ways, with the core personality or the ground of consciousness, a range of possibilities that could in part explain the diversity of religious experience.

Diversity in Unity. These ideas also explain how the Universe could experience each creature’s hunger, fear, or triumph as the creature does while remaining One. DGP’s claim that this is impossible rests on the observation that our experiences all flow in a single “stream of consciousness” (Bayne 2010). The stream metaphor encodes the role of memory in our consciousness of the present: we cannot fully believe that a VR game is real because we can remember strapping on the goggles. But the unity of this stream depends (on cosmopsychism) on the brain structures that shape our experience, not on the universal ground that experiences it. So, the unity of our consciousness can tell us nothing about that ground’s capacity to experience each creature’s consciousness as wholly real and separate. Indeed, cosmopsychism implies that it does.

Knowledge and Intelligence

When the terms are used to describe a world, knowledge and intelligence can be defined as information and the capacity to process it. The Universe is relatively unsurpassable in both respects. First, it always possesses complete information about its past and present. It is hard for us to see this, for the hundreds of tiny, unnoticed influences at play in even simple events make detailed information about their past states irretrievable by us. And the quantity of this hidden information, the world’s entropy, is always growing. But while information is always being hidden from us, none is ever lost, for our physical laws are both reliable and reversible.

Rules encode a system’s causal patterns. If, given a certain state (S_1), no rule let us predict what comes next (S_2), information would be lost; the two states would not belong to the same, unified system. Since they make such predictions possible, our physical laws are reliable. But they are also reversible: one cannot only predict S_2 from S_1 ; one can also retrodict S_1 from S_2 (see Lane 2010, 67–71). A world governed by irreversible rules would lose information about its past states with every state transformation. That does not happen in our world, for our laws of physics conserve information, even within black holes (Pennington et al. 2020). This is significant, for the conservation of information in black

holes is unlikely to be a requisite of our existence.¹⁶ Yet, LGP predicts it, for a world that loses information about any of its prior states would not be unsurpassably knowing. Nor would it be an unsurpassably unified system, for its past and present states would not be unsurpassably linked.

Our world also processes information. Physicist Seth Lloyd (2006, 174) describes it as a quantum computer.

In the computational universe, space is filled with “wires,” paths along which information flows. ... The wires meet at quantum logic gates, where that information is transformed and processed. The quantum logic gates, in turn, tell space how much to curve at that point. The structure of spacetime is derived from the structure of the underlying computation.

At each moment since the Becoming, the Universe has computed its own, ever more information-filled and computationally powerful future state. Since no part of it can compare, the Universe is relatively unsurpassable in processing power/intelligence.

Does this make it unsurpassable in Anselm’s sense? A classical theist might argue that her God also knows the detailed past and present states of the Universe, but in addition knows the future in its detailed entirety. As Alan Turing showed, this possibility is not open to a computational process; it can only know its future state by computing it (see Lloyd 2006, 34–37). Yet, our theist would argue, we can conceive of classical theism’s God.

Or can we? Many deny that even God can know the future in exhaustive detail. Neo-classical and open theism reject the idea (Mullins 2016, 331–33). And there are other reasons to think classical theism’s God would be less knowing than God-as-Universe. No theistic God can experience our pains and triumphs exactly as we do, and the disabilities of classical theism’s God are even greater. It can have no experiential knowledge (Sarot 1991) and cannot even know a range of propositional statements (Grim 2003).

Effectiveness/Plenitude

On LGP, the Universe must be both One and vastly many. Teilhard (1959, 45) wrote, “The stuff of the universe, woven in a single piece according to one and the same system, but never repeating itself from one point to another, represents a single figure.” A vast and various figure. The observable Universe includes ~ 2 trillion (2×10^{12}) galaxies (Conselice 2016). Each has ≥ 100 billion (10^{11}) stars. Nearly all of these have planets (Cassan 2013), which come in all possible sizes and orbital arrangements. The whole Universe is *at least* 250 times larger than the observable part (Vardanyan et al. 2011). And our world’s proliferation of structure does not stop with astronomy. Smolin (1997, 163) notes that we “not only find structure on a variety of scales, we find structure on every scale we

have so far explored.” At the smallest scale, what seems to be quantum indeterminacy may be the world changing holistically to become ever higher in structural diversity (Smolin 2016).

Is the Universe *unsurpassably* vast and various? The weak anthropic principle (“WAP”), the tautological truth that any world we observe must support our existence, offers a way to address this question. Naturalistic explanations of cosmological fine-tuning rest on the WAP, but it can only explain why our world exhibits enough structural richness to support our existence, to make it seem plausible that we evolved. In itself, the WAP cannot explain *superfluous structure*: any vastly more abundant array of phenomena than our existence requires. Superfluous structure, if it exists, would require another explanation, and LGP offers one. It predicts superfluous structure because it predicts that our physical laws should be *hyper-tuned*: tuned to a degree far beyond our requirements to maximize structure, life, and consciousness.

Why life? Living creatures are both the most complex structures we know and the most prolific producers of nonliving structure. As just one example, more than two-thirds of the 5,000 or more mineral species known to exist on Earth are the result of changes life has made.¹⁷ They are also the only forms of consciousness we know. So, the hyper-tuning hypothesis predicts that life, including complex life, should be far more widespread in the Universe than it had to be for us to exist. It should be a major contributor to the world’s superfluous structure.

To learn how much superfluous structure there is, start with our astronomical requirements. “[O]ur solar system,” writes Stephen Hawking (2008, 130), “is certainly a prerequisite for our existence, as is an earlier generation of nearby stars in which heavy elements could have been formed by nuclear synthesis. It might even be that the whole of our galaxy was required. But there does not seem to be any necessity for other galaxies to exist, let alone the million or so of them that we see, distributed roughly uniformly throughout the observable universe.” Adam Frank and Woodruff Sullivan (2016) make a supporting point: For us to be the only technological civilization in the observable Universe to date, the odds against such a civilization evolving on any particular planet in any particular star’s habitable zone would have to be between 2.5×10^{22} and 2.5×10^{24} to 1. Thus, if the actual odds were only ten billion to one against a technological civilization arising on a representative planet, we could expect that somewhere between 2.5 trillion and 250 trillion such civilizations have come to exist since inception.

Even so, might the actual odds be so enormously great that little of this structure is superfluous? Life is the great complexifier, and most considerations once thought to make complex life rare are now thought not to have that effect (see, e.g., Gowanlock 2011; Kasting 2012; Imachi 2020;

Sandora 2019). The key factor therefore seems to be the ease with which life arises from nonlife.

The frequency with which life arises remains a mystery, but we may soon have the answer. If even primitive life is found to exist (or to have existed) on extraterrestrial bodies within our observational reach, especially those within our solar system, the likelihood would be high that life is widespread. If we observe no signs of extraterrestrial life, that would suggest it is not widespread. The absence of such signs would tend to falsify the hyper-tuning hypothesis, and LGP with it.

By contrast, neither outcome—plentiful life or none—would falsify or confirm theism. Theism is consistent with a world “full” of living and nonliving structures, but it does not imply such a world. Unlike medieval Christian theology, contemporary theology is “more inclined to say that God willed to create finite beings who should be capable of personal relationship with Himself” (Hick 1977, 77). Again, LGP makes a testable claim while theism does not.

Eternity

Eternity is a great-making attribute, but it poses a challenge for LGP. Entropy measures a loss of ordered energy and structure, and the second law of thermodynamics says it always increases. It therefore seems unavoidable that, sooner or later, the stars will burn out and structure will disappear. Yet, if God became the world only to die with it, God could not be God. Anselm’s dictum would preclude it.

The answer seems to be a return to God at the end of this age. With nothing left to love or experience, God could then choose to become a new Universe. The energy requirement for a new Becoming would be minimal. According to Andrei Linde, 1/100,000 of a gram of matter would be enough (Holt 2004). No matter how large the Universe becomes, God’s choice to Become would be unitary. The knowledge of physics and other sciences that creatures in our world accumulate would enable the design of a new one, as would the experiences of our world’s sentient creatures. God would sacrifice most of this knowledge at the new Becoming, but would gain an evolving world. God’s consciousness (in the sense of the UCP) would continue, as it continued from the last world to ours.

CONCLUSION

Theism rests on faith; the truth of LGP is a scientific question. As our knowledge of the Universe grows, its research program will either progress or degenerate. For now, it appears to offer a more consilient worldview than theism has provided over the past two centuries.¹⁸

NOTES

1. For the history, see Mapson (2016) and Weinstein (2019).
2. Two anthologies—Mapson (2016) and Mapson and Perry (2019)—reflect this interest.
3. Emphases in quotes are in the original.
4. Smolin (2013) argues that time is real in this sense.
5. Part One, Section Two, Chapter One, Article One, III.
6. <https://sites.google.com/view/pandeism> (visited May 12, 2019).
7. As Leibniz was first to see, all possible phenomena cannot be actualized in a single world.
8. From 1 John 4:8; *Masnavi* 1:110; *Bhagavad-Gita*, Ch. 5.
9. This story is told and Chamberlain is quoted in Barrow and Tipler (1986, 165).
10. I place “atom” in quotes to avoid confusion with chemical atoms.
11. This is, I hasten to say, a simplified explanation.
12. I owe this example to Hoffman (2019, 119–21).
13. The *Zohar*, quoted in Aczel (2001, 35).
14. The ways our senses shape each other (Cytowic 2018; O’Callaghan 2015) support this hypothesis.
15. DID was formerly called “multiple personality disorder.” Kastrup (2016, 51–52) suggested its relevance in this context.
16. See the discussion of the WAP below.
17. Mineralogist Robert Hazen, quoted in Wei-Haas (2016).
18. My thanks to Kenneth King, Knujon Mapson, Jonathan Schaffer, and an anonymous reviewer for their comments and suggestions.

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