God and/as the Universe

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Abstract:

I address the issue of what the role of the particular theoretical physical model of the Universe we inhabit should be in one's pantheistic or panentheistic theology, as this question is scarcely addressed in the traditional pantheistic or panentheistic views. Pantheists and panentheists do consider the God-Universe relation as crucial, but they do not delve into the physical theory, that is, into cosmology. This might be due to their thinking that the particular cosmology is not important as long as we have the general picture of how God is supposed to be related to the Universe. In this essay, I argue that as compared to the Big Bang model of the Universe, the more recent Big Bounce model, based on quantum cosmology, is more congenial to a naturalistic version of panentheism.

In earlier work (Aranyosi 2013) I offered a view of God, which I dubbed "logical pantheism", according to which God is to be identified with (my account of) logical space.[1] The basic argument was that logical space is truly the only item in our ontology that deserves the name "God", given the most neutral and most correct definition of the concept God, the Anselmian "the being greater than which nothing can be conceived". Though I still subscribe to this view, I realize that it is quite odd and disconnected from the traditional pantheistic or panentheistic views, in that it does not award (for good reasons) any special place for the physical Universe in one's theological economy.

In this essay I would like to address the issue of what the role of the Universe is in one's pantheistic or panentheistic theology is, not simply because I haven't said anything about it in my previous work, but because there is a neglect in the traditional pantheistic or panentheistic views when it comes to the precise nature of the Universe. Pantheists and panentheists do, of

[1] For a summary of Logical Pantheism, see Aranyosi 2022.

course, consider the God-Universe relation as crucial, but they do not delve into the physical theory, that is, into cosmology, possibly because they think that the particular cosmology is not important as long as we have the general picture of how God is supposed to be related to the Universe.

In what follows, I will try to correct this shortcoming. I will proceed as follows. In the first section I will explain and compare two kinds of panentheism, *mereological* and *emergent* panentheism, depending on how they view the *being in* relation that is supposed to hold between the Universe and God. In section 2, I consider Naturalism and set it as a constraint on our theorizing about alternative notions of divinity. In section 3, I argue that, on the face of it, emergent panentheism appears to be the only model that is compatible with naturalism. In section 4, I consider Big Bang cosmology, and argue that it is not congenial to naturalistic panentheism. In section 5, I talk about Big Bounce cosmology (a.k.a. loop quantum cosmology) and argue that it is a nice physical model that can ground a reasonable naturalistic mereological panentheist view. I end the essay with a few thoughts on the kabalistic notion of *tzimtzum*, which appears to be an early (purely speculative) adumbration of loop quantum cosmology.

Mereological versus emergent panentheism

Pantheism and panentheism are alternatives to both classical theism and atheism. Pantheism *identifies* God with the Universe, whereas panentheism states that the Universe is *in* God. Ever since Spinoza's *Ethics*, a common theme of advertising such alternatives is that they compensate for some shortcomings of the more established views. Atheism's shortcoming is the lack of spirituality; many people reject theism, but still consider themselves spiritual in some sense. Classical theism's shortcoming is that it posits a transcendent god, who many people find distant, unreachable, and unknowable. A further "selling point" of *panentheism*, as compared to pantheism, is that it avoids the danger of emptying the concept of GOD of spirituality by identification with nature, which is a problem of pantheism (cf. Culp 2017).

There are many versions of panentheism, stretching back in time all the way to Ancient religions, but I would like to put forward one distinction which I think is important for theoretical reasons – that between a simple, mereological understanding of the *being in* relation and a subtler, emergentist understanding of it.

The mereological understanding appears as the obvious interpretation of the relation of *being in*, expressed in the slogan "everything in God", yet one can seldom find it in the history of pantheism. I will mention and briefly discuss one recent such view, which I take to be close enough to what I call "mereological panentheism", but first let us see what this interpretation amounts to. What I mean by mereological pantheism is the view that the Universe is a proper part of God's, where "proper part" is understood in accordance with core classical mereology (cf. Varzi 2016). We can define proper parthood via a core principle and a decomposition principle of supplementation. The core principle is that *x* is a proper part of *y* iff *x* is a part of *y*, but not identical to *y* ($PPxy \leftrightarrow Pxy \ \& \ x \neq y$). The decomposition principle, which has standardly been taken as analytic of the concept of PROPER PART (cf. Simons 1987, 116), is what Simons called "Weak Supplementation" in his survey of mereology:

Weak Supplementation: $\forall x \forall y(PPxy \rightarrow \exists z(Pzy \wedge \neg Ozx))$

where the predicates *P*, *PP*, and *O*. mean, respectively, "is a part of", is a proper part of", and "overlaps". What the principle says is that whenever an individual, *x*, is a proper part of another, *y*, there must be a remainder – an individual, *z*, that is a proper part of *y* but disjoint from *x*. It is very tempting, indeed, to take *Weak Supplementation* as analytic, though there certainly have been quite a few dissenting voices in the metaphysics literature.[2]

The emergentist –or more, generally, a dynamic or process interpretation of– panentheism, on the other hand, is less straightforward, yet, it has been dominating the proposed models in the literature. I will discuss a particular such model later, in section 3, but for now I just want to briefly describe what this type of panentheism is supposed to look like.

Instead of thinking about the Universe-God relation as a simple part-whole relation, according to this second type of panentheism we are supposed to the think of divinity as being somehow an emergent property of the Universe. In other words, though there is nothing more than the physical Universe needed to obtain God, God's divinity is more than what the simple sum of the material parts of the Universe would entail. This is the basic idea of an emergent property; it is

[2] See Cotnoir 2021 for a discussion of alleged counterexamples and the source of the disagreements about the principle.

a property that cannot be predicted or inferred from the totality of properties instantiated at a lower level of complexity.[3]

An example of a domain that many theorists consider as involving this type of strong emergence is quantum mechanics. In that literature it is called 'holism' (Teller 1986, Healey 2016, Lewis 2017). Though the metaphysics of emergence is a complex and controversial topic, one important point that I want to emphasize is that emergence is *not* supposed to be a wacky, unnatural, anomic, mysterious phenomenon just because strongly emergent properties are not a priori entailed by base properties; on the contrary, emergence is taken as implying a *nomic* relation between the base and the emergent property. Indeed, C. D. Broad himself, who was one of the chief representatives of British emergentism (cf. McLaughlin 1992) defines emergence as involving nomicness as a necessary condition:

> Put in abstract terms the emergent theory asserts that *there are certain wholes, composed (say) of constituents A, B, and C in a relation R to each other; that all wholes composed of constituents of the same kind as A, B, and C in relations of the same kind as R have certain characteristic properties*; that A, B, and C are capable of occurring in other kinds of complex where the relation is not of the same kind as R; and that the characteristic properties of the whole R(A, B, C) cannot, even in theory, be deduced from the most complete knowledge of the properties of A, B, and C in isolation or in other wholes which are not of the form R(A, B, C). The mechanistic theory rejects the last clause of this assertion. (C. D. Broad 1925: 61) (*my emphasis*)[4]

Since I think nomicness is what grounds naturalness when it comes to judging whether a certain phenomenon's explanation is naturalistic or not, I will now turn to a discussion of naturalism in the context of panentheism.

Naturalism

Let me first state that my agenda in this essay is to try to find a feasible and coherent *naturalistic* panentheism. Why naturalism? There are two reasons for this preference. One has to do with our *Zeitgeist*; indeed, in the last 60 years or so philosophy has increasingly come to be viewed by its practitioners as a continuation of empirical science, or at least as an armchair, analytic activity which nevertheless is supposed to be compatible with the sciences. The second reason is that

[3] It is worth emphasizing that what we are interested in here is what has been called "strong emergence" in the literature, that is, cases when it is in principle impossible to infer the instantiation of a property from a certain base, not cases when a property at a higher level of organization appears merely as *surprising*, but ultimately predictable. Cf. Chalmers 2006.

[4] The paradigmatic case for emergence has always been the mind-body problem. The mind, or rather some essential property of it (e.g. its intentionality, or its phenomenal aspect, or some other alleged property), is said, by dualists, for instance, to emergent vis-à-vis the neurological base which grounds it. Yet philosophers who did put forward such views (the classical British emergentists, or contemporary ones, like Chalmers 1996, Crane 2001) also emphasize the nomic connection between mental and physical properties and the existence of fundamental psychophysical *laws*. It is the non-fundamentality of the physical and the fundamentality of the psychophysical that thee emergentists insist on, not some alleged *lawlessness* between the mental and the physical.

naturalism about theology, just like (or even more so than) naturalism about the mind, is a challenging and intrinsically interesting intellectual endeavor, much harder than the standard non-naturalistic theology. Indeed, even pantheism, which, on the face of it, seems like a straightforward doctrine very congenial to a naturalistic worldview, is even more problematic the more naturalistic one wishes to be about it (Leftow 2016).

Let me then state my definition of naturalism, which I will then briefly compare to the two mainstream views about it. My definition of naturalism is as follows:

Naturalism: A theory, *T*, meant to explain a phenomenon, *P*, is naturalistic at time *t* iff in all the hypotheses contained in *T* which involve *P*, *P* figures as a relatum in relations that are established/known/assumed at *t* as *laws of nature*.

This definition ties naturalness of an entity or phenomenon to whether it behaves according to some pattern, so that a law of nature regarding its manifestation can be established. Consequently, a theory that only posits nomic connections among phenomena is a naturalistic theory.

I introduced a time variable because it is possible to have periods of time when we have reason to posit the existence of a phenomenon, but we don't yet have an explanation of its behavior. Thus, miracles, for instance, will not count as natural and a theory that posits them won't count as naturalistic since miracles are events or phenomena that at the time of their occurrence do not fall under any known law of nature; they are counterlegal occurrences. Yet, it is logically possible that something we thought is a miracle at a time *t* become a natural phenomenon later, when we are able to establish a law of nature having that phenomenon as a relatum.

Another consequence of my definition is that the classical theistic God is not a natural entity. The reason for this is that God's attributes, especially the attribute of omnipotence, come into conflict with any possibility that God could be a relatum in a law of nature. God's omnipotence entails that God can violate laws of nature at will, bring about miracles, and render the whole idea of regularity meaningless when it comes to His behavior. Conversely, if we could establish laws of nature about God's behavior, then God would not be the supernatural being that mainstream theism talks about.

It is useful to briefly compare this understanding of naturalism with the two mainstream ones, ontological and methodological naturalism. There is no agreed upon definition of ontological naturalism. One could adopt a causal view, and say that the natural is the causal, and so naturalism would be commitment to only causally efficacious entities.[5] This is not a very reasonable proposal since it would make both miracles and God natural entities if they do have causal effects in the world.[6]

[5] This would be equivalent to what has been dubbed "Alexander's dictum" (though its history goes back to Plato's dialogue *The Sophist*), that is, the slogan "to be is to have causal powers".

[6] To unpack this a bit further, it depends, in effect, on how one thinks about causation. If causation is taken as not requiring (let alone reducible to) regularities (causal laws of nature), then, as I claim above, God, angels, miraculous phenomena, etc., will come out as natural. If, on the other hand, causation is taken in a regularist fashion, then ontological naturalism will coincide with my understanding of naturalism, as it will identify the natural with the causal and the causal with the lawlike.

One could also adopt the view that naturalism should be understood as *physicalism* (Papineau 1993, 2016). Physicalism is the view that everything that exists is physical in nature or reducible in some sense to physical facts. Now, this proposal also fails to appear very reasonable, especially considering the controversy about whether physicalism is true or not when it comes to the mind-body problem. The very idea that it does not seem logically incoherent to think of the mind as non-physical, yet connected to the physical by fundamental *psychophysical* laws, as per the emergentist view, shows that to equate naturalism with physicalism is a mistake.[7]

The other popular way to understand naturalism is *methodological* naturalism. Its basic point is to tie naturalness to the empirical scientific method. So, the idea would be a commitment to only natural entities and phenomena, where "natural" means "discovered via empirical methods". This seems reasonable, but there is a century or so of debate and controversy in the philosophy of science as about what "the scientific method" really means, when considered as a normative constraint. Anyhow, my definition of naturalism will simply coincide with methodological naturalism when the latter considers the expressions "established via empirical methods" and "established as a law of nature" as synonymous.

One might worry that, as it stands, the definition is not very informative since it does not further explicate the notion of a law of nature.[8] I am aware that there is a massive literature on various views of the laws of nature, but I believe that, in principle, my account of naturalism will be able to accommodate any of these. More to the point, one might consider three views of laws of nature that have been put forward and see whether they are problematic for my approach to naturalism: governing accounts, Humean accounts, and causal essentialist accounts. Let us briefly consider each and see whether they are problematic.

(a) Governing accounts. On the most prominent governing account, namely, the one put forward by David Armstrong (1983), a law of nature is a second-order necessitation relation between universals. The problem with these accounts seems to be that they do not offer an explanation of where the necessity comes from. Helen Beebee (2000), for instance, have suggested that a governing account of laws of nature grew out from a commitment to understanding what happens in the universe to be a matter of divine decree. Similarly, Brian Ellis (1999) argued that the governing conception of laws is best understood as a secularized version of the sort of divine command theory of the laws of nature defending by the likes of Isaac Newton and Bishop George Berkeley in the 17th and 18th centuries.

Some would perhaps think that, because of the foregoing considerations, this is hardly a naturalist view. I have two replies to this worry. One is that we shouldn't commit the genetic fallacy and reject a view just because it originates on some other view that we do not subscribe to. Second, we shouldn't reject a view based on demanding from it exactly what the theory says it shouldn't be demanded. In particular, the

[7] To further unpack this point, we could distinguish, following Stoljar 2001, two interpretations of what "physical" could mean, and get theory-physicalism and object-physicalism. The former is based on the idea of defining "physical" as whatever is acknowledge by current physics, while the latter is based on defining "physical" as whatever belongs to the fundamental categorical basis of the dispositional properties observed by physics. Theory-physicalism is silent about a potential future discovery of psychophysical laws and whether it would be part of physics or not; this is a subproblem of the more general problem known as Hempel' dilemma (cf. Crane and Mellor 1990). Object-physicalism I find quite obscure and speculative in a way that makes it not very useful in the context of how to account for the idea of naturalism. It is not clear whether there are such categorical and fundamental "object-physical" properties that would explain the instantiation of both dispositional physical properties and all mental properties (such as intentional and phenomenal). It is pure speculation; hence, it can't really figure as the ground for a potential definition of naturalism, which should not depend on whether such speculations turn out to be true or not.

[8] I am indebted to Andrei Buckareff for the objections that I will formulate and respond to in the rest of this section.

governing accounts take laws of nature as basic and irreducible, hence, it should not abe a surprise that the necessity involved in them is brute.

Anyhow, the key idea that makes this view compatible with naturalism is that it is, as pointed out above, a *secularized* version of the way Newton and Berkeley thought about the universe. I would say that it is not unique in this respect. Darwin's theory of evolution could also be taken as a secularized version of a creationist story, as long as that story appeals to particular *laws* by which God created various species.

(b) Humean accounts. The Humean approach to laws of nature conceives of them as supervening on local matters of fact. On this theory, the laws of nature are descriptive, supervening on contingent facts about significant uniformities that obtain in the entire history of the universe.[9] The regularities the laws of nature describe are not necessary connections. Here a worry might be that a god that is external to the universe could nevertheless be the source of the regularities. For instance, occasionalism would be compatible with this Humean picture, and occasionalism is hardly a naturalistic view.

In response, I should point out that, although occasionalism is coherent under this Humean picture, the problem with it is that it posits something, namely God, that is, in fact, redundant. The Humean picture *does not need* such an entity outside the universe, that is, outside the local matters of fact; those facts are sufficient to account for the laws.

(c) Causal essentialist accounts. Proponents of causal/dispositional essentialism take at least some of the intrinsic properties of objects to be causal powers. The laws of nature are descriptions of how such causal powers of objects and integrated systems of the causal powers of objects behave. Some proponents of the view even express their position in terms like those of proponents of Humean supervenience. George Molnar, for instance, writes: "Laws of nature supervene on (…) the simple powers of the objects of the world. Powers are the truthmakers for the laws" (2003, 199). Space does not permit us to go into details of causal essentialism, but a problem for my account from this perspective seems to be that it is not laws of nature per se that can account for naturalism, but the fundamental causal powers or systems of interlocked such powers.

I do not strongly disagree with this point. Previously I did express sympathy for essentialism (Aranyosi 2010), and I am ready to accept that perhaps in the final analysis it might be that laws of nature are reducible to causal powers. Still, it does not change the picture that I have put forward – in particular, not when it comes to my earlier rejection of the causal account of naturalism. The reason is that a blanket causal criterion, without the whole machinery of causal essentialism, would still not ensure the absence of singular and unpredictable causal interference by a divine being.

Naturalistic panentheism

Naturalistic panentheism would be the view that the Universe is in God, in some sense of "in", in such a way that the strictures of naturalism are also respected. One can easily see why such a view would be attractive if it worked. First, naturalism itself seems to be the rule nowadays when it comes to normative requirements regarding one's ontology. Second, as mentioned before, panentheism appears to be a nice midway position between pantheism and theism, which, if coherent, would do justice to both the naturalistic and the spiritualistic inclinations of the contemporary man.

As it happens, though, naturalistic panentheism is not exactly the most straightforward view. Let us start with what I earlier in this essay called "mereological panentheism", according to

[9] For discussion, see Beebee 2000, Earman and Roberts 2005, and Loewer 1996, Buckareff 2019.

which the "in" in the slogan "everything in God" is to be understood mereologically, as standing for proper parthood. The problem with this type of panentheism is precisely the idea of there being a *remainder*, as per *Weak Supplementation*, once we subtract the Universe from God. One simple, and ultimately *extensionally correct* alternative formulation of naturalism is that there is nothing over and above the Universe.[10] What follows is that mereological panentheism can't be naturalistic. Indeed, Mark Johnston's recent panentheistic proposal (2009) has been criticized by Andrei Buckareff (2016) precisely along these lines. Johnston's view is that the Universe *constitutes* God but is not identical to God, where constitution is a sui generis relation, which implies material coincidence but is distinct from identity (cf. Johnston 1992). Johnston claims this is compatible with naturalism, yet there must be a remainder once we subtract the Universe from God, if he is right about constitution as not being identity.

It is worth digging a bit deeper into the issue of parthood and constitution at this point. Is Johnston committed to *Weak Supplementation* or not? Because if not, then maybe there is no problem with his mereological panentheism at all since it is based on some nonstandard mereology, which denies *Weak Supplementation*; he wouldn't be the first one to deny it (cf. Cotnoir 2021). But, in fact, it is not *Weak Supplementation* that makes the difference here. We should distinguish between an uninterpreted (or most liberally interpreted) notion of parthood and a material/spatial interpretation. Mereologies as purely formal systems apply to both, but when it comes to metaphysical issues it will matter whether your mereology is based on an ultraliberal interpretation or not. The ultraliberal interpretation is found in David Lewis's mereology (1991: 75–81); he calls it "topic-neutral interpretation". In Johnston's view there must be a fusion of God and Universe, which is The World; this indicates an ultraliberal interpretation of mereology. Yet, it is also true that God and the Universe *coincide*, as per the constitution claim, which means that when it comes to coincidence Johnston must mean *material* coincidence, that is, coincidence assuming a material/spatial interpretation of "part". This is the only way his view could be coherent; yet it is for this reason that it cannot be naturalistic since the supplement of the Universe in The World must exist and be immaterial/nonspatial.[11]

It looks, therefore, as though mereological panentheism is not congenial to naturalism. What about emergence or dynamic panentheism? Traditionally, most panentheist doctrines fall into this category, and, furthermore, it does seem to be compatible with naturalism. Consider Samuel Alexander's emergentist panentheism. As Emily Thomas (2016) convincingly argues, it is a serious naturalist contender within the set of emergentist theologies, including contemporary ones, such as the one developed by Philip Clayton (2004a, 2004b). Alexander's magnum opus, *Space, Time, and Deity*, is an attempt to integrate God and divinity (deity) into a purely natural world. The basic idea is that deity is not yet present in spacetime, but it will *emerge*. We can see here the crucial difference between emergence panentheism and mereological panentheism in the way they explicate the idea

[10] This is John Heil's way of formulating it (2012: 1). I say "it is extensionally correct" meaning it is *merely* extensionally correct! More to the point, as it stands, the definition picks out the right thing regardless of whether dualism or physicalism is true of this Universe, if by "Universe" we do not mean the *universe of discourse* but the *natural universe*. This, of course, brings about circularity since the term "naturalism" is defined in terms of a "natural universe". The universe of discourse, on the other hand, would include literally *everything* (that exists), hence not serve at all the purpose of circumscribing naturalism and hence distinguish it from non-naturalism.

[11] This is a general problem with the constitution view, namely, the problem of what grounds the distinctness of two materially coincident objects; it is not a problem for non-naturalists, but it is one for those who want to be naturalists since everything that's material about the two objects is shared by them, so what is left to distinguish them, like, for instance, *de re* modal properties, does not seem to be material (cf. Bennett 2004, Paul 2002).

of God being partly the Universe but *more* than it. For the mereological panentheist this "more" is conceptually tied to proper parthood, hence, God is supposed to exist *in excess of* the Universe; but for the emergentist it is the completion of a final stage of a natural development of the Universe, hence, God being more than the Universe does not mean God being in excess of the Universe, but deity being the goal or final stage towards which the Universe has a *tendency* or, as Alexander puts it, a *nisus*, to evolve.[12] This nisus does not appear to be supernatural. As Thomas (2016: 262) puts it:

> Alexander is convinced that deity will emerge due to a nisus in space-time, which has already 'borne its creatures forward' through matter and life and mind, and will bear them forward still (Alexander 1920, ii. 346). Exactly what Alexander means by 'nisus' is unclear. A nisus is a kind of drive or striving, and Alexander seems to believe that the nisus is driving emergence towards higher qualities, not merely different qualities. The nisus provides progress, not merely process. There is no indication that Alexander takes the nisus to be anything other than a natural law or principle operating within his space-time universe; as we saw above, Alexander rejects entirely the thesis that the universe was designed.
>
> In itself, there is nothing inherently non-naturalist about the notion of a nisus (…)

If Thomas's interpretation is right, then Alexander's and similar emergentist panentheisms appear to be better placed than mereological panentheisms with respect to the naturalistic constraints. I won't dispute here the claim that emergentist panentheism is congenial to naturalism,[13] but rather the claim that mereological panentheism is doomed to failure when it comes to the requirements of naturalism. Consequently, in the next sections I am going to argue against this apparent failure.

Big Bang cosmology and theism

As I mentioned in my introduction to this essay, the exact physics of the Universe does not get discussed in the context of natural theologies put forward as alternatives to theism, because, I

[12] I should note here that Thomas rejects the popular view that Alexander was a panentheist. Her main argument is that, unlike, for instance, Lloyd Morgan, Alexander did not think that God is beyond the Universe, but rather that God is a proper part of the Universe, which is, as Thomas put it "a theology *for which there is as yet no label at all*" (emphasis in the original). My explanation of why we disagree on this point is that Tomas thinks strictly in terms of mereological notions when considering the notion of "being in", whereas I have distinguished that notion from what a called "the emergence notion".

[13] First, the idea of God or deity as an emergent quality out of a developing universe has, at least the way I see it, the flavor of non-naturalistic historical idealism á la Hegel or Bradley; indeed, it is well known that Alexander was influenced by Bradley, whose philosophy was influenced by Hegelian dialectic. Second, and more importantly, it is unclear, if we look at most of what has been written in the field of physical eschatology, whether the end times of the Universe have anything as interesting as to qualify as the completion of deity or divinity. Indeed, *heat death*, a consequence of the Second Law of Thermodynamics coupled with the inflationary cosmological model regarding the distant future of the Universe, looks rather the *opposite* of the glorious fulfillment of divinity. For an exhaustive annotated bibliography on physical eschatology, up to 2002, see Ćirković 2003.

reckon, it is thought that the crux of the issue lies at a higher level of generality, where it is the Universe in general, regardless of how exactly it is structured, that is relevant.

This is wrong. The Big Bang cosmological model, which has been dominating contemporary physics in the last 50 odd years, ever since the discovery in 1965 of the cosmic microwave background radiation, has some conceptual problems that make it less congenial to naturalistic pantheism, and more attractive to theists. The main culprit for this is the notion of a spacetime *singularity*, which is what defines a cosmology as belonging to the Big Bang model. Big Bang cosmology puts forward in its formalism a *mathematical* singularity which is supposed to correspond in physical reality to a point in spacetime where the gravitational field and mass density of the Universe are infinite, or, equivalently, where the space occupied by the Universe is *zero*. The conceptual problem is that such a point is a mathematical fiction; physicist differ as to whether they believe the singularity is a physical reality, a merely mathematical posit, or just a physically paradoxical but ultimately empirically adequate posit.

The spacetime singularity attracts some philosophical attention, especially from people interested in the debates in the philosophy of religion regarding the existence of God. The right interpretation of the Big Bang singularity is, indeed, one of the central issues of contention in the debate between William Lane Craig and Quentin Smith (1993) about whether the Big Bang is more congenial to theism or to atheism.

Craig's main argument for *theism* is that in the Big Bang model, the Universe has a beginning in the past (namely, the *explosion* – the singularity is a mathematical fiction), and since we can't make sense of the Universe coming out of nothing, it must have had a cause, which then Craig thinks it must have been personal, that is, God.

Smith, on the other hand, thinks that it is *atheism* which follows from the Big Bang model. His argument is that the singularity has physical reality and what comes out of it is completely unpredictable, yet, if God created the world, He would create something that would predictably lead to life in the Universe; so, God could not have created the singularity, so God does not exist.

I am deliberately offering only these highly compressed versions of their argument, because my main goal here is not to adjudicate who is right about whether God exists, but to point out that the notion of singularity is highly problematic, and that in the context of trying to elaborate a naturalistic alternative to theism that is not merely atheism, it is this notion that seems to me to constitute the main obstacle. I'm not saying that the theist, like Craig, is *right* about theism being supported by Big Bang cosmology, but that he has a coherent point about the meaningfulness of asking the question "what was the cause of the Big Bang?"; and that question can be asked precisely because of the prediction of the singularity which the Big Bang model is bound to support.

If we try to apply a panentheistic picture to Big Bang cosmology, we will face trouble. If the Universe has as its origin the singularity, then it is finite in the past. Yet, if the Universe is supposed to be part of God, in the mereological sense, then God must precede the existence of the Universe (since God *is* eternal[14]), in which case it is hard to think of the God-Universe relation otherwise than as a causal one, which is simply the theistic idea of creation.

[14] I am, sure enough, not claiming that all the theistic God's qualities should be accommodated by a panentheist. Some of them will be rejected as a matter of definition and understanding of panentheism as an alternative to theism; for instance, *personhood* and *omnibenevolence*. Others will at most be accommodated as metaphorically interpreted, for

Big Bounce cosmology and panentheism

Loop quantum cosmology, or the Big Bounce model of the Universe, is a "no-singularity" alternative to the Big Bang model. It is based on quantum gravity, which is an attempt in current physics to unify gravity, quantum mechanics and general relativity. The reason there are no singularities predicted or retrodicted by the theory is that space is taken as discrete, quantized, namely, as having a minimal extent. As we go back in time, we reach a period, just before the big explosion (superinflationary stage) whose effects we experience today, when space and time as such, that is, the Universe, was extremely small. But, importantly, "extremely small" here does not mean "point sized". It is the stage at which the Universe was contracted to the minimal quantum of space that the theory posits—a scale on the order of a Planck length, approximately 10−35 meters; smaller scales do not exist. Consequently, the Universe had a very large density, but not infinite as in the Big Bang model.

The second crucial component of the Big Bounce model is that the Universe, which currently is in an inflationary phase, had a contracting phase before the big bounce event. Quantum loop cosmologist think that the Universe is *eternal* both towards the past and towards the future.[15] Our observable universe is the result of the big quantum bounce that happened at the end of the contracting phase of the ancient universe. There are plenty of interesting and highly technical issues that physicists are bound to discuss in the coming years regarding the details of this model,[16] but why is or should the model be interesting for non-specialists, like philosophers of religion?

The Big Bounce model holds the promise of a potential physical theoretical and empirical ground for a coherent and straightforwardly *mereological and naturalistic* panentheism. First, the philosophical temptation of theism really comes from two sources – the ontological argument and the cosmological argument. It is the latter that is relevant here for our discussion of panentheism.[17] The cosmological argument's force really depends on whether the Universe has a beginning in time. If loop quantum cosmology is the right model of the Universe, then the cosmological argument does not even arise since the Universe is eternal in the direction of the past.

Second, we do not have the problem of non-natural remainders in this model. Let's call the part of the Universe (or rather *Bi*verse) we are inhabiting U_1 and the pre-bounce one U_2 and their fusion U. The panentheistic view would then amount to saying that God is U. The slogan "Everything in God" would be interpreted as U_2 being a proper part of U. The remainder would then be U_1, the ancient, contracting, pre-bounce part of the Universe–nothing unnatural about it!

Now, of course, one could understandably raise the issue of whether there is anything god-like about U. It *is* a legitimate question but note that the same question ca be raised about *any*

instance, *omnipotence* and *omniscience*. Yet, some will be unproblematic and will have to be accommodated even by alternatives to theism, for instance, *eternity*, *omnipresence*, and *immutability*.

[15] In the early history of the model, the big bounce was considered a stage in a series of contractions and expansions, known as the *oscillatory* model of the universe. Nowadays, a non-oscillatory view is more popular, according to which there is just one bounce.

[16] Physicists should consult Ashtekar and Singh 2011, for an exhaustive article on the state-of-the-art in quantum loop cosmology.

[17] Though see Aranyosi 2013 for why the former is relevant too, in general.

universe when it comes to *pantheism*; and panentheism is not that different from pantheism in their problem with justifying the "theism" bit in their name. It is difficult, in other words, to offer an obvious and convincing reason for taking the Universe as being divine or containing divinity intrinsically. In my version of pantheism, logical pantheism, that is, the doctrine of identifying God with Logical Space, the divinity comes from (or can be accessed and admired or *worshipped* in) the grandeur of Logical Space, which is the largest and richest conceivable space. Brian Leftow, for instance, has criticized my view, expressing skepticism about my idea that one could worship Logical Space; it is worth quoting Leftow extensively, because it offers an quasi-exhaustive picture of why people have a problem with the divinity that pantheists (and hence panentheists, or at least naturalistic mereological ones) want to posit as intrinsic to a non-personal entity such as the Universe (or Logical Space for my earlier view):

> Aranyosi argues that we think an impersonal pantheist deity fails as an object of worship because it does not elicit appropriate emotions. But as he sees it—Sufism being his main example—worship is of two sorts: exoteric, which is merely the following of certain rules, and "esoteric," the worship of "experts" in worship, which is the pursuit of mystical experience. This, he says, is "about a psychological-spiritual state of the subject who worships. . .not about any cognitive-theoretical construct. . .the main focus is a state to be reached by the worshipper." The state's content is beyond description; so no description of a deity could be worse or better at articulating its content; and so a pantheist "object" for it is as good as any other. Aranyosi might say, then, that construing worship as talking-to is too bound to exoteric practice; "true worship" is beyond speech.
>
> Well, mystics themselves would be surprised to hear that they aim only at a psychological state. They would say that they aim at union with God, and that a description of God is integral to the pursuit. This is true even of the Sufi prayer Aranyosi instances, which consists largely in recitation of names (canonical descriptions) of God. His other example, Christian Palamism, involves a verbal formula invoking Christ and His mercy. Prayer, whether the Sufi dhikr or the Palamist Jesus prayer, is talking to. So the mystic pursuit Aranyosi sees as "esoteric" worship is no exception to the talking-to account. Again, in the Christian mystical tradition more generally, meditation on the nature of God and the life of Christ plays a central role in leading up to the union experience.
>
> Again, the esoteric/exoteric distinction is foreign to the Western monotheisms apart from Sufism; to the rest of us, what we are doing is grade-A standard worship, which has nothing to do with following rules (save insofar as these preserve good order at worship services) and everything to do with speaking to God. More to the point, while mystics say repeatedly that their experience is beyond description, they also say a good deal about its content: their point is that it is beyond fully adequate description. The most basic thing they say, repeatedly, is that they are sure they experience the God of Western theism, not of something else. *They themselves, then, would emphatically deny that a naturalist universe is as good as any other as the object of their quest*. (Leftow 2016: 73–74) (my emphasis)

I have emphasized the very last sentence of Leftow's, because it shows a misunderstanding on his part when it comes to why I think an entity like Logical Space deserves worship. First, my point was that this entity is *maximal* in so many respects, hence, it deserves our *awe*; and awe is a kind of intellectual worship. I am not saying that any entity would be good enough as on object of worship. Now I'm saying the same thing about U, the big Universe/Biverse in the Big Bounce model. U is *awesome* – so it deserves worship. Second, I claim that the only reason we nevertheless

are not yet convinced is that intellectual awe is not the kind of attitude that has the full force of traditional worship, in that it lacks the emotional component of the latter. Now, I grant Leftow that he has some good points about whether my account of mystical experience is right, especially in light of what mystics themselves claim, but, in any case, I do not now consider that part of my view as the most important. The most important part is that certain facts about the Universe are *awesome* (its unity, its complexity, its beauty of organization and function, its laws of nature), hence there is an important sense in which it deserves to be worshipped as God. This is all a pantheist needs.

What about the panentheist? What holds of pantheism regarding the motivation for—and partly regarding the object of—worship will equally hold for panentheism. Going back to our Biverse in quantum loop cosmology, there is a lot of overlap with pantheism, except for one detail: the relevant (sub)universe in terms of God's *immanence* in the world (which is what pantheism emphasizes) is our observable universe, U1, whereas the relevant (sub)universe in terms of God's transcendence (which is what panentheism adds to pantheism) is U2. This makes sense, indeed, because the part of the Big Bounce Biverse that would qualify as a naturalistic interpretation of a theistic immanence claim of ours, like "God is in the world", should be U1 and not U2 since it is U1 that *we* inhabit. U2, on the other hand, fits very well the panentheist intuition of there still being a proper part of God that is beyond our reach. Indeed, the pre-bounce universe is causally and spatiotemporally separated from the universe we inhabit. The whole Biverse, then, looks like an *awesome* entity that constitutes the ground and support of everything that is relevant to our existence as human beings.

Tzimtzum, Big Bounce, and God's location

I would like to end with a few words about a philosophically interesting Jewish theological doctrine, the *tzimtzum*, or divine contraction, which does look like an early speculative anticipation of the idea of a big bounce and of a biverse.

The Lurianic Kabbala introduced the notion of contraction into the Kabbalistic tradition, motivated by some conceptual puzzles related to the idea of God being omnipresent already before a physical universe was created. In a recent article on the coherence of the *tzimtzum*, Samuel Lebens explains what the problem was supposed be, by reference to Luria's questions regarding divine omnipresence:

> Rabbi Yitzchak Luria (1534–72) poses the following questions: How can there be a world if God is everywhere? Given God's expansiveness, how could there be any room left over in which a world could exist? If God is 'all in all,' how can there be anything that isn't God? How could God create a world from nothing, if there was no such thing as 'nothing' in the first place? (2017: 162)

Though Lebens dismisses most of these questions as confused, I would like to argue that they do in fact make sense. It is notoriously difficult to explain the apparently simple idea of divine omnipresence, which is a central attribute of God's in standard perfect being theology. In connection with Luria's worries, for instance, Lebens suggests that God' omnipresence not be

understood as involving location in space, but rather the power to influence things in any location in space:

> Some of these questions seem confused. There's no reason to think God is actually located in space, such that his omnipresence leaves no room for other things. He can be omnipresent in some derivative sense, without being located in space; so long as his power and/or knowledge extends to all regions. (2017: 162)

This is a derivative notion of omnipresence rather than a fundamental and literal one (Inman 2017: 169), in the sense that God's omnipresence is grounded or even reduced to some other entity's or item's omnipresence; God is present at all locations, *l*, in virtue of some entity, *e*, being present at all such locations – in this particular case, this entity, *e*, is God's power or influence. On the alternative model of a non-derivative, or fundamental, omnipresence God is present at all locations simpliciter, without the need of any distinct entity to be so located.

As Inman observes, the derivative notion of omnipresence is problematic in that it makes literal, spatial omnipresence *redundant* as a divine attribute:

> One interesting thing to note in passing here is that it is difficult to see how on a DO model omnipresence is a distinct attribute over and above divine omnipotence, omniscience, omnibenevolence, or a combination of these divine attributes. For this reason, the proponent of a DO model might consider omnipresence to be reducible to or "nothing over and above" one of the above attributes or conjunction thereof. (2017: 172)

This is the reason I think we should adopt the view that omnipresence should be understood *literally*, as God being spatially present everywhere, rather than in some derivative or even metaphorical way. The problem, then, that the doctrine of contraction is an answer to is that God is already everywhere before any creation of a universe takes place, hence, there is no space where a universe could be created. The idea of *tzimtzum* is that God contracts himself in order to allow for a universe to be formed.[18]

The *tzimtzum* is not a good solution for the problem, if one wants to be a *theist* and keep the idea that God is immaterial and simple (Goldschmidt and Lebens 2018).[19] But *it is* a good solution for a naturalistic pantheist or panentheist, for whom God is a material being wo exists in spacetime by being identical to (or encompassing) the evolving 4D spacetime manifold.[20]

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[18] Lebens (2017) offers an alternative view, which he calls "Hasidic idealism", according to which the *tzimtzum* is a fiction, to be analyzed along the lines of how fictional discourse is accounted for in philosophy of language and metaphysics. See also Lebens 2015.

[19] Immateriality and divine simplicity are core doctrines of both Christian and Judaic theism.

[20] Following Josh Parson's distinction (2007), and by analogy to endurance and perdurance in the persistence literature (Lewis 1986: 202), we could think of God as either "entended" or "pertended". Pertension is what most people normally mean by "extension in space", that is, an object occupying place, *p*, by each of the subspaces of *p* being occupied by a proper part that object. Entension, on the other hand, is weird; an object entends a place *p* by being wholly present at each of the subspaces of *p*. Theists have a problem with both these ways for God to be omnipresent

Finally, it is easy to see that not only is the shape of the universe analogous in the *tzimtzum* and in the Big Bounce model, but the conceptual problem to which that shape is a solution is very similar in the two. There are, more exactly, two such similarities. One has already been mentioned in the quote by Lebens: how could the world come out of nothing? Both the Lurianic Kabbalah and the Big Bounce model are based on taking this problem seriously; and as a solution they posit a pre-"creation" universe, separated from our universe by the bounce/*shevirah*.[21]

The second similarity is in the way the *shevirah* is described, which bears an uncanny resemblance to the idea of the quantum nature of space and time in loop quantum cosmology and gravity. Here is, for instance, Joseph Dan explaining the idea as it appears in the classic interpretations of Luria's doctrines by Gershom Scholem and Isaiah Tishby:

> The analysis presented by Scholem and Trishby is most profound and mythic in character. According to it, when the initial phase, the *zimzum*, was carried out, the empty space was not really empty. It is like when a container is emptied of water; the inside of the container is still wet, with water clinging to its sides. Some divine light remained in the *tehiru*, and this residue, called by the Lurianists, in Aramaic, *reshimu* (impression) included in it some elements of difference and "otherness" that previously were scattered within the infinite Godhead. This was the real purpose of the zimzum: to concentrate and discharge these potentially different entities away from the Godhead, this achieving uniformity and perfection for the rest. (2007: 76)

There are several analogies with loop quantum cosmology that one can easily draw from this passage. The small quantity of water clinging to the wall if the container is analogous to the discrete, quantum character of space. The previous infinite Godhead is analogous to the pre-bounce infinite universe. The *tzimtzum* is analogous to the contracting part of the Biverse. And the discharge of *reshimu* is analogous to the post-bounce superinflationary phase of our universe.

The resemblance, as I said, is indeed uncanny, but we should keep in mind that we are comparing a purely speculative theology with a somewhat speculative but still scientific model of the universe; so we should not get too enthusiastic about a potential genuine isomorphism between them. Nevertheless, I do believe that there might be some genuine overlap regarding some of the conceptual/metaphysical questions which motivated these two theories, as radically different on nature and justification as they might be.[22]

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(Hudson 2009: 211. Inman 2017) – they turn God into a material thing. But pantheists and panentheist are perfectly fine with both.

[21] *Shevirat ha-kelim* is translated as "breaking of the vessels", and it is the Lurianic term for the reconstruction of the universe after the *tzimtzum*. More on this and the *tzimtzum* below.

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