

Missing Entities: Has Panpsychism Lost the Physical World?

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Abstract: Panpsychists aspire to explain human consciousness, but can they also account for the physical world? In this paper, I argue that proponents of a popular form of panpsychism cannot. I pose a new challenge against this form of panpsychism: it faces an explanatory gap between the fundamental experiences it posits and some physical entities. I call the problem of explaining the existence of these physical entities within the panpsychist framework “the missing entities problem.” Spacetime, the quantum state, and quantum gravitational entities constitute three explanatory gaps as instances of the missing entities problem. Panpsychists are obliged to solve all instances of the missing entities problem; otherwise, panpsychism cannot be considered a viable theory of consciousness.

1. Introduction

There is a lot to like about Philip Goff's *Galileo's Error*. The book is a concise introduction to the philosophy of consciousness. Without a loss of rigor, Goff brings the academic discussions of consciousness from the ivory tower to the broader public. Moreover, there is a lot to like about Goff's preferred metaphysical theory—*panpsychism*. Panpsychism brings a breath of fresh air to the stale debates between physicalists and dualists. It promises an account of human consciousness compatible with both the data of physics and introspection. Goff and fellow panpsychists aspire to solve the mystery of consciousness with a worldview shift. They posit that human consciousness and the physical world are of the same kind, are both essentially experiential. Although substantial, this re-thinking of the nature of reality seems justified if panpsychism can indeed deliver on its promises.

I use this occasion to pose a new challenge against panpsychism. Panpsychists are standardly challenged for whether they can account for human consciousness. However, it has so far been neglected whether they can account for the *physical world*. I set out to explore this question by analyzing whether the entities entailed by some of our best theories of physics are compatible with panpsychism. I do this by analyzing aspects of Goff's take on panpsychism both from *Galileo's Error* and from his wider academic work.

I argue that if panpsychism were true, the existence of at least some *physical entities* would be left unexplained. I call this *the missing entities problem* for panpsychism. I define *three explanatory gaps* between the hypothetical fundamental experiences (that panpsychists posit) and different physical entities as instances of this problem. Panpsychists are obliged to solve all instances of the missing entities problem. Otherwise, the worldview shift proposed by panpsychists is unwarranted, and panpsychism cannot be considered a viable theory of consciousness.

2. Missing Entities

Goff argues that Galileo's error was to think that the *quantitative* vocabulary of physics fully captures the essences of physical entities. As Galileo himself puts this, in a famous passage:

[the book of the universe] is written in mathematical language, and its characters are triangles, circles, and other geometrical figures. Without these it is humanly impossible to understand a word of it, and one wanders around pointlessly in a dark labyrinth. (2008, p. 183)

Galileo was a mind-body dualist. He thought experiences are real, yet quite unlike physical entities. He saw experiences as essentially not only quantitative but moreover *qualitative*. He took this to entail that physical entities and experiences are different in kind.

Contemporary philosophers of mind are, by and large, physicalists. Physicalists reject Galileo's dualism due to theoretical considerations based on the current empirical evidence.¹ Nonetheless, many physicalists follow Galileo in his putative error. They embrace the Galilean conception of physical reality (what Goff calls the "*purely physical*" conception). According to these physicalists, the fundamental entities are purely physical. In their view, the purely physical facts *ground* the experiential facts. "Grounding," as I understand it, is a relation that holds between the more fundamental facts (as grounds) and the less fundamental facts (as groundees). Grounds *determine* and *explain* the obtaining of their groundees.

Pure physicalism is often contested because it faces an *explanatory gap* between the pure physical and the experiential facts. An explanatory gap, simply put, means that there is *no intelligible connection* between a ground and a groundee.²

¹ Many physicalists argue that dualism violates the "causal closure" of the physical. See Papineau (2001).

² Readers seeking a more rigorous definition should think of explanatory gaps in terms of a *lack of a priori entailment* between grounds and groundees. See Chalmers and Jackson (2001).

To locate explanatory gaps, as a good heuristic, think about what an ideal reasoner could deduce about reality from its fundamental elements. For example, think of Laplace's fictional demon. If Laplace's demon could never deduce a groundee from its fundamental ground, then there is an explanatory gap between fundamental reality and that groundee. Plausibly, Laplace's demon could deduce the properties of H₂O (and, in general, of all purely physical groundees) from the fundamental, purely physical grounds. In contrast, plausibly, not even Laplace's demon could deduce what red feels like (and, in general, what any experience feels like) from the purely physical facts. If so, pure physicalism faces the above-mentioned explanatory gap.

Explanatory gaps matter because they might reveal mistakes in our conception of reality. They might indicate the falsity of the grounding claims they involve. Goff (2017, pp. 100–3) argues that there should be *no* explanatory gaps in true cases of grounding when the ground and groundee are thought under “*transparent*” concepts. In Goff's usage, a transparent concept reveals the *full essence* of its referent; it reveals “*what it is for that entity to be part of reality*” (Goff 2017, p. 15).

Goff argues that both pure physical and phenomenal concepts are transparent. Pure physical concepts refer to purely physical entities. As Goff (2017, p. 101) argues, they reveal that purely physical entities are essentially quantitative: their essences are pure physical structures. Phenomenal concepts, in contrast, are the concepts we use in introspection when thinking about experiences in terms of what they feel like. In Goff's (2017, pp. 107–8) view, phenomenal concepts reveal that experiences are essentially qualitative: their essences are their phenomenal characters, are what experiences feel like.³

I summarize Goff's ideas in the following two theses:

No Explanatory Gaps: There are no explanatory gaps in true cases of grounding where both the ground and the groundee are thought under transparent concepts.

³ I take this to imply that the contents of an experience *are* the properties of the experience itself. As Goff puts it: “Arguably, the qualities in our experience just are, in their essential nature, experience-characterizing properties” (2017, p. 161).

Transparency: Pure physical concepts and phenomenal concepts are transparent.

Given *No Explanatory Gaps* and *Transparency*, the explanatory gap between the pure physical and the experiential facts entails that *pure physicalism is false*.⁴

Goff aspires to fix Galileo's error in the light of *No Explanatory Gaps* and *Transparency*. He and fellow panpsychists *redefine* the Galilean conception of fundamental physical reality. According to Goff's preferred version of panpsychism, it is implausible that pure quantities could exist autonomously without having some deeper qualitative ground. Goff and fellow panpsychists posit that experiences are the perfect candidates for such a ground. In Goff's own words:

All we get from physics is this big black-and-white abstract structure, which we must somehow fill in with intrinsic nature. We know how to color in one bit of it: the brains of living organisms are colored in with consciousness. How to color in the rest? The most elegant, simple, sensible option is to color in the rest of reality with the same pen. (2019, p. 135)

The resulting view is panpsychism. Or, more precisely, *Russellian pure panpsychism*. The adjective "Russellian" is in honor of the philosopher and mathematician Bertrand Russell. It designates the conviction (that Russell likewise held) that the fundamental physical structure of the cosmos has a qualitative ground. The adjective "pure" designates that fundamental reality is *entirely* experiential. The structure of the fundamental experiences is objective; it obtains independently of human observation.⁵ Physics accurately describes this structure. If panpsychism is true, the fundamental physical structure of the cosmos *is* the structure of the fundamental experiences.

⁴ It is worth noting that this argument does not apply to all versions of physicalism; some physicalists are happy to accept explanatory gaps between grounds and groundees. See Schaffer (2017) for a defense of such a view.

⁵ And, in general, independently of the observations of any non-fundamental subject.

As Goff (2019, p. 113) points out, panpsychists typically conceive of the fundamental experiences as “unimaginably simple.” In their view, these simple hypothetical experiences ground both human experiences and all physical entities.

Many contemporary panpsychists are moreover *reductive* panpsychists.⁶ They posit that the above-mentioned fundamental experiences are the building blocks of everything. I illustrate this idea with a theological metaphor: if such reductive panpsychism is true, all that God would need to do to create the cosmos is to create the fundamental experiences; everything else would follow metaphysically “for free.”⁷ Moreover, epistemically, in line with *No Explanatory Gaps*, reductive panpsychism promises a cosmos *without* explanatory gaps. If reductive panpsychism (of the above kind) is true, the knowledge of the fundamental experiences would, in principle, entail knowledge of all other facts for an ideal reasoner.

Throughout this paper, unless otherwise specified, I use “panpsychism” to refer to *pure Russellian reductive panpsychism* as I have defined it above. Goff is sympathetic to this version of panpsychism, both in *Galileo’s Error* and throughout his academic work.⁸ Panpsychism, so construed, seem to be the most cohesive, parsimonious, and widely accepted version. It is a form of experiential monism that aspires to explain human consciousness better than physicalism.

It is not clear whether panpsychism can fulfill its explanatory promise. The panpsychist framework has *two essential metaphysical seams*:

- (a) between the fundamental experiences and human experiences, and
- (b) between the fundamental experiences and all physical entities.

Panpsychists must be wary of any unclosable explanatory gaps at either of these seams. Unclosable explanatory gaps violate *No Explanatory Gaps*; they obtain even for

⁶ More rigorously defined, “reductive panpsychism,” as I use the term here, is panpsychism that is both metaphysically and epistemically reductive; it is the conjunction of constitutive and type-A panpsychism. The kind of grounding at play here is “grounding by analysis,” in Goff’s (2017) terminology.

⁷ I stress this is only a metaphor and a heuristic: panpsychists are *not* necessarily committed to the existence of God.

⁸ Goff also explores and defends other versions of panpsychism such as: consciousness+ panpsychism, emergentist panpsychism, and hybrid panpsychism. I briefly discuss consciousness+ panpsychism in section 4. The rest of these views are beyond the scope of this paper.

reasoners with all the required transparent concepts. Unclosable explanatory gaps entail cracks in the elegant panpsychist framework; they entail that panpsychism—as I have defined it—is false.

Case (a) corresponds to “*the combination problem*.”⁹ The combination problem is a serious and well-discussed problem for panpsychism. However, the combination problem is not the only serious problem that panpsychism faces. Given *No Explanatory Gaps*, panpsychists are obliged to resolve both (a) and (b). Case (b) is mostly ignored in the literature. I use this occasion to bring (b) into the spotlight.

Against panpsychism, I argue that if fundamental reality were purely experiential, some physical entities might lack an intelligible explanation in terms of fundamental reality. If so, were we to rebuild the cosmos from pure experiences, these physical entities would be *missing* from our reconstruction of reality. I call the problem of explaining the existence of these physical entities *the missing entities problem*. I express this problem as a broad explanatory gap as follows:

Missing Entities: There is an explanatory gap between the fundamental experiences (as grounds) and some physical entities (as groundees).

In the rest of the paper, I show how to use *Missing Entities* to argue against panpsychism.

A note on terminology. I use the term “entity” in a broad sense. In my usage, directly observable entities (such as tables and planets), indirectly observable entities (such as spacetime and micro-particles), and purely theoretical entities (such as the quantum state and spin networks) all count as entities. The challenge I raise against panpsychism is that experiences do not have the right structure to be the grounds of all physical entities.

⁹ For more on the combination problem see Chalmers (2016).

3. Three Explanatory Gaps

The three principles referred to above—*No Explanatory Gaps*, *Transparency*, and *Missing Entities*—work together as premises in an argument against panpsychism that I call “the missing entities argument”:

- P-1. *No Explanatory Gaps* is true.
- P-2. *Transparency* is true.
- P-3. *Missing Entities* is true.
- C. Panpsychism is false.

If sound, the missing entities argument entails that at least some physical entities are *not grounded* in the fundamental experiences. If so, going back to the theological metaphor I used earlier: it would not be enough that God creates the fundamental experiences to create the cosmos. Instead, God would *need to do more* to bring the missing entities into existence. If so, experiences alone are not enough to recreate the cosmos. Thus, panpsychism is false.¹⁰

Goff (2017, pp. 100–3) explicitly defends P-1 and P-2. I expect these two premises to be uncontroversial for reductive panpsychists. Rejecting P-1 and P-2 undermines a key motivation for panpsychism. Without *No Explanatory Gaps* and *Transparency*, panpsychists would struggle to reject physicalism based on explanatory gap worries. Thus, panpsychists are better off accepting P-1 and P-2.

With P-1 and P-2 out of the way, I dedicate the rest of this section to the defense of P-3. I defend P-3 by defining *three explanatory gaps* as instances of it. They involve spacetime, the quantum state, and quantum-gravitational entities. All three of these gaps involve experiences (as grounds) and pure physical entities (as groundees). All three gaps express the same idea, the idea that the structure of the cosmos is essentially

¹⁰ As I stated already, the missing entities argument only targets pure Russellian reductive panpsychism. *Impure* (and thus, more complex) forms of panpsychism positing both experiences *and* physical structure as fundamental are not its target.

different from the structure of experiences.¹¹ Beyond these three gaps, there might be other ways to specify P-3 involving different physical entities or properties. It only takes *one* instance of *Missing Entities* to challenge panpsychism. The panpsychist is obliged to close all known instances of *Missing Entities*.

In the case of all three explanatory gaps, I set out to establish *Missing Entities* by first analyzing *human experiences* and then inferring that the hypothetical fundamental experiences are similar. I base this inference on the following thesis:

Good Model: Human experiences are a good model for the fundamental experiences posited by panpsychists.

Good Model might appear controversial. It entails that human experiences can be used as proxies for the putative fundamental experiences. It entails that we are justified to use the available transparent concepts of human experiences—referenced in *Transparency*—in place of the unavailable transparent concepts of the putative fundamental experiences. If so, the phenomenal concepts involved in *Missing Entities* are covered by *Transparency*. This consequence of *Good Model* might appear overly strong, given that the fundamental experiences are unknown. Panpsychists broadly agree that humans do not directly access the fundamental experiences.

In defense of *Good Model*, I point out that fundamental experiences are a theoretical posit. Their primary role is to explain human experiences. Human experiences are our *only guide* to the fundamental experiences. Thus, I take that it is reasonable to assume the fundamental experiences must be *similar* to human experiences. How similar? Similar enough to ensure there is *no explanatory gap* between them (as grounds) and human experiences (as groundees).

Rejecting *Good Model* comes at a high price for the panpsychist. First, it shrouds panpsychism in mystery. If the fundamental experiences are a complete mystery, it is

¹¹ Thus, *Missing Entities* is like the hard problem of consciousness in reverse. In the role of P-3, *Missing Entities* resembles the hard problem turned upside-down and put to use against the panpsychist.

impossible to investigate how they might ground the rest of reality. Second, and more importantly, it turns the combination problem into a potentially unclosable chasm. If the fundamental experiences are not similar to our experiences, it is unreasonable to expect they could intelligibly explain our experiences. In light of this, *Good Model* presents the panpsychist with a dilemma: either (1) reject *Good Model* but shroud panpsychism in mystery and face a potentially unsolvable combination problem, or (2) accept *Good Model* but deal with the missing entities argument. The missing entities argument targets panpsychists willing to accept horn (2) of this dilemma. I count Goff among these panpsychists, given his persistent ambition to solve the combination problem in his academic work.

3.1. The Spacetime Gap

The first gap involves *spacetime* as a groundee.

Spacetime Gap: There is an explanatory gap between the fundamental experiences (as grounds) and spacetime (as a groundee).

The theory of relativity is our best current theory of space and time.¹² The theory of relativity—in its most straightforward ontological interpretation—entails the existence of *spacetime*. The theory of relativity, so understood, is a substantivalist theory of spacetime. If spacetime substantivalism is true, spacetime is a ubiquitous and dynamic entity with no further physical ground. In this section, I assume that spacetime substantivalism is true, and I base *Spacetime Gap* on it.

Spacetime has an *essential geometric structure*. It is a *four-dimensional manifold* structured by the *spacetime metric*. In geometry, metric structures determine *distances*. The spacetime metric determines the spacetime distance between any two events in spacetime.¹³ Spacetime distances are invariant; they are the same for all

¹² By “the theory of relativity,” I have in mind the conjunction of the special and the general theory of relativity.

¹³ What I call the “spacetime distance” is often called the “spacetime interval” in the physics literature (standardly designated as “ $(\Delta s)^2$ ”). Here, I use the term “spacetime distance” both for simplicity and to emphasize that this quantity is the spacetime analog of the Euclidean distance.

observers. If spacetime's metric structure were different, the theory of relativity would no longer apply to spacetime; spacetime would no longer be the same entity, it would no longer *be* spacetime. If so, the spacetime metric is likely essential to spacetime.¹⁴

Visual experiences, more than any other experiences, are associated with distances. I can clearly see and measure the distance between two points on a line, and I can clearly tell that some objects are close to me while others are further away from me. Thus, it appears that at least some visual experiences might be essentially metric. If so, could some visual experiences, in some contexts, instantiate the spacetime metric?

The spacetime metric entails facts of *positive* distances but also of *negative* and *null* distances. The distinction between positive, negative, and null spacetime distances constitutes spacetime's causal structure. These three kinds of spacetime distances obtain *everywhere* in spacetime: at all scales and in all regions. There are perfectly natural reference frames in every cell of our bodies where spacetime events are at positive distances but also at negative and null distances from one another.

Human experiences, in contrast to spacetime, seem to instantiate only positive distances. Our ordinary concept of distance is the concept of a positive quantity separating some entities. Although negative and null distances are coherent, they appear to be *neither perceivable nor imaginable*. If so, given that phenomenal concepts are transparent, it seems reasonable to assume that no human visual experience essentially has the spacetime metric.

Beyond visual experiences, the same point seems to apply to all other human experiences. To the best of my introspective ability, I cannot find any experience that exhibits the properties of spacetime's metric structure. To the best of my introspective ability, no human experience instantiates negative and null distances. If so, again, given that phenomenal concepts are transparent: *no* human experience appears to have the spacetime metric.

¹⁴ In the literature, this metaphysical position is known as *metric essentialism*; its locus classicus is Maudlin (1989).

Putting the above together: spacetime essentially has the spacetime metric, while all human experiences lack the spacetime metric. If so, via *Good Model*, the putative fundamental experiences (posited by the panpsychist) likely lack the spacetime metric. If so, it seems that not even an ideal intellect (like Laplace’s demon) could deduce spacetime’s existence from the putative fundamental experiences. Thus, *Spacetime Gap* is true.

If panpsychism is true, spacetime is a dependent entity grounded in the putative fundamental experiences. Thus, although spacetime has no further physical ground, it has an experiential ground. However, *Spacetime Gap*—in the role of P-3 of the missing entities argument—entails that if panpsychism were true, spacetime would lack an explanation in terms of fundamental reality. Thus, if panpsychism were true, there might be no spacetime. Thus, if spacetime substantivalism is true, *Spacetime Gap*, as a premise of the missing entities argument, entails that panpsychism is false.

3.2. The Quantum State Gap

The second gap involves the *high-dimensional quantum state*, posited by some proponents of realist quantum theories, as a groundee.

Quantum State Gap: There is an explanatory gap between the fundamental experiences (as grounds) and the high-dimensional quantum state (as a groundee).

Quantum theory is our best current theory of matter. Quantum theory’s predictive power is undeniable, yet its ontological implications are an enigma. The wave function is the central mathematical device of quantum theory. According to proponents of *realist* quantum theories, the wave function is not only a useful mathematical device; instead, it represents a real entity.¹⁵ Philosopher of physics Tim Maudlin (2019) calls this entity the “*quantum state*.”

¹⁵ Realist quantum theories include Bohmian, Everettian, and spontaneous collapse quantum theories.

The properties of the quantum state are a matter of heated debate. There is a lot of disagreement about how much of the wave function's mathematical structure corresponds to the quantum state's structure. Specifically, one question of key importance is whether the quantum state has the same number of dimensions as the wave function.

The wave function's domain is standardly called a *configuration space*. It is typically characterized as $3N$ dimensional, where N stands for the number of particles it describes. The universe is estimated to have at least 10^{80} particles. If so, the configuration space of our universe's wave function has at least 3×10^{80} dimensions.

Proponents of (what I call) *high-dimensionalism* argue that the quantum state is $3N$ dimensional, just like our universe's wave function. In their view, the 3D space aspect of spacetime is grounded in the $3N$ dimensional quantum state. *Quantum State Gap* involves this high-dimensional conception of the quantum state.

Contributors to this volume Alyssa Ney (2012) and Sean Carroll (2019), are notable proponents of high-dimensionalism. It is worth noting that Goff (forthcoming) argues against high-dimensionalism based on the worry that it cannot account for the reality of human consciousness. Thus, this section is not directly an attack on Goff's view but is aimed more generally at panpsychists sympathetic towards high-dimensionalism.

Given high-dimensionalism, the quantum state is essentially $3N$ dimensional. The complexity of the quantum state, so defined, is staggering. It is impossible to imagine (or otherwise experience) anything even remotely close to this high-dimensional structure. If so, and given the transparency of phenomenal concepts: clearly, no human experience is essentially 3×10^{80} dimensional.

By now, my defense of *Quantum State Gap* should be obvious. If panpsychism is true, the quantum state is grounded in some fundamental experiences. However, via *Good Model*, it is reasonable to assume that none of the putative fundamental experiences is 3×10^{80} dimensional. Based on this, were panpsychism true, not even Laplace's demon could deduce the existence of the quantum state from the fundamental experiences. Thus, *Quantum State Gap* is true.

Quantum State Gap—in the role of P-3 of the missing entities argument—entails that if panpsychism were true, the high-dimensional quantum state would lack an explanation in terms of fundamental reality. If panpsychism were true, there might be no high-dimensional quantum state. Thus, if high-dimensionalism is true, *Quantum State Gap*, as a premise of the missing entities argument, entails that panpsychism is false.

3.3. The Quantum Gravity Gap

The third gap involves the *timeless quantum-gravitational entities*, posited by some theories of quantum gravity, as groundees.

Quantum Gravity Gap: There is an explanatory gap between the fundamental experiences (as grounds) and timeless quantum-gravitational entities (as groundees).

Theories of quantum gravity aspire to explain gravity in a way that is compatible with quantum theory. Some theories of quantum gravity aspire to accomplish this by *quantizing* spacetime. Contributor to this volume Carlo Rovelli (2004), is a leading figure in the development of one such theory: *loop quantum gravity*. These theories of quantum gravity posit that spacetime, as a whole, is grounded in fundamental structures that lack a spatial and temporal metric. These structures seem to be essentially *neither spatial nor temporal*.

I use the term “timeless quantum-gravitational entity” as a blanket term for any fundamental entity that lacks an essential temporal metric and is posited by a theory of quantum gravity.¹⁶ The postulated existence of timeless quantum-gravitational entities gives rise to *Quantum Gravity Gap*.

¹⁶ In loop quantum gravity, the timeless quantum-gravitational entities are called “spin networks.”

Time appears to be an essential property of all human experience.¹⁷ No human experience seems possible unless it has some temporal duration, unless it lasts some time. This should be plain to everyone who has reflected on any ordinary experience. If human experiences are essentially temporal, via *Good Model*, it follows that the putative fundamental experiences are likewise temporal. If so, *Quantum Gravity Gap* is true.

Quantum Gravity Gap is not a new challenge for panpsychism. Susan Schneider (2018) has already risen an analogous challenge. Goff acknowledges her challenge and offers a tentative solution (2019, pp. 209–10). Based on Miri Albahari's (2019) work, he suggests that one kind of human experience might be essentially timeless. This is *mystical experience*. Mystical experiences are typically induced either by deep meditation or by the use of psychedelics. They have been reported across many different cultures and religions. People who have undergone mystical experiences often describe them as experiences of pure oneness beyond space and time.

Given that phenomenal concepts are transparent, mystical experiences might be essentially timeless. However, this alone is not sufficient to close *Quantum Gravity Gap*. Closing *Quantum Gravity Gap* requires experiences that both (a) are essentially timeless and (b) have the *right kind* of timeless structure. I argue that even if mystical experiences satisfy (a), they most likely fail to satisfy (b). The “right kind of timeless structure” required in (b) is the structure of the specific quantum-gravitational entities we are trying to ground. I illustrate this by reference to *Spacetime Gap*.

To close *Spacetime Gap*, it is not sufficient that some experience has *some* metric. Instead, some experience must have the spacetime metric. Likewise, to close *Quantum Gravity Gap*, it is not sufficient that some experience has *some* timeless structure. Instead, some experience must have the structure of the specific quantum-gravitational entities they are expected to ground (or, at least, a structure sufficiently similar to allow for an intelligible connection).

¹⁷ For an independent defense of this claim, see Phillips (2014).

It is highly unlikely that mystical experiences have the structures of quantum-gravitational entities. Reports indicate that timeless mystical experiences are experiences of pure oneness, *without any differentiation*.¹⁸ Thus, plausibly, they lack any definable structure. If so, via *Good Model*, it follows that the timeless fundamental experiences are likely to lack any definable structure. Moreover, given *Transparency*, if mystical experiences had a structure even roughly resembling that of quantum-gravitational entities: mystics would have told us about it by now. Yet, they have not. Instead, it was physicists who developed quantum gravity. Thus, again, via *Good Model*, it follows that even if there are timeless fundamental experiences, their structure is likely not similar to that of quantum-gravitational entities.

In summary, timeless quantum-gravitational entities have specific timeless structures. The reports of mystical experiences indicate that some human experiences might be essentially timeless. However, these experiences seem to lack structures similar to the ones posited by theories of quantum gravity. If so, via *Good Model*, it follows that the putative fundamental experiences likewise lack timeless quantum-gravitational structure. If so, were panpsychism true, not even Laplace's demon could deduce the existence of these timeless quantum-gravitational entities from the fundamental experiences. Thus, *Quantum Gravity Gap* is true.

Quantum Gravity Gap—in the role of P-3 of the missing entities argument—entails that if panpsychism were true, timeless quantum-gravitational entities would lack an explanation in terms of fundamental reality. If panpsychism were true, there might be no timeless quantum-gravitational entities. Thus, if any of the theories positing such entities is true, *Quantum Gravity Gap*, as a premise of the missing entities argument, entails that panpsychism is false.

¹⁸ See Albahari (2019).

4. The Consciousness+ Response

Missing Entities is true if at least one of the above explanatory gaps is true. If *Missing Entities* is true, given my previous defense of the other premises, the missing entities argument is sound. If so, panpsychism is false.

The missing entities argument refutes a specific version of panpsychism that is pure, Russellian, and reductive. This is one version of panpsychism that Goff is sympathetic towards. However, he also defends other versions. Notably, in his academic work, Goff (2017, pp. 179–81, 230–5) develops a unique version of panpsychism he calls “*consciousness+ panpsychism*.”

Consciousness+ panpsychism posits that fundamental reality is constituted of consciousness+ properties. These hypothetical properties enfold “experiential and non-experiential aspects into a single nature.” (Goff 2017, p. 180) Consciousness+ panpsychism is impure, Russellian, and reductive. Goff develops it as one potential solution to the combination problem.¹⁹ The non-experiential aspects of consciousness+ are completely mysterious. Goff argues that the addition of these hidden aspects to experiences might solve the combination problem.

Goff envisions consciousness+ panpsychism as metaphysical monism. Consciousness+ properties are supposed to be unitary. This makes sense in the context of solving the combination problem. Presumably, the experiential aspects of consciousness+ explain human experiences qua experiences. In contrast, presumably, their plus-aspects explain how the putative fundamental experiences combine into human experiences. If so, both the experiential and non-experiential aspects of consciousness+ have necessary *explanatory roles* in solving the combination problem.

The missing entities argument fails to refute consciousness+ panpsychism. As I have argued, experiences alone cannot close *Missing Entities*. However, consciousness+ properties might close *Missing Entities* in virtue of their plus-aspects. If so,

¹⁹ It is worth noting that Goff also proposes other potential solutions to the combination problem. Perhaps the most notable among these is his “phenomenal bonding” proposal (Goff 2016).

consciousness+ panpsychism avoids both the combination and the missing entities problem. Nevertheless, I believe, stretching the explanatory role of consciousness+ properties this far might come at a price. The price is the loss of *monism*.

Let us assume—as Goff argues—that Galileo’s conception of the physical world is mistaken. Thus, contra Galileo, physical entities have some deeper qualitative ground. Moreover, suppose we are justified to posit consciousness+ properties to explain human consciousness (perhaps due to explanatory gap worries). So far, so good. Now, ask yourself: what is the best candidate for the deeper qualitative ground of physical entities?

Missing Entities indicates that experiences alone (as long as they are similar to our human experiences) are *not* apt to ground the physical world.²⁰ On the other hand, the plus-aspect of consciousness+ is tailor-made for closing explanatory gaps. It seems that, when it comes to grounding the physical world, the plus-aspect can do *all* the explanatory work and do it *alone*. In contrast, experiences can do this same explanatory work *only if assisted* by the plus-aspect. This indicates that the experiential aspect of consciousness+ might be explanatory *redundant* in closing *Missing Entities*.

If I am right about the above, the plus-aspect of consciousness+ seems to be the best candidate for the qualitative ground in the scenario under consideration. Although the two aspects of consciousness+ come together in solving the combination problem, they come apart in closing *Missing Entities*. But then, is there any strong reason to think consciousness+ is unitary? We might as well be dualists at this point.

Consider the following dualist view.²¹ Imagine a cosmos where two distinct kinds of properties are fundamental: non-experiential (physical) qualities and experiences. The physical qualities ground the physical world. The fundamental experiences correlate with them throughout the cosmos: like a ghost in the machine. Yet, these fundamental experiences do not ground any physical entities. The two kinds of fundamental properties come together in complex systems (such as humans). There,

²⁰ Assuming, of course, that one of the theories of physics I have examined is true.

²¹ Or rather: *dualist panpsychism*.

they mutually ground higher-order experiences. Although rough, this sketch seems coherent. The onus is on Goff to explain why his monistic consciousness+panpsychism is preferable to this or a similar form of dualism.

5. Conclusion

Panpsychism promises a lot. It is a well-motivated and elegant metaphysical theory. However, panpsychism faces serious challenges from both the combination problem and, as I argued, the missing entities problem. I used this opportunity to elucidate the missing entities problem as a new problem for panpsychism.

All the instances of *Missing Entities* I outlined express the same underlying idea: The structures of the cosmos are essentially different from the structures of experiences. I based *Missing Entities* on an inference from human experiences to the putative fundamental experiences. Our experiences can ground rich structures. Yet, the structures of the cosmos are richer. The structures of the cosmos are beyond the structures of our experiences. I argued, via *Good Model*, that panpsychism is most likely to work if the fundamental experiences it posits are similar to our experiences. *Missing Entities* is the outcome of this inference. *Missing Entities*—as a premise of the missing entities argument—entails that the physical structure of the cosmos cannot be purely experiential.²² If so, Galileo might have been right to separate physical structure and experiences.²³

²² At the very least, the fundamental experiences certainly *cannot be unimaginably simple*, as Goff and many other panpsychists posit.

²³ I am deeply grateful to Philip Goff for his comments on the paper, and more importantly, for teaching me about panpsychism and then inviting me to argue against it. Many thanks also to Jamie Elliot, Zhiwei Gu, and Alex Moran for commenting on the paper.

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