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Can the Psi Data Help Us Make Progress on the Problem of Consciousness?

Abstract: *The inherently subjective nature of consciousness severely limits our ability to make progress on the problem of consciousness. The inability to acquire objective, publicly available data on the phenomenal aspect of consciousness makes evaluating alternative theories very difficult, if not impossible. However, the anomalous nature of subjective states with respect to our conventional theories of the physical world suggests the possibility of considering other anomalous data around consciousness that happen to be objective. For such purposes, I propose that we examine the psi data gathered under laboratory conditions, which generally receive little attention. I wish to consider whether we have theories or frameworks of consciousness that attempt to account for subjective qualia but also fit the psi data. I argue that Russellian monism can be combined with an argument regarding quantum holism to arrive at a version of cosmopsychism that fits very well with the psi data. While I do not argue that such a framework exhausts the theoretical possibilities, I do suggest we can move forward with a framework that has attractive theoretical features and is also consistent with objective data currently on the table.*

1. Introduction

The problem of consciousness is perhaps the most challenging problem facing scientific enquiry. Essentially, the problem is how to fit inherently subjective experiences into our scientific comprehension, which is based on an objective understanding of the world. We have

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arrived at this understanding by evaluating theories using objective, third-person-generated data. However, as Nagel (1974) noted, accessing the subjective character of experience for other conscious organisms is impossible. Our only knowledge of subjective experience comes from accessing it directly from the inside.

Without objective data on the phenomenal nature of our world, it is difficult to see how we can truly make progress on explaining consciousness, especially if the correct explanation requires a move seen as radical or unpalatable. Those who accept what Chalmers (1996; 1997) has characterized as the ‘hard problem’ believe that consciousness is likely fundamental in some sense and that physicalist explanations cannot succeed. They have been more willing to explore alternative frameworks, such as panpsychism (Seager, 1995; Strawson, 2006) or neutral monism (Coleman, 2017). However, physicalists who do not favour such alternatives will likely be unpersuaded by philosophical arguments that do not also make empirical contact with the objective world.¹

While the subjective character of consciousness remains outside the reach of objective methods, in order to make progress, I believe we should consider somehow expanding the data we use to consider alternative explanations of consciousness. Thus, I propose using a set of data that is generally characterized as anomalous and falls under the umbrella term *psi*. While these data remain controversial, meta-analyses across various *psi* categories indicate strongly significant effects. I believe that these data are relevant to the problem of consciousness, so that it is likely a mistake to ignore them. However, perhaps many do not accept such data because they perceive difficulty in reconciling them with our current scientific understanding. Towards addressing this concern, I will explore current directions in the philosophy of consciousness and quantum physics that may support *psi*.

Early in the twentieth century, prominent physicists involved in developing quantum mechanics considered the possible connection between consciousness and quantum behaviour. Marin (2009) observed that, as early as the 1927 Solvay Congress, some of the early

¹ See the recent debate between Massimo Pigliucci (physicalist) and Phillip Goff (panpsychist) at <https://letter.wiki/conversation/277>. A key objection from Pigliucci regarding Goff’s argument involves the inability of panpsychists to generate testable claims.

pioneers of quantum mechanics considered the possibility that consciousness and mysticism had some relevance to quantum theory. But most quantum physicists have discarded such directions. The present work picks up this question, focusing on a possible connection between consciousness and quantum mechanics. The persistence of two arguably intractable problems — consciousness and the measurement problem of quantum mechanics — makes attractive finding a link between these two.

My paper is organized as follows. In the next section, I argue why we should include the psi data in our evaluations for theories of consciousness. In the third section, I explore a theory consistent with such data by bringing together two different philosophical threads: Russellian monism and quantum holism. Russellian monism has recently attracted considerable interest as a way to place consciousness in the physical world while avoiding the problems that plague dualism and physicalism. However, it faces a number of challenges of its own. I believe that recent work advancing the notion of a common ground with quantum mechanics suggests a promising direction. I argue that bringing together Russellian monism and quantum holism leads towards a version of *cosmopsychism*, the position that all conscious states are aspects of a more fundamental or basic consciousness for the cosmos.

In the fourth section, I discuss how my proposal fits the psi data, as well as helps account for our conscious experience. While psi remains controversial because it is anomalous with respect to our current scientific understanding, I argue that it is not anomalous with respect to my proposed framework. Finally, I will offer a conclusion.

2. Accepting Anomalous Data on Consciousness

The difficulty of fitting conscious experience into our understanding of the world, as well as the impossibility of gathering objective data on its phenomenal aspect, has led some philosophers to attack the notion of phenomenal consciousness itself. Advocates of illusionism usually argue that, instead of truly phenomenal states of experience, we access only quasi-phenomenal states that can be reconciled within a completely functionalist framework. To make the case for illusionism, Frankish (2016) framed the problem of consciousness in the following way:

Suppose we encounter something that seems anomalous, in the sense of being radically inexplicable within our established scientific worldview.

Psychokinesis is an example. We would have, broadly speaking, three options. First, we could accept that the phenomenon is real and explore the implications of its existence, proposing major revisions or extensions to our science, perhaps amounting to a paradigm shift. In the case of psychokinesis, we might posit previously unknown psychic forces and embark on a major revision of physics to accommodate them. Second, we could argue that, although the phenomenon is real, it is not in fact anomalous and can be explained within current science. Thus, we would accept that people really can move things with their unaided minds but argue that this ability depends on known forces, such as electromagnetism. Third, we could argue that the phenomenon is illusory and set about investigating how the illusion is produced. Thus, we might argue that people who seem to have psychokinetic powers are employing some trick to make it seem as if they are mentally influencing objects. (pp. 12–13)

I might quibble a bit with the analogy. In the case of psychokinesis, I would prefer the opportunity to enquire whether the evidence was gathered under controlled conditions, confirmed by other researchers, and so on. However, Frankish's concern here is the debate on consciousness, and I think his analogy illustrates his point well.² Frankish fully accepted that consciousness is anomalous with respect to our current scientific explanation, based on the difficulty of accounting for basic qualitative experiences (qualia) within a physicalist framework. Yet, given strong evidence of confirmation of the main body of physicalism, he counselled a conservative approach, arguing against exploring any radical moves in scientific theory. Hence, we are advised to take up the third option and examine the possibility of illusionism.

For my part, I cannot accept the view that my experiences are illusory in the sense that Frankish, Dennett (1991), and other illusionists have argued. Instead, I believe that my conscious experiences are real, even if I am mistaken in my interpretation of the contents of my experiences, such as when I am dreaming. But I do accept that experience remains very difficult for our prevailing scientific understanding to explain. Accounting for qualia within our current scientific framework remains prohibitively difficult. Following the way Frankish framed the problem, this appears to leave us with the first option. However, I suggest we can appease the worries of Frankish and others by minimizing how we extend our theorizing.

² I discuss more about anomalous mind–matter interaction later.

That is, we might confine our attention to areas where gaps currently exist in our understanding of the world. If we target these gaps, instead of revising areas that have proved extraordinarily useful, we might make progress on the problem of consciousness while having little impact on theories that remain on solid ground. I believe that this sort of approach is currently being employed with what is being called Russellian monism, and I take this up in the next section.

But returning now to the anomalous character of consciousness, I would like to suggest that this arguably troublesome feature presents a loophole regarding the epistemological aspect of the hard problem: gathering third-person data. The anomalous nature of consciousness suggests the possibility that some theories we might develop could spill over in the direction of other anomalous features, perhaps in ways we could test. What kind of theory and what kind of anomalous data remain to be seen. However, it happens that currently various kinds of anomalous data exist that are intimately linked to consciousness. These data are generally called *psi*, which is an umbrella term used for such anomalous behaviour as telepathy, clairvoyance, precognition, and psychokinesis.

Of course, the *psi* data are controversial and often ignored. I believe this is unfortunate, especially for the categories of *psi* examined under laboratory conditions and vetted in refereed publications. Nevertheless, this research has recently gained more attention in major psychology journals (Bem, 2011; Storm, Tressoldi and Di Risio, 2010), and most recently with Cardeña (2018), who provided a comprehensive summary of the extant meta-analyses for *psi* evidence. Cardeña noted that the overall evidence ‘provides cumulative support for the reality of *psi*, which cannot be readily explained away by the quality of the studies, fraud, selective reporting, experimental or analytical incompetence, or other frequent criticisms’ (p. 663). He also noted that the rigour of the *psi* experimental methodology has increased with time, often including analyses for possible publication bias as well as the quality of the studies. I discuss this evidence later, as well as how it fits with my own proposal. But at this point, we can note that we have on the table a considerable amount of anomalous but replicated data that could be critical in evaluating various theories of consciousness.

Recently, however, Reber and Alcock (2019) have strongly attacked Cardeña’s (2018) presentation and broadly dismissed all of the paper’s findings. They did so, however, without citing any flaws in the data or methodology. Their arguments against accepting the data were based

on what they viewed as the conflict between psi and our current scientific understanding. As they put it:

If the physicalist-materialist framework of modern science is correct within the bounds of demonstrability and theoretical coherency — and everything that has been learned through science says it is — the fact that claimed parapsychological phenomena are so grossly inconsistent with that framework suggests that they are all but impossible and that the claims made by proponents cannot be true. (p. 392)

We can note the similarity of this argument to the one used by Frankish in regarding phenomenal experience as illusory. But if, instead, we have selected the first option mentioned by Frankish (see above) and regard our conscious experience as real yet anomalous, we might be reluctant to dismiss an additional set of anomalous data associated with consciousness, in this case objective laboratory data that have been vetted by scientific peers. If we already accept that consciousness is anomalous in the sense that its subjective nature does not fit with physicalist explanations, the basis for rejecting the psi data (because they do not fit with physicalist explanations) is weakened. In this regard, I have never encountered a serious criticism of the psi data that also acknowledges the hard problem. Of course, phenomenal experience and the psi data are anomalous for different reasons; physicalist theories have difficulty accounting for qualia, and psi phenomena, such as precognition, appear inconsistent with current scientific theories. However, if we accept that the psi data are closely linked with consciousness, we might consider that these two reflect different modes or properties around consciousness, a possibility that could motivate us to take a closer look.

In other words, we might see our problem as an effort to solve a giant jigsaw puzzle, where the pieces include our scientific theories as well as different sorts of observations. Perhaps consciousness represents a large empty region where we struggle to gain traction. Here, suppose we consider whether the piece representing psi might somehow be joined with another piece representing subjective experience. At first glance, this may seem unlikely. As noted, psi and subjective feels remain anomalous in different ways. But perhaps other missing pieces involving aspects of the physical world might facilitate some kind of fit. As I'll discuss shortly, recent work on consciousness has focused on the deep (intrinsic) nature of matter, where we remain ignorant. It seems possible that pieces representing this area could, in turn, connect with the parts of our puzzle linked to quantum mechanics, where we also struggle to find a satisfactory ontology.

Thinking along these lines, an improvement in our understanding of the deep nature of matter may lead to an interesting way to fit together both the psi data and qualitative experience.

In the next section, I focus on approaches to consciousness and quantum mechanics that have not yet been linked with psi. Specifically, this involves a version of cosmopsychism that results from combining arguments associated with Russellian monism and quantum holism. I believe these arguments will have attractive features on their own regarding the hard problem. But I will also argue that combining these arguments ultimately provides a framework that is consistent with the psi data, which we currently have in hand. If successful, we may have a useful framework that accommodates many of our best theories.

3. Linking Russellian Monism with Quantum Mechanics

Russellian monism is generally associated with two arguments made by Bertrand Russell (1927). The first is that physics can provide us with only a structural or relational understanding of the physical world. That is, the ultimates that comprise our world, such as mass and velocity, are expressed in terms of mathematical relations to other such ultimates. Russell argued that these elegant and mathematical frameworks nevertheless leave us ignorant with regards to whatever relata ground the relations established in our structural understanding. In other words, physics cannot reveal the intrinsic aspect of our physical world.

The second argument is that the best knowledge we have of the intrinsic aspect of reality is the direct knowledge we have of the nature of our own conscious states. Russell held that these states, which we acquire without abstract equations or theories, give us our only knowledge of an intrinsic aspect within the world. These two arguments can then be combined to provide a deeply interlinked view of mind and matter. Since physics tells us nothing of the intrinsic aspect of our physical world, we may posit that this aspect is the same (or has the same basis) as our own conscious experiences.

This argument appears to suggest a way of escaping the problems faced by physicalism and dualism. That is, taking consciousness as intimately linked with the intrinsic aspect of our physical world indicates a way to avoid the radical emergence that physicalism seems to require. Also, this union between matter and consciousness at the

core of our existence implies that the causal closure of the physical world need not present a problem, as it does with dualism. Thus, Russellian monism looks very promising for those who view consciousness as fundamental in some sense. But in addition to these attractive features, by focusing on an aspect of the world that science leaves untouched, Russellian monism arguably avoids the concern raised by Frankish (2016) of how to redevelop scientific theories to accommodate conscious experience. Thus, it is quite possible that a solution to the problem of consciousness via Russellian monism will leave much of our scientific theories intact.

Alter and Nagasawa (2015) provided a useful formulation of Russellian monism, arguing that basic properties described by physics are structural or relational. They use the term *inscrutables* to characterize properties that ground the physical structure (or relations) that physics describes.³ That is, they define inscrutables as ‘natures that are not fully characterized by structural/relational descriptions’ (p. 425). According to Alter and Nagasawa’s formulation of Russellian monism, at least some inscrutables are either protophenomenal or phenomenal properties.⁴ Thus, our own experience of consciousness is grounded or based in a deeper, fundamental aspect of our world that eludes our structural or mathematical frameworks.

However, it is by no means clear how the vast diversity of phenomenal experience arises from such an inscrutable or fundamental ground. The most common version of panpsychism addresses this issue by positing that some or all subatomic particles possess a rudimentary level of consciousness.⁵ In this framework, the different varieties of consciousness presumably result from complex aggregates of these particles, which possess micro-experiences. But this leads to the combination problem: how do micro-experiences combine to yield

³ Alter and Nagasawa borrowed this term from Montero (2015). However, Lockwood (1989) used the phrase ‘inscrutability of matter’ to convey the same notion, attributing it to Foster (1982).

⁴ Protophenomenal properties require other conditions or properties to instantiate consciousness (Chalmers, 1997).

⁵ Brüntrup and Jaskolla (2017) have presented a recent collection of papers that explored the attractions and problems of panpsychism.

our familiar macro-experiences? Many consider the combination problem to be a formidable issue for constitutive panpsychism.⁶

However, Alter and Nagasawa (2015) raised another difficulty. As we have discussed, inscrutables remain outside of what physics reveals. How, then, do we characterize or pin down their nature? Although Russellian monism is usually associated with panpsychism and neutral monism, Alter and Nagasawa noted that some versions of inscrutables are compatible with idealism, dualism, or even physicalism. Kind (2015) raised a similar worry; namely, that the inability to establish the properties of inscrutables may lead us back towards an intractable debate between people with either strong dualist or strong physicalist intuitions. Montero (2015), for one, argued for a Russellian physicalism where inscrutables are entirely physical yet also provide a base for consciousness. While Russellian monism remains attractive, the relatively obscure nature of inscrutables threatens to diminish its utility.

3.1. *Quantum holism and a common ground*

Making progress within the framework of Russellian monism likely requires that we pin down the nature of the inscrutables. This forces us to consider what we know or can know about quantum mechanics, the most fundamental aspect of the physical world. But quantum mechanics remains a branch of physics. Recall that, according to Russell, physics delivers an understanding of matter based on structuralism. In his own words, ‘the aim of physics, consciously or unconsciously, has always been to discover the causal skeleton of the world’ (Russell, 1927, p. 391). Alter and Nagasawa (2015) characterized this structural understanding as ‘nomic (or causal) spatiotemporal structure’ (p. 431). Given all this, what can quantum mechanics reveal about the inscrutable nature of our reality?

Returning to our puzzle metaphor, we might wonder what properties quantum mechanics possesses that can be linked with psi. We can note some of the psi data, such as remote viewing, appear to exhibit puzzling nonlocal correlations. Of course, it happens that the property of entanglement between subatomic particles also shows nonlocal correlations across arbitrary distances. As is well known, Einstein,

⁶ Seager (1995) discussed the problem and coined the term *combination problem*; however, James (1890) recognized the problem earlier and characterized it vividly. See Chalmers (2017) for a recent overview.

Podolsky and Rosen (1935) argued that the nonlocal nature of entanglement indicated that the theory was incomplete. However, Bell (1964) showed that the EPR thought experiment generated contradictions with quantum mechanical predictions, which have been confirmed experimentally. Thus, the nonlocal nature of quantum mechanics appears to be established.

Before going further, I wish to address the use of the terms *nonlocal* versus *non-separable* within the literature. The term *nonlocal* is often used to characterize the property of entanglement, involving modal correlations between separated entities. However, Ney (2020) has recently noted that the term is often associated with a causal connection between objects within space-time, which conflicts with special relativity. Ney has advocated the term *non-separable*, which, she argued, can be understood within the context of a high-dimensional ‘space’, through which entangled entities are connected, rather than our more familiar space-time. This notion of a high-dimensional space is the basis for wave function realism, the position advocated by Ney (2020), Albert (2013), and others that the extraordinary number of dimensions required by the wave function (due to entanglement) point towards an ontologically real high-dimensional space.⁷ Ismael and Shaffer (2020), whose proposal of a quantum ground I wish to discuss, also have chosen the term *non-separable* rather than *nonlocal*, and their argument is also consistent with wave function realism. However, all this said, in this paper I retain use of the term *nonlocal* to characterize the modal correlations between quantum entities, primarily because that term has often been used to characterize psi phenomena. I prefer to maintain consistency and avoid confusion. However, I will not use the term to suggest any causal relationships, unless explicitly stated.

Ismael and Schaffer’s (2020) proposal is framed around their argument that the nature of quantum mechanics reveals nonlocality in the sense that nature ‘allows spatiotemporally separated entities to have states that cannot be fully specified without reference to each other’ (p. 4131). This entanglement between states of entities, they

⁷ The notion of a quantum field inhabiting high-dimensional space, advocated by Albert and others, should not be confused with quantum field theory, which attempts to extend quantum mechanics to incorporate more classical fields, as well as special relativity. Also, wave function realism is distinct from von Neumann’s argument that quantum superpositions described by the wave function constitute real aspects of the world’s ontology.

argue, cannot be understood in terms of causal relationships between such entities. Instead, such correlated behaviour between entities is most likely consistent with the presence of a common ground that ‘coordinates the randomness’ between the possible states. While this common ground is not described in the quantum formalism, they argued that it can be inferred from the behaviour of the correlated entities. For Ismael and Schaffer, this common ground establishes a metaphysical relationship between relatively derivative entities, the particles that constitute our world, with what they characterize as ontologically prior. Thus, the distinct components of entangled systems are ultimately grounded in an integrated whole, ontologically fundamental to the components.

The notion of a quantum ground that Ismael and Schaffer proposed arguably provides an attractive candidate for the Russellian inscrutable, whose nature cannot be characterized fully in structural or relational descriptions. Of course, quantum formalism contains a great deal of structure. However, Ismael and Schaffer’s inference of a common ground made no explicit reference to such within the formalism. Thus, their notion of a quantum ground appears to require something non-structural (not captured within the quantum formalism) that influences the system of entangled quantum states as a whole.

Ismael and Schaffer described this as a metaphysical ground, ontologically prior to the quantum system, inhabiting a high-dimensional space and thus not confined to the causal, spatio-temporal order. Its inherently holistic influence intimates a fundamental and nonlocal unity across all spatio-temporally separated entities. Its status as a metaphysical ground that holistically orchestrates the relationships between quantum states suggests a promising candidate for whatever ultimately grounds the relationships described by physics. Based on its non-structural and fundamental properties, we have reason to focus our attention here as the Russellian inscrutable. Thus, this quantum ground within wave function space is also an attractive candidate for the basis of consciousness. As I’ll discuss later, the inherently nonlocal nature of this quantum ground leads us towards a view that the universe as a whole is conscious.

3.2. Potentia as the intrinsic aspect of matter

The question of intrinsic nature leads us to ask, what is the something or stuff that lives in this high-dimensional ground? Although advocates of wave function realism such as Albert and Ney are

physicalists, Russellian monism gives us reason to think that this most basic entity is the ground for consciousness as well as quantum behaviour. And, as we have discussed, this most basic entity is ontologically prior to the various outcomes of experiments, as well as, in general, the particles that constitute our world. Thus, it seems reasonable that we might call this stuff *potential matter* or ‘*potentia*’. Although this idea of ‘*potentia*’ is not widely embraced by physicists, the notion is important historically and it does have some contemporary advocates.

Heisenberg (1958) proposed applying the term, which he attributed to Aristotle, within the context of the Copenhagen interpretation to represent the superpositions of possible states that exist before measurement. That is, Heisenberg held that superposed states represented real tendencies or potentialities that would instantiate upon measurement. Recently, Kastner, Kauffman and Epperson (2018) have proposed using Heisenberg’s notion of *potentia* within what they describe as a dualistic framework (although in their view distinct from substance dualism). Their framework also follows the Copenhagen postulate in holding that measurement triggers superposed states (in *potentia*) to transition into the observed states upon measurement.

This notion also has been expressed extensively by Stapp within von Neumann’s framework of Processes I and II. Stapp (2017) follows Heisenberg’s (1958) proposal of incorporating *potentia* or real tendencies into the notion of quantum superposition associated with the Copenhagen framework. However, Stapp introduced two additional modifications that are interesting for our purposes. First, he argued that this domain of *potentia* can be characterized as mind-like.⁸ Second, Stapp characterized actual experimental outcomes (resulting from wave function collapse) as the ‘choice of nature’ in response to the experimenter’s choices. Thus, building on von Neumann’s framework, Stapp made the case for both our own volition and that of nature. And, while Stapp described this framework as dualistic in a pragmatic sense, he also maintained that a mind-like monism of nature is fundamental to both Processes I and II.

Here, I suggest that incorporating the notion of quantum *potentia* into the intrinsic aspect of matter offers a more parsimonious approach

⁸ See also Radin (1997), who explored, in the context of explaining psi phenomena, the possibility that consciousness has roots in a nonlocal quantum field, characterized by probabilities (pp. 158–60).

than some version of dualism or a framework that retains quantum superposition. Many physicists are understandably reluctant to embrace a concept that implies a version of dualism or appears to add something unobservable to the world's ontology. However, Russellian monism gives us reason to believe a deeper ontology exists — the intrinsic nature of the matter — beyond what physics can reveal. Thus, we have reason to put some weight on this notion of quantum potentia as the ultimate base or ground for the world. Moreover, the ontologically prior nature of this quantum ground, residing outside of space-time, suggests a way of accommodating the nonlocal correlations of quantum states without violating relativity. In addition, this notion of 'potentia', as the intrinsic aspect of matter within a high-dimensional ground, obviates the necessity of wave function 'collapse'.

3.3. *Quantum interpretations*

Assuming this is true or at least a reasonable thing to consider, what might this suggest about the correct interpretation of quantum mechanics? Ismael and Schaffer (2020) remained neutral and declined to speculate on which interpretation their notion of quantum ground might favour. However, in my view, their proposal has at least the flavour of a hidden variables approach. That is, something not referenced within the formalism nevertheless coordinates the probabilities, and thus orchestrates the relationships, between possible quantum states.

The various interpretations of quantum mechanics try to explain the measurement problem: the apparent transition from the wave function (a superposition of possible states) to the observed experimental outcomes. Given the persistence of the problem, it is tempting to consider that the influence of the quantum ground we have been considering plays a role here as well. That is, perhaps this quantum ground possesses nomological (law-like) properties that guide subatomic particles beyond what is captured by the wave function towards their observed states, while also accommodating Stapp's notion that nature itself makes a 'choice'. But if this quantum ground is indeed the Russellian inscrutable, and therefore grounds phenomenal properties, this leads us not so much in the direction of Bohm's (1952) version of hidden variables (which is fully deterministic), but towards his later work on the 'implicate order' (Bohm, 1980; Bohm and Hiley, 1993). Indeed, Bohm in this later work proposed that an

ontologically deeper ground, existing in the high-dimensional configuration space and providing the basis for both mind and matter, governed the behaviour of quantum systems through ‘active information’. Bohm and Hiley also described this high-dimensional space as a domain of potentialities or potential flux, which I view as consistent with the notion of *potentia* I have considered. Also, this approach, like Bohm’s earlier hidden variable theory, obviates the need for wave function ‘collapse’.

Thus, my proposal shares features with both Bohm and Stapp, while maintaining some differences. Both Bohm (1980) and Stapp (2017) proposed that real potentialities, within what we might call a quantum ground, provide the foundation for both mind and matter. While they both created room for free agency, Stapp (2017) more explicitly embraced the role that volition plays in bringing about outcomes. However, Bohm (1980) proposed a neutral monist framework, in contrast to my more explicitly phenomenal base. Stapp’s potentialities are mind-like; however, he retained the collapse postulate of the orthodox framework, while I do not.

The possibility that the intrinsic aspect of the world provides the foundation for agency (as well as consciousness) has recently been explored by Mørch (2020). Mørch noted that various philosophers of historical importance have argued that our direct experience of agency likely leads us towards an understanding of true causation. Thus, introspection on our ability to make real choices arguably gives us some understanding for the basis of causation in the world at large. Ismael and Schaffer (2020) stopped short of characterizing the causal relationship between the ontologically prior ground and a given system under investigation. But perhaps our considerations of the quantum ground as the basis for phenomenal experience also suggest this basis as the foundation for agency as well.

To recap, I submit that we have good reasons for viewing the quantum ground as an attractive candidate for the Russellian inscrutable. Thus, we are led towards a view of the intrinsic aspect of our world as an ontologically prior, nonlocal ground of potentialities fundamental to our spatio-temporal order. Moreover, Russellian monism suggests that this deeper stratum of potentialities is the ground of our experience, and perhaps true agency as well. As I shall discuss, these attributes, which include nonlocality, ground of potentialities, and a foundation for experience and volition, will provide a framework that fits well with the psi data.

3.4. *Wave function cosmopsychism*

The universal nature of this quantum ground moves this proposal into the family of *cosmopsychism*, the view that all conscious experiences possessed by humans or animals are aspects of or derive from the consciousness of the cosmos.⁹ The primary attraction of cosmopsychism is its ability to avoid the combination problem we mentioned earlier. According to Goff (2017), all conscious experiences are grounded via subsumption in the consciousness of the whole universe.¹⁰ Other recent explorations of cosmopsychism include Nagasawa and Wager (2017), Shani (2015), and Shani and Keppler (2018).¹¹ Most of these are heavily indebted to Schaffer's (2010) work proposing that the cosmos is the one truly fundamental and whole object, and thus ontologically prior to all of the more derivative objects within the universe.¹² However, with the notable exception of Shani and Keppler (2018), much current work does not attempt to link theories of cosmopsychism with quantum mechanics.

Shani and Keppler's (2018) version of cosmopsychism hinges on a non-standard modification of quantum field theory known as *stochastic electrodynamics* (SED), which describes an 'all-pervasive electromagnetic background field', called the zero-point field (ZPF), pervading the universe.¹³ Within this framework, physical systems become conscious through suitably coupling with the ZPF, which they argued is the source of conscious experience. Shani and Keppler described 'phase-locked modes' as key mechanisms that interact with the ZPF in a way that facilitates filter-like extraction of 'states of consciousness from the phenomenal color palette immanent in the ZPF' (2018, p. 399).

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- ⁹ The case that this ground contains only mental properties also yields a version of cosmic idealism. I retain here the label *cosmopsychism* because I believe this ground may contain both mental and non-mental properties. Chalmers (2020) discussed the distinctions between varieties of panpsychism and idealism.
- ¹⁰ Goff's grounding by subsumption can be illustrated as follows: my entire experience of enjoying a picnic lunch in a park with green grass subsumes my experience of a patch of green.
- ¹¹ See also Laszlo (2007) for explorations of a fundamental information field, motivated from speculative extensions of quantum field theory.
- ¹² Kafatos and Nadeau (2000) also argued that we can infer the universe to be conscious, due to its holistic, nonlocal nature, from which conscious creatures have emerged.
- ¹³ This framework builds on earlier work by Keppler (2012; 2016) that presents the ZPF as the fundamental field supporting conscious experience.

However, this proposed ZPF field arguably provides a substantially different ontology from Ismael and Schaffer's high-dimensional ground. While Shani and Keppler argued that their theory can account for entanglement and other quantum behaviour, there does not appear to be any additional nonlocal behaviour inherent in their framework. I submit that my proposal of a nonlocal ground of aware potentiality is better positioned to accommodate the psi data. However, at the present time Shani and Keppler's theory is more fully developed than my own. Perhaps their framework can be adapted to account for the psi data. Going forward, I will focus on my own proposal.

I believe that characterizing the fundamental quantum ground as an inherently aware unified domain of potentialities has some significant implications and advantages. Of course, it must be said that the idea of the universe as a whole being conscious in any sense might be hard to swallow. However, the idea is straightforward if we take the universal quantum ground as a fundamental, non-separable entity. In this view, all particles are aspects of this vast, ontologically prior, field or ground. Under Russellian monism, we can also understand that various conscious experiences are aspects of this phenomenal base. Hence, we avoid the problem of understanding how sentient particles combine to produce more familiar states of consciousness. However, this proposal faces the decombination problem: how the more derivative conscious experiences of humans and animals arise from such a phenomenal quantum ground.

Concerning decombination, here I will offer only a preliminary approach. We might frame the problem as follows: given a nonlocal and universal quantum ground as a base for phenomenal properties, how can we account for conscious experience in a local physical system? I suggest that the property of quantum contextuality indicates a direction. Quantum contextuality indicates that the measurements of quantum observables ultimately depend on other (entangled) observables, as well as all physical details of the experimental set-up.¹⁴ Thus, the wave function and experimental outcomes are critically and holistically dependent on all facets of the quantum system. This holistic sensitivity between quantum behaviour and its associated physical system may suggest that certain configurations, also situated

¹⁴ Contextuality in this sense is often understood to rule out hidden variable interpretations; however, this does not apply to Bohm's nonlocal hidden variable approaches or to what I present here.

in the quantum (phenomenal) ground, interact with this meta-physically foundational source in a way that supports experience.

My own intuition suggests that biological systems are probably necessary to support conscious experience. Perhaps biological systems have properties that allow a sort of quantum extraction of experience from the phenomenal base of the quantum ground. As it happens, the emerging field of quantum biology is identifying quantum properties in a growing number of biological processes. Marais *et al.* (2018) have recently presented a current overview of how energy transport processes, such as photosynthesis and enzyme catalysis, exhibit quantum mechanical properties such as quantum coherence. They also cited preliminary theories and data supporting quantum properties associated with aviary migration, olfaction, and cognition. Perhaps this growing field will eventually show the kind of links between biology and quantum mechanics that support conscious experience along the lines I have explored.

Thus, a physical (biological) system with the right properties may support a range of qualitative feels extracted from an ontologically prior phenomenal base. Borrowing Shani and Keppler's (2018) notion of a filter (but using a different ontology), I suggest that such a system extracts an aspect of conscious experience from the quantum ground and foundational 'phenomenal palette'.¹⁵ Shani and Keppler also speculated that such consciousness-supporting mechanisms extend down to the level of subatomic particles (albeit to a rudimentary degree). However, I suggest that a higher degree of information flow may be required for consciousness, such as that found in biological systems. We might imagine a radio tuned to a specific station that plays a particular format of music. Such a radio produces a range of music, depending on to which frequency the device is tuned. With this notion of a filtering process extracting a range of experience from a phenomenal ground, the particular qualia experienced by a bat, worm, or frog result from how key systems of their physiology interact holistically with an ontologically deeper field of aware potentiality.

Within this preliminary sketch, important questions remain as to how various cognitive mechanisms involving memory, perception, and motor control integrate with core experiential processes.

¹⁵ Also, within the parapsychology literature, Kelly *et al.* (2007) built on the work of William James and F.W.H. Myers to argue that a brain as filtering mechanism can accommodate a wide range of psi phenomena.

Presumably, systems of neurons associated with these and other conscious (or unconscious) cognitive processes are intimately linked with this notion of quantum filtering. Thus, various inputs from the sensory, memory, or other cognitive systems likely modulate this filtering process, producing various possible conscious experiences based on the organism's biology.

4. Explaining Conscious Experience and the Psi Data

To recap, I have argued in favour of developing more curiosity around theories of consciousness that can be linked with the anomalous data known as psi. I then explored a promising class of theories that so far has not been linked to any of the psi data. Russellian monism has considerable appeal in helping us avoid unattractive features of dualism and physicalism, but it also faces its own serious challenges. To sidestep these challenges, I have sought to identify the Russellian inscrutable with the notion of the quantum ground as the ontologically prior basis of our world. Given the property of entanglement, this becomes essentially the quantum ground for the universe. In this way, we obtain a version of cosmopsychism where phenomenal (and physical) properties are based in a high-dimensional 'space' of potentiality.

We can note how this framework accounts for some common, yet poorly understood, aspects of our experience. The subjective feels (qualia) of experience arise from a deeper ground of phenomenal resources, depending on how the biological structure of an organism interacts with the quantum ground. Instead of combining micro-experiences, the physical body acts like something of a filter, in turn extracting combinations of qualia from the phenomenal base of the quantum ground. Also, perhaps we need not treat our first-hand experience of agency as an illusion. That is, just as our conscious experience is derived from a deeper field of phenomenal properties, our experience of volition may be derived from this ontologically fundamental ground as well.

However, it so happens that this proposal is also consistent with the laboratory psi data. I do not presently claim to make new predictions that we can test using objective, empirical methods, although I am hopeful that these can eventually be obtained, perhaps with refinement of the general framework. In the meantime, I do believe that the set-up I have described supports a worldview where the psi data can be taken seriously. Earlier, I explained why the tendency to dismiss or ignore

these data based on the reasoning that they do not square with physicalist assumptions is misguided (phenomenal experience also does not fit well with physicalist assumptions). Another common objection against psi is that it lacks a theoretical framework. While I do not argue here that my proposal exhausts the theoretical possibilities, I believe I have made good use of some theories currently on the table to provide a framework that supports the psi data.

In what I have proposed, the foundation of phenomenal experience is a shared ‘space’, albeit one that is nonlocal and high-dimensional. Thus, our consciousness (or perhaps our unconsciousness) may be ultimately rooted in the universal quantum ground, again characterized as an underlying stratum of potentialities, possessing a wealth of intrinsic information that underlies our universe. Searching for other words, perhaps our conscious experience is more wave-like or ‘spread out’ than our conventional understanding leads us to believe. Perhaps this could support experiences of hunches or intuitions that are often dismissed, yet happen to be veridical. Overall, I consider that the inherently probabilistic and nonlocal nature of this common ground presents something that fits with a number of different modes of psi.

For convenience, I draw heavily on Cardeña’s (2018) recent presentation, which summarized all of the major meta-analyses on psi studies conducted recently and throughout the previous century.¹⁶ I also present here a condensed version of his tables reporting the results of the meta-analyses across various psi categories.¹⁷ These include the meta-analyses of all various modes of psi, including telepathy, clairvoyance, precognition, presentiment, and mind–matter interaction (psychokinesis).

4.1. Telepathy and clairvoyance

In the case of telepathy, the table shows findings for three different empirical designs: forced-choice card guessing, ganzfeld, and psi

¹⁶ The forced-choice card experiments, conducted in 1937, are the earliest psi studies included in Cardeña’s summaries.

¹⁷ To economize on space and limit some of the discussion, I omitted a few of the reported psi modes and statistics that did not include Z statistics or the number of studies. Also, I did not report the effect sizes, which are based on different methods for different psi categories. In addition, I only reported statistics that include all of the studies of a given experimental design, while Cardeña also included subsets that removed outliers, imposed homogeneity, or used some other criteria.

dream studies.¹⁸ With respect to remote viewing, my table also shows the results of two meta-analyses, those by Milton (1997) and Dunne and Jahn (2003).¹⁹ Remote viewing is a technique where the participant describes a place, chosen at random, where a sender is located.²⁰ As the astronomically small p values indicate, all meta-analyses for telepathy and clairvoyance are highly significant.

	# Studies	Z	p
Forced-Choice Cards			
Honorton and Ferrari (1989)	309	11.41	6.3×10^{-25}
Storm <i>et al.</i> (2012)	91	10.82	10^{-16}
Ganzfeld			
Storm <i>et al.</i> (2010)	108	8.31	$<0.10^{-16}$
Psi Dream Studies			
Storm <i>et al.</i> (2017)	52	5.01	2.72×10^{-7}
Remote Viewing			
Milton (1997)	75	5.85	2.46×10^{-9}
Dunne and Jahn (2003)	88	5.42	3×10^{-8}
Precognition			
Bem <i>et al.</i> (2016)	90	6.40	1.2×10^{-10}
Presentiment			
Mossbridge <i>et al.</i> (2012)	26	5.30	5.7×10^{-8}
Dice			
Radin and Ferrari (1991)	73	18.20	<0.001
Micro-PK			
Bosch <i>et al.</i> (2006)	380	2.47	<0.05
Global Consciousness Project			
Nelson (2015)	461	7.23	2.34×10^{-13}

Table 1. A subset of the meta-analysis summaries of various psi modes, adapted from Cardeña (2018). Z = the cumulative standard deviation from the mean; p = the statistical likelihood of obtaining the test results while assuming the null hypothesis is correct. I limit the results taken from Cardeña to the modes of psi that I discuss here. In his tables, Cardeña also included psi studies such as non-contact healing and remote influence that did not report the Z values.

¹⁸ Please see Cardeña (2018) for more details, as well as the respective meta-analyses.

¹⁹ Cardeña also reported the results of other meta-analyses on remote viewing, but which were unaccompanied by information on the number of studies. Thus, I elected to exclude them here.

²⁰ Most experiments have the sender in the present, but some place her or him in some place at a future time. Please see Cardeña (2018) for more details.

How might my proposal fit with telepathy and clairvoyance? I believe that seeing the quantum ground as the source of phenomenal properties permits anomalous sharing of information consistent with the empirical data. For telepathy, I am not suggesting that some sort of signal is transferred between minds.²¹ But I believe my framework is consistent with our conscious experience being ultimately linked with the quantum ground at a more fundamental level of reality that also grounds experience. Thus, our consciousness or unconsciousness likely accesses a deeper domain that we share with other minds. But something like this could also provide an explanation for remote viewing as well. That is, if our consciousness connects with an underlying and inherently nonlocal ground that is integral with our world, we could have unconventional access to information on the environment, perhaps very far away. This framework appears to support the sort of intuitive flashes that we cannot explain through conventional channels of information. That this framework provides a story that supports both telepathy and clairvoyance comports well with the difficulty of disentangling the two that has been noted in the psi literature (Radin, 1997, pp. 67–8).

4.2. Precognition and presentiment

Precognition and presentiment are two other forms of psi that suggest processes outside our conventional and linear notions of time. Table 1 includes the meta-analyses based on Bem's style of implicit precognition experiments, which essentially time-reverses otherwise standard tasks studied in psychology. For example, in one case the participant is primed with various words after he makes his selection, reversing the normal sequence of the experiment. The meta-analyses based on 90 different studies found highly significant effects (Bem *et al.*, 2016).²²

The characterization of the ontologically prior aspect of our world as a domain of potentialities, operating outside of our spatio-temporal

²¹ While quantum entanglement entails correlation between entities, it does not permit communication (or for that matter any causal interaction) between them. However, I will briefly suggest another mode of anomalous communication between sender and receiver below.

²² Presentiment, another psi mode, involves the detection of various physiological shifts that precede a stimulus. Mossbridge, Tressoldi and Utts (2012) found significant evidence in the 26 studies that they collected.

order, suggests a way to interpret experiments on precognition and presentiment. If our consciousness is rooted in such a domain, then perhaps our unconsciousness has access to potentialities that correspond to future states. Such access might be accompanied by a feeling or intuition about a future event, as well as, perhaps, by unconscious physiological responses (presentiment). For me, this interpretation is more palatable than an alternative proposal of retrocausation (Sheehan, 2015). Precognition and presentiment may reflect an ability to perceive or access (unconsciously, in the case of presentiment) such potentialities residing within a nonlocal ground of awareness.²³

4.3. Psychokinesis

Table 1 also includes overall statistics that reflect extant studies on three categories of psychokinesis or mind–matter interaction: the effect of mental intention on dice (Radin and Ferrari, 1991), micro-PK (Bosch, Steinkamp and Boller, 2006), and the Global Consciousness Project (Nelson, 2015). The combined results for studies investigating the effect of mental intention on dice rolling, compiled by Radin and Ferrari (1991), suggest small, yet significant, effects.

The latter two mind–matter interaction methodologies use quantum processes to produce true random streams of digital 1s and 0s. Micro-PK investigates the ability of participants to influence the output through mental intention. Bosch, Steinkamp and Boller (2006) gathered the extant micro-PK studies and confirmed small, but statistically significant, effects. They were cautious in drawing their conclusion, highlighting the heterogeneous nature of the studies. After noting their overall high quality, they suggested that publication bias might be the most plausible explanation. However, Radin *et al.* (2006) argued that invoking publication bias would require an implausible number (1,500) of unpublished studies.

I submit that mental intention might influence physical processes through the capacity of the mind to influence the potentialities that ground our world. That is, psychokinesis likely requires the capability to influence or imprint on this quantum ground. However, psychokinesis as discussed in the literature appears to presume some degree of true agency. As I have observed, my proposal supports this notion

²³ Within his implicate order framework, which is also based in a high-dimensional quantum ground, Bohm (1996) has previously conjectured that precognition may involve the ability to sense potentialities.

of volition. However, this sort of influence likely involves a larger number of factors than the other modes of psi we have explored. These could include the dispositions and characteristics of the sender, the receiver, and the environment. The holistic nature of the quantum ground appears to complicate greatly such a transfer of intention or information. With this in mind, we can note that the statistical significance associated with psychokinesis (with the exception of the GCP) is considerably smaller than other modes of psi, such as Bem-style precognition, presentiment, and ganzfeld telepathy.²⁴ This likely indicates smaller effect sizes, relative to other modes of psi, and reflects the difficulty of influencing the quantum ground relative to merely accessing information.²⁵

To return to Frankish's (2016) criticism, recall that he argued that psychokinesis would necessitate new psychic forces. This is not necessarily wrong. Contrary to Frankish's concern, however, my proposal does not revise anything in our well-established scientific understanding. Rather, it is confined to the *gaps* in our understanding of consciousness and quantum mechanics. I submit that our intention may have some influence on the deeper, nonlocal, and probabilistic level of reality. (This is not the sort of stuff dramatized in superhero movies.) The bottom line is that we need not dismiss the psi data, nor deny the qualia of our direct experience. Quite the contrary, both types of data are likely necessary for us to improve our understanding of consciousness.

Nelson's (2015) Global Consciousness Project (GCP) explores the data produced by a network of random number devices positioned around the world. The GCP investigates whether the digital output from these devices is influenced during times of important (perhaps global) events, such as the terrorist attack on 11 September 2001. Nelson's hypothesis is that the random output of these devices is influenced by a kind of resonance, as large numbers of individuals respond emotionally to a given event.²⁶ Previously, I speculated that

²⁴ I did not report the effect sizes for various modes of psi. The different methodologies used appear to have resulted in different notions of effect sizes, making comparison across psi modes difficult. However, the small effect size reported in Bosch, Steinkamp and Boller (2006) is reflected in the relatively small *p* value, which I do report.

²⁵ A similar story might account for an alternative version of telepathy, where the sender could influence the common quantum ground shared by sender and receiver.

²⁶ Of course, unlike the version of micro-PK we discussed briefly above, the populations presumably affecting these RNG devices have no knowledge of their existence.

groups of individuals sharing a common emotion caused by an important global (or possibly more local) event could influence the quantum ground of potentialities (Williams, 2013).²⁷ Nelson's GCP arguably deserves to be distinguished from the other modes of mind-matter interaction, possibly representing its own unique category. Cardeña (2018) noted that the effect size for the GCP appears to be substantially larger than for other modes of psychokinesis. Of course, the GCP does, indeed, seem to be something very different: relatively large groups of people sharing a common emotional reaction in contrast to single individuals attempting to influence an RNG device through mental intention. However, while the GCP might arguably be characterized as a different mode of psi from other psychokinesis experiments, it nevertheless appears to fit reasonably well into this proposed framework.

Overall, I believe this framework appears to be a reasonably good fit with the different modes of psi we have on the table. However, while it is consistent with the psi data, the relationship between the theory and the data is a relatively loose one. That is, it is difficult for me to see how explicit parameter estimates on psi effects might be generated, even if the theory is enhanced. That said, we can note that this quantum ground cosmopsychism is not only consistent with psi, it is consistent with the typically modest or small size of the psi effects. In other words, the inherently holistic nature of the wave function, which implies a large number of relevant factors, appears to be consistent with the small or modest effect sizes that characterize the psi literature.

5. Conclusion

My central aim here is to ask what theories or frameworks of consciousness currently on the table cohere well with taking seriously objective, anomalous data pertaining to consciousness. Of course, it is also important that the theory be consistent with conventional data. But throughout the history of science, anomalies have played a key role in facilitating scientific breakthroughs. Recognizing this important historical role hopefully justifies looking for ways of expanding

²⁷ In the paper, I borrowed from Bohm's notion of an implicate order within the quantum ground, which has important similarities to the version of cosmopsychism I explore here.

the set of data we typically use in order to make progress on consciousness.

In considering this possibility, I have explored integrating Russellian monism with quantum mechanics in a way that suggests that the quantum ground is a base for phenomenal resources. This version of cosmopsychism can be characterized as an ontologically prior, nonlocal domain of aware potentia. As I have mentioned above, I believe such an approach has the virtues of helping us pin down the inscrutability of matter, as well as providing a path towards avoiding the combination problem. Aside from these theoretical virtues, I believe it also fits well with several different modes of psi data that meta-analyses show we ought to be taking seriously.

However, to those who object to using the psi data, I would ask, given the persistent difficulty of the mind–body problem as well as its anomalous nature, what anomalous data would you find acceptable? And if we decide at the outset to rule out using anomalous data of any kind (apart from phenomenal experience itself), can we truly expect to make progress on the problem of consciousness, relying only on philosophical arguments? For me, the data on psi will likely be essential for us to make progress on exploring this problem that has remained obstinate for centuries.

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