

**Title:** “The Varieties of Physicalist Ontology: A Study in Whitehead’s Process-Relational Alternative”

**Abstract** (150-200 words): This paper brings Alfred North Whitehead’s Philosophy of Organism into conversation with the recent panpsychist turn in analytic philosophy of mind. Whitehead’s unabashedly metaphysical project broadly aligns with recent critiques of reductive physicalism and the turn toward a conception of experience as basic to Nature. This paper thus examines physicalism’s dominant strategies for explaining consciousness, including eliminativism, epiphenomenalism, and emergentism, and concludes that the panpsychist alternative is superior. However, Whitehead’s process-relational panexperientialism diverges in crucial respects from the dominant substance-property variants of panpsychism. I argue that Whitehead’s version avoids many of the conceptual difficulties plaguing the latter and that it thus represents a more formidable alternative to standard physicalism.

**Key words:** panpsychism, panexperientialism, physicalism, emergence, experience, consciousness, process-relational philosophy

The skull-crackingly hard problem concerning the place of consciousness in the physical universe has led an increasing number of analytic philosophers of mind to take seriously the panpsychist alternative to standard physicalism. Nonetheless, Brüntrup and Jaskolla note in their editors’ introduction to *Panpsychism: Contemporary Perspectives* that the usual response to the doctrine remains “an incredulous stare” (2017, 2). Perhaps the most forceful dismissal to date comes from Colin McGinn, who in a reply to Galen Strawson rejects panpsychism as “a comforting piece of utter balderdash” that only stoned hippies could believe (McGinn 2006, 93).

But an explanation for the emergence of consciousness in the universe known to physics has thus far proven elusive. Fundamental philosophical questions remain to be answered before the criteria for such a scientific explanation can even be established. For example, is consciousness essentially ‘real’ or ‘illusory’? That is, does it “have truck with the totality of things by reason of its sheer actuality,” as Alfred North Whitehead suspected (1929, 15), or is it a peripheral accident, a mere

epiphenomenon emergent from blindly churning physiochemical processes that are otherwise well understood by natural science? Does consciousness evolve, and if so, does it intelligently influence the behavior of the organisms instantiating it? These questions are not merely theoretical or academic. They cut to the very core who and what we are, shaping our sense of what it means to be human.

Despite the initial incredulity it provokes, this paper argues that panpsychism—specifically Whitehead’s process-relational, panexperiential version—provides a viable alternative to scientific materialism while also avoiding the philosophical excesses of dualism and idealism. Strange as it may sound to modern ears, panpsychism has a long and rich history stretching back to the origins of Western philosophy. Heraclitus opposed Parmenides’ vision of unchanging Being with the doctrine that ‘everything flows’ (*panta rhea*). Heraclitus understood the universe to be “an ever-living fire” (*pyr aeiζoon*), making him not only the first recorded process philosopher but the first panpsychist, as well (Skrbina 2005, 29). Even in the early modern period, thinkers like Giordano Bruno and Gottfried Leibniz, often lauded for their important contributions to the emergence of both the scientific method and the scientific worldview, continued to uphold some version of the doctrine. “Lucretius tells us what an atom looks like to others,” writes Whitehead, “and Leibniz tells us how an atom is feeling about itself” ([1933] 1967, 132). Skeptics may be tempted to excuse Bruno and Leibniz’s panpsychist eccentricity as an unthought residue of pre-modern animism. Once enlightened by the findings of contemporary physics and biology, surely these luminaries would happily have dispensed with the ‘primitive’ notion that atoms can feel? Perhaps not. What, after all, are we to make of Whitehead, another mathematical and philosophical genius who critiqued scientific materialism and arrived at his own variety of panpsychism not despite but because of the findings of contemporary physics and biology?

“There persists...[a] fixed scientific cosmology which presupposes the ultimate fact of an irreducible brute matter...spread throughout space in a flux of configurations. In itself such a material is senseless, valueless, purposeless. It just does what it does do, following a fixed routine imposed by external relations which do not spring from the nature of its being...[This] is an assumption which I shall challenge as being entirely unsuited to the scientific situation at which we have now arrived” (Whitehead [1925] 1967, 17).

This paper brings Whitehead's "Philosophy of Organism" ([1929] 1978) into conversation with the recent panpsychist turn in analytic philosophy of mind. Whitehead's unabashedly metaphysical project broadly aligns with recent critiques of reductive physicalism and the turn toward a conception of experience as basic to Nature. However, Whitehead's process-relational panexperientialism diverges in crucial respects from the dominant substance-property variants of panpsychism. I argue that Whitehead's version avoids many of the conceptual difficulties plaguing the latter and that it thus represents a more formidable alternative to standard physicalism.

## 1. Why not Whitehead?: A Brief Historical Excursus

"Urge & urge & urge,  
Always the procreant urge of the world.  
Out of the dimness opposite equals advance, always substance & increase, always sex,  
Always a knit of identity, always distinction, always a breed of life."  
—Whitman ("Song of Myself")

Understanding Whitehead's process-relational approach to panpsychism (or panexperientialism, as David Ray Griffin has renamed it<sup>1</sup>) first requires a bit of historical contextualization. While Whitehead's early work with Bertrand Russell on the logical foundations of mathematics is widely acknowledged by analytic philosophers as seminal to the emergence of their school of thought, Whitehead's later metaphysical speculations are for the most part either ignored or ridiculed.<sup>2</sup> For example, W. V. Quine traveled to Harvard in the mid-1920s to study with the coauthor of the *Principia Mathematica*. After attending the lectures that became *Science and the Modern World* (1925), Quine acknowledged "a vivid sense of being in the presence of the great" but went on to admit that the notes he took were mostly full of doodles. "What [Whitehead] said," Quine reports, "had little evident bearing on the problems that I recognized" (Quine 1985, 83). Another student of

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<sup>1</sup> Griffin coins the term "panexperientialism" (Griffin 2008, 78) and suggests it is preferable to the more common term "panpsychism," since the latter implies the pervasiveness of a higher form of consciousness that endures through time, while the former is closer to Whitehead's sense of momentary actual occasions of experience arising and perishing. While I believe Whitehead's philosophy of organism can be understood as a species of panpsychism, I use Griffin's term in this paper in order to avoid confusion.

<sup>2</sup> See Winters 2017 for a further account of the sociological and conceptual reasons for the lack of engagement with Whitehead's metaphysics by analytic philosophers.

Whitehead's at Harvard, Donald Davidson, was initially transfixed by his ideas, but later reflected that his encounter with Whitehead "set [him] back philosophically for years" by confirming his youthful "inclination to think that doing philosophy was like writing poetry" (Davidson 1999, 14). Not everyone was quite as sour on Whitehead's speculations at Harvard. Ernest Nagel credited Whitehead with being one of the first to realize and attempt to address the metaphysical problems that were becoming "acutely pressing in the special sciences," praising him for his "[sensitivity] to the advances of recent science as well to the ancient tradition that philosophy is the systematic study of being" (E. Nagel 1954, 154). But Nagel also noted "the severe abuse of language to which Whitehead is partial" (ibid.), a familiar (if not entirely fair) refrain among those who attempt to read him for the first time.

To round out this historical excursus, let us return to Nagel's point about the special sciences. By the mid-1920s, the new quantum and relativity theories had already succeeded in demolishing the old mechanical philosophy of Nature by transforming matter into energy and merging space and time together with gravity. The classical explanations of Nature offered by a once confident scientific materialism no longer made any sense. A second scientific revolution was afoot. At the same time, Ludwig Wittgenstein led the logical positivists in a revolt against the excesses of British idealism by blowing up the bridge purporting to connect the metaphysical speculations of philosophers with the ultimate nature of things: "Whereof one cannot speak, thereof one must be silent" (Wittgenstein 1922, 189). The physicists struggling to come to terms with the strange ontological implications of their discoveries could henceforth expect no help from philosophers. Whitehead's own pathbreaking work on the application of mathematics to physics made him especially sensitive to Einstein's relativistic revolution; he was also well aware of the concurrently unfolding quantum revolution. His sensitivity to the metaphysical earthquake underway in the physical sciences awakened Whitehead from the dogmatic slumber of the mechanistic paradigm. "What is the sense of talking about a mechanical explanation," Whitehead asked, "when you do not know what you mean by mechanics?" (1925, 16). His *Philosophy of Organism* is a protest against the lifeless Nature imagined by Descartes, Galileo, and Newton, and a rejection of the narrow linguistic analysis and sterile logical positivism of his philosophical contemporaries. His is an attempt to *make natural science philosophical again* by asking whether physical causes and motions need be so violently segregated from the conscious reasons and emotions by which we apprehend them.

In *Process & Reality: An Essay in Cosmology* ([1929] 1978), Whitehead aims for nothing less than the construction of an organic system of the universe that not only brings quantum and relativity theories into coherence, but gathers up scientific truths, aesthetic feelings, and religious values into an integral vision of reality. It is true that Whitehead found it necessary to invent many new turns of phrase to accomplish this feat. He thus contrasts his speculative philosophical method with that of the “critical school” (Whitehead [1938] 1968, 173), which for my purposes can easily be identified with the then just emerging analytic school of thought. This school assumes that humanity “has consciously entertained all the fundamental ideas which are applicable to its experience” and that “human language, in single words or in phrases, explicitly expresses these ideas” (ibid.). The critical or analytic school, Whitehead continues, “confines itself to verbal analysis within the limits of the dictionary” (ibid.). In contrast, Whitehead’s speculative method “appeals to direct insight, and endeavors to indicate its meanings by further appeal to situations which promote such specific insights. It then enlarges the dictionary” (ibid.). Whitehead credits analytic philosophy for its “delicate accuracy of expression,” but marks the main “divergence between the schools [as] the quarrel between safety and adventure” (ibid.).

Davidson worried about the adventurous Whitehead’s attempted alliance between speculative philosophy and mystical poetry. Both, according to Whitehead, make “reference to form beyond the direct meanings of words.” He continues: “If you like to phrase it so, philosophy is mystical. For mysticism is direct insight into depths as yet unspoken” (ibid., 174).<sup>3</sup> Davidson’s complaint may be short-sighted, however, especially once one has acknowledged the profound metaphysical problems that after nearly a century of careful analysis continue to plague not only the physical sciences but the philosophy of mind, as well. Hamlet was right: “There are more things in heaven and earth...”<sup>4</sup>

While getting to the bottom of Whitehead’s chilly reception among analytic philosophers is not the aim of this paper, a few conjectures can be offered. After a celebrated first career as a mathematician, Whitehead’s untimely entry into philosophy in the mid-1920s can be read as heralding the more recent return to metaphysics both in the analytic and Continental traditions. Philosophers are finally catching up to the problems Whitehead was pointing out nearly a century

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<sup>3</sup> Whitehead qualifies this statement by adding that, while “poetry allies itself to metre,” philosophy is allied to “mathematical pattern” ([1938] 1968, 174).

<sup>4</sup> “There are more things in heaven and earth, Horatio, Than are dreamt of in your philosophy” (Shakespeare, *Hamlet* 1.5.167-8). Though of course in Whitehead’s case, there are strictly speaking no passively enduring things on earth or in heaven, only actual and potential processes.

ago. Perhaps it is just because his cosmological ideas initially emerged in the wrong season that they have remained buried in the snow. In addition to the unfortunate timing, Whitehead's lack of easy classification is probably another reason for his neglect. Neither an analytic philosopher, nor a phenomenologist, Whitehead's approach generally confounds partisans of both schools. That said, his process-relational philosophy has been creatively taken up by a number of friendly thinkers on the Continent (initially Henri Bergson (1999, 47), later Gilles Deleuze ([1968] 1994, 284-285; [1988] 1993, 76ff), and most recently Isabelle Stengers (2011) and Bruno Latour (2005). Whitehead's thought also featured prominently in the Speculative Realism movement that swept through Continental philosophy beginning in late 2010 (Bryant et al. 2011; Harman 2018). He is perhaps best situated within the American pragmatist tradition stemming from Charles Sanders Peirce, William James, and John Dewey, though even here the shoe pinches. Dewey is the only one who lived long enough to respond to Whitehead's philosophy, which he praises for its organicism and experiential point of departure but criticizes for its mathematical residues (Schilpp 1941). In the end it must be admitted that Whitehead's process-relational philosophy is singular in its aims and conclusions. Any attempt to pigeonhole his thought into a school inevitably trivializes it. Of course, Whitehead himself generated a school<sup>5</sup>, but there exist plenty of wild Whiteheadians who avoid any established orthodoxies, like Deleuze, Stengers, and Latour, or Randall Auxier and Gary Herstein (2017).

Finally, there is the issue of Whitehead's inclusion of reformed conceptions of teleology and God in his cosmological scheme. For many philosophers and natural scientists, this rules out in advance any serious engagement with his ideas. Daniel J. Nicholson and John Dupré, for example, claim that the theological baggage of Whitehead's process philosophy is a "liability" for thinkers with a naturalistic aim (2018, 7). But a closer look at Whitehead's process-relational reformulations of purpose and divinity may reveal to those who rushed to dismiss them that Whitehead shares many of their criticisms of traditional natural theology. By the time God and teleology return from Whitehead's adventure in cosmology, the former is no longer an omnipotent Creator but a creature of Creativity suffering with the rest of us, and the latter is no longer an eternal design imposed from beyond the world but an aesthetic lure immanent in the experience of each and every actual occasion in the world, whether that experience belongs to Shakespeare or "to the most trivial puff of existence in far-off empty space" (Whitehead [1929] 1978, 28).

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<sup>5</sup> See the Center for Process Studies, formerly at the Claremont School of Theology in California and recently relocated to Willamette University in Salem, Oregon.

My hope is that this paper brings Whitehead out of cold storage and at least thaws his ideas enough to get those unfamiliar with his Philosophy of Organism to consider the alternative it represents, not only to physicalism, but to dualism and idealism, as well. Despite Quine's first impression, it may turn out that Whitehead has much to say about the problems faced by contemporary analytic philosophers, especially those who, against all odds, now find themselves affirming the panpsychist heresy.

## **2. The Place of Consciousness in the Physical Universe**

Serious conceptual difficulties await any philosopher attempting to understand the place of consciousness in the physical universe. David Chalmers' "hard problem of consciousness" (1995) is perhaps the most oft cited formulation of the impasse, but the basic problem goes back to Rene Descartes' argument that a real distinction exists between a thinking or mental substance and an extended or material substance ([1647] 1982, 21). While many contemporary physicalists would be quick to dismiss Descartes' idea of an immaterial soul as unscientific, his correlate idea of extended matter continues to shape the scientific imaginary of Nature as something explainable without remainder in purely mathematical terms. While Descartes faced the difficult problem of accounting for the relationship between two entirely autonomous substances, contemporary physicalists face what is arguably an even harder problem: how can extended matter in motion ever give rise to the seemingly *interior* experience of conscious thought and emotion? As Galen Strawson has pointed out, even if this "seeming" experience ends up being some sort of illusion, the seeming itself still demands an explanation: "any such illusion is already and necessarily an actual instance of the thing said to be an illusion" (Strawson 2018).

Let us run through the various metaphysical options at play for those affirming standard physicalism, by which I mean any variation on the ontology that posits that the final real things (whether particles, fields, or some other mode of existence yet to be discovered by science) are passively enduring objects entirely devoid of subjective enjoyment and aim. When addressing the place of consciousness in Nature, physicalists generally draw upon three basic explanatory strategies: eliminativism, epiphenomenalism, and emergentism. Many physicalists, in order to side-step patent absurdities, end up tacitly sliding back and forth between two or more of these positions in the course of their explanations of consciousness. Unfortunately, there is little consistency in how these

terms are defined in existing literature, hence the need to offer accounts of each position as they are considered for the purposes of this paper.

### **a) Eliminativism**

Eliminativism tries to deny the reality of consciousness outright, arguing that our folk psychological intuitions and self-reports about it are hopelessly misguided and need to be replaced by more mature neurophysiological or computational accounts. While Paul and Patricia Churchland are perhaps the most prominent contemporary defenders of this position (P. S. Churchland 1986; P. M. Churchland 1988), its origins can be traced back to Wilfred Sellars (1956) and Quine (1960). Quine's reflections on the matter are especially relevant. He raises the question of whether eliminativism truly "repudiates" conscious experiences as factually mistaken, or whether it is meant as a theory identifying such experiences with physiological facts (Quine 1960, 265). He decides that there is no real distinction to be made in this case between explanation and identification. If the elimination of consciousness in favor of physiological processes is the same as the identification of consciousness with correlated physiological processes, all the sudden eliminativism starts to sound a lot like panpsychism, with the crucial qualification that the panpsychist refuses to grant brain matter any special ontological status, as though it instantiated experiential capacities not found to some degree in all physical processes. In Whitehead's terms: "There's nothing in the real world which is merely an inert fact. Every reality is there for feeling: it promotes feeling; and it is felt" (Whitehead [1929] 1978, 310). In other words, if Quine's reading is right, Whitehead is also an eliminativist about that sort of consciousness that is imagined to be something extra in addition to physical processes.

More recently, a quasi-transcendental version of eliminativism has been defended under the label of "illusionism" (Frankish 2016). The idea is that we suffer inextricably from what Daniel Dennett calls a "user-illusion" (Dennett 2017, 222). There is really no one home inside, but because we are constitutively blind to the neural basis of our user-illusion, we cannot help but keep knocking on the door. The answer to all our knocking comes only as a bunch of mouth-squeaks signifying nothing (other than more squeaks). We are just a bunch of neurons and chemistry playing out an evolutionary algorithm. "We're all zombies" (Dennett 2004, 67). Despite his critics, Dennett denies that his version of physicalism is eliminativist (Dennett 2017, 224). His philosophy is a good example of the way the most inventive physicalists end up combining aspects of multiple positions, sliding from eliminativism for questions of ontology to emergentism when it is a question of the practical functionality of conscious will (Dennett 2003).

Hard core eliminativists like the Churchlands, or like the speculative realist philosopher Ray Brassier (2007), can at least be credited with biting the materialist bullet by accepting that any physicalism worthy of the name leaves absolutely no room in the universe for anything like what most people mean by consciousness. For Brassier, eliminativism is not just a promising neuroscientific theory of consciousness but a tremendous opportunity for speculative philosophy. Philosophers, rather than acting as “a sop to the pathetic twinge of human self-esteem” by continuing to seek the restoration of a meaningful connection between human consciousness and the cosmic processes that generate us, should instead follow the logic of eliminativism to its admittedly nihilistic conclusions (Brassier 2007, xi). Even if attempts to restore meaning succeed in increasing our quality of life, Brassier still calls upon self-respecting philosophers to reject them, since “thinking has interests that do not coincide with those of living” (ibid.). The eliminativist position can be criticized as self-refuting, since it denies in theory what, short of suicide, one cannot deny in practice (though even the act of suicide implies a conscious decision to kill oneself). How can one claim to hold to the view of eliminative materialism if the capacity for holding meaningful views of anything is precisely what the position purports to be eliminating? Brassier responds to the performative contradiction criticism by pointing out that the eliminativist project entails a rejection and replacement of the folk psychological view of ‘views’ or ‘beliefs’ assumed by its critics. Following Paul Churchland, Brassier reduces the propositional meanings and sentential beliefs of folk psychology to the “dynamics and kinematics” of neural activation patterns in the brain (Brassier 2007, 12, 15-17). What it is to hold a particular view (e.g., “Eliminativism is true”) is just for the relevant neural pathways to fire.

While panpsychism may initially affront the common sense of modern Western adults, eliminativism is an even bigger stretch.<sup>6</sup> Of course, the common sense folk psychology of a particular era cannot be given the privileged position of determining metaphysical reality. Whitehead’s process-relational panexperientialism entails a radical revisioning of our common sense understandings of consciousness and propositional meaning. But it does not deny outright the reality of consciousness. Philosophy can reform common sense without eliminating the very possibility of a meaningful life. According to Whitehead, “As we think, we live” (Whitehead, [1938] 1968, 63). Thinking is, after all, as natural to the life of a conscious organism as eating or breathing. If our philosophy cannot in the

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<sup>6</sup> Primal humans and present day children would appear to take it as a matter of course that the world is alive. Only in the last several hundred years has an anthropologically peculiar modern Western consciousness emerged that compels many adults into an over-animation of the ego and of human society won through the de-animation and disenchantment of the natural world.

end be squared with the “overpowering deliverances” (Whitehead [1929] 1978, 50) of experience and the “concrete affairs of life” (Whitehead [1925] 1967, 80), it is a good sign that we have made a wrong turn somewhere in our abstract reasoning. This, at least, is how a pragmatic radical empiricist like Whitehead addresses the matter: “Metaphysics is nothing but the description of the generalities which apply to all the details of practice” (Whitehead [1929] 1978, 13).

## **b) Epiphenomenalism**

Epiphenomenalism claims there is room enough for consciousness to be somehow excreted by the brain, but only as a semi-transparent ghost or “inert spectator” (James 1890, 129) with no causal influence over the goings-on of the body or its proximal environment. As formulated most famously by Thomas Huxley, epiphenomenalism is the view that consciousness is “completely without any power...as the steam-whistle which accompanies the work of a locomotive engine is without influence upon its machinery” (Huxley 1875, 62). Epiphenomenalists at least acknowledge the irreducibility of our direct intuition of conscious experience. But assuming a broadly naturalistic and thus evolutionary framework (as Huxley and most contemporary defenders of the doctrine claim to) rules out accounts of epiphenomenal consciousness as sealed off from but nonetheless perfectly correlated with physical processes via a “pre-established harmony” (e.g., Leibniz). Any naturalistic account must explain the causal nexus between mental and physical processes, even if the causal relationships are said to move in only one direction, i.e., physical causes determining an epiphenomenal steam-whistle. Given the requirements of naturalism, the problem with epiphenomenalism is that it is incomprehensible how such a complex ghost-like consciousness could ever have evolved if it serves no function at all for the organism it haunts. If consciousness plays no active role in shaping an organism’s behavior, it cannot be selected for and thus has no role in biological adaptation (T. Nagel 2012, 44ff). As James argued more than a century ago, it is an absurd abuse of scientific reasoning to assert in the same breath that, while consciousness exists, “all those *manners* of existence which make it seem relevant to our outward life are mere meaningless coincidences, inexplicable parts of the general and intimate irrationality of this disjointed world” (James 1879, 21). Not only is the epiphenomenalist view incoherent, the opposed view, that consciousness to varying degrees depending on cerebral complexity “[exerts] a constant pressure in the direction of survival,” grants further plausibility to the Darwinian evolutionary story: “It is, in fact, hard to see how without an effective superintending ideal the evolution of so unstable an organ as the mammalian cerebrum can have proceeded at all” (ibid., 16).

The neuroscientist Michael Graziano attempts to avoid this problem with epiphenomenalism by redefining conscious awareness in neuroscientific terms as “attention” (Graziano 2019). While focusing on the ‘phenomenal properties’ of conscious awareness gives philosophers the impression that subjective experience is some sort of extra ethereal or nonphysical essence (e.g., private ‘qualia’), what Graziano calls an “attention schema” has been scientifically measured in brain-based computational terms (ibid.). The attention schema is the brain’s way of internally modeling certain aspects of its own activity, and our reports and claims about our own consciousness appear to correlate with it (ibid., 101). Graziano thus slides away from the hard problem of consciousness to ask a different question: what sort of neural computations allow us to make claims about supposedly conscious experiences? “In this theory,” writes Graziano, “the ghost in the machine, the consciousness inside us, is a topic of discussion among us only because our intuitions are informed by an attention schema, with its incomplete account of attention” (ibid., 103). While a supposedly ethereal essence would have no way of altering the behavior of an organism, the attention schema serves an adaptive function by monitoring, predicting, and controlling the brain’s attentional resources (ibid., 101). It performs this function in a purely physical way without the influence of any extra-physical consciousness.

While a Whiteheadian approach has its own reasons for being critical of the search for ethereal ‘phenomenal properties’ or private ‘qualia’ (see sections 3 and 4 below), Graziano’s neuroscientific slight of hand gets us no closer to understanding the place of consciousness in the physical world. To start with, consciousness is not merely “a topic of discussion” and cannot be reduced to the sentential claims we make about ourselves and our experience. Whatever else it is, conscious experience of oneself in a world is a concretely intuited activity, not just an abstract linguistic report about or computational model of this activity. Graziano admits he isn’t offering a philosophical answer for how consciousness arises in the brain, but he also implies that his properly scientific approach forces us to accept that “there is no meaningful answer to the question” (ibid., 97). We are just “a biological machine that claims to have a hard problem” (ibid., 96). We are brain networks running a linguistic program whose only power is that it can make claims about itself, statements about what it believes is going on and what its own and other people’s intentions are. These beliefs, claims, and intentions have no bearing on what is actually going on inside the skull or beyond it, since their meanings are epiphenomenal to computations in the brain and the motion of matter through spacetime.

A broader assumption baked into Graziano's approach is that "the brain is an information processing device" (ibid., 95). This is stated as though it were a truth that neuroscience has discovered, but it is hardly that. It is a theoretical paradigm and a research program, that is, a framework for studying the brain as if it were a computer, not a fact about what the brain is. Other neuroscientists and philosophers of mind reject the computational approach and instead study brain activity from an enactive and embodied perspective (Varela et al. [1991] 2016, 44ff; Thompson 2007, 51ff). From an enactive perspective, speaking in terms of decontextualized and disembodied 'information processing' going on inside the skull neglects the extent to which meaningful information presupposes a relational and experiential horizon within which it can be interpreted. Evan Thompson extends Gregory Bateson's claim that "information is a difference that makes a difference" (Bateson [1972] 2000, p. 315), adding that information "is the making of a difference that makes a difference to *somebody* somewhere" (Thompson 2007, 57). Informational meaning is thus embedded not only in the complex dynamics of an experience-imbued brain, but in the sensorimotor networks of the body, and even extends out into the surrounding social and ecological environment with which the organism is structurally coupled and has co-evolved.

### **c) Emergentism**

Emergentism claims that consciousness appears in the universe whenever matter manages to arrange itself into the appropriate dynamical shapes. Some say a simple form of consciousness emerged with the first living cells ('biopsychism'), while others claim these cells had to blindly organize themselves into large packs of neurons called brains before the light of consciousness could flicker on ('cerebro-psychism'). Still others insist that it was necessary for these brains to become sufficiently entangled in the symbolic network of a language before full-blown consciousness could explode onto the scene ('anthropopsychism').

There are weak and strong versions of emergence (Brogaard 2016, 131ff). The higher level capacities of a *weakly* emergent consciousness are at least in principle deducible from and thus in fact causally reducible to its lower level constituents. Once cognitive neuroscience discovers the relevant underlying brain mechanisms, complicated as they may be, the mystery of consciousness will be understood to have been only an artifact of our limited knowledge. Weak emergence thus presents an epistemological puzzle for physicalism to solve, rather than an ontological impasse forcing it to re-examine its premises. Of course, if weak emergentists do solve the engineering

problem of how the brain makes the mind, it is difficult to see how they will avoid sliding back into epiphenomenalism.

*Strongly* emergent conceptions, in contrast, affirm the ontological novelty of consciousness above and beyond its physical components, even granting it downward causal influence upon the body and surrounding environment. Such a view at least refuses to explain away the evident facts and overpowering deliverances of conscious thought and intention, facts that law, politics, morality, religion, and practical life in general require; facts that even the endeavor to produce scientific knowledge itself necessarily presupposes, for what else is knowledge but a mode of consciousness? As Whitehead quipped, “Scientists animated by the purpose of proving they are purposeless constitute an interesting subject for study” (Whitehead [1929] 1958, 16). But unless it can explain how meaning and purpose arise out of mass and energy, strong emergentism lands us right back where Descartes left us nearly four centuries ago, with irreducible mind on one side, brute matter on the other, and no rational account of how they might relate to one another. Focusing on the gradual development of mental capacities from bacterial chemotaxis to Shakespearean poetry over the course of billions of years of biological evolution is an obvious strategy for narrowing this gap. But merely saying ‘evolution did it’ doesn’t cut it, since it wasn’t Darwinian evolution that gave rise to the first cellular life. Darwin’s theory of speciation by natural selection presupposes self-producing and reproducing organisms, it does not explain them. In Thompson’s terms, “natural selection is an emergent consequence of autopoiesis, not its cause”(2007, 212).

On the other hand, there is a wider definition of evolution than that assigned by Darwin. Whitehead was convinced that evolution had relevance for not just biology but all the sciences, including physics and cosmology. He imaginatively generalized Darwin’s theory such that evolution by the reproductive inheritance of variations checked by environmental pressures became evolution by the rhythmic propagation, or vibratory reiteration, of actual occasions along historical routes, whereby a particular occasion’s conformal physical prehensions of past actualities (=the inheritance of efficient causes) are integrated with its novel conceptual prehensions of future possibilities (=the formal causes of variation) into some emergent enduring pattern of experiential value.<sup>7</sup> Whitehead argued that materialism could not survive its encounter with evolutionary theory, since the former implies merely the “purposeless and unprogressive” rearrangement of externally related substances and their accidental properties, while “the whole point of the modern doctrine is the evolution of the

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<sup>7</sup> For more on Whitehead’s imaginative generalization of evolutionary theory, see Segall 2018, 57ff.

complex organisms from antecedent states of less complex organisms” (Whitehead [1925] 1967, 101). “The doctrine,” Whitehead continues, “cries aloud for a conception of organism as fundamental for nature” (ibid.).

Information theoretic accounts of the gap between matter and life provide some hope for a pathway forward, but without incarnating information into the meaningful horizon of experience enacted by living organisms, research programs seeking to analogize brain activity to computation end up having to conceive of information processing as some sort of quasi-conscious homunculus hovering above the neurochemistry of the brain and steering it around. For example, neuroscientists regularly describe information processing in the brain as “goal relevant,” “selective,” and “sensitive” (Sy et al. 2015, 122), all terms implying intentionality and purposefulness, even though the presuppositions of mechanistic biology upon which computational neuroscience rests says such powers are impossible. Luckily, taking information seriously does not require “assuming that abstract properties have physical potency,” as Terrence Deacon put it (Deacon 2012, 192).

Deacon is a strong emergentist who tries to dispel the homunculus and de-etherealize information by describing it not as an extra essence added to the physical but in terms of the “absential” features of an incomplete Nature:

“A counterintuitive figure/background reversal, focusing on what is absent rather than present, offers a means to repair some of the serious inadequacies in our conceptions of matter, order, life, work, information, representation, and even consciousness and conceptions of value” (Deacon 2011, 44).

Information is just what is absent from physically present matter. It is not involved in the push and pull of causal efficacy, but instead ‘constrains’ these physical interactions, acting as a formal and final cause that ratchets physics (thermodynamics) up a contragrade organizational gradient into chemistry (morphodynamics), biology (teleodynamics), and eventually full-blown conscious thought (intentionality). Like the enactivists, Deacon limits information processing to the living world, denying ‘intentionality’ to the physical and chemical realms. He grants morphodynamic systems the ability to ‘fall up’ negentropic gradients of complexity toward the telic informational processes of living semiosis, but rejects the idea of any aim or value or *elán* implanted in matter prior to the emergence of life. Telos is added later and not baked in. Not the creative evolution of organisms,

but “vacuous bits of matter with no internal values...hurrying through space” (Whitehead [1938] 1968, 158) are fundamental for Nature.

It is here that the panpsychist integration of physics and experience goes further toward the naturalization of information by making sign interpretation, or in Whitehead's terms, 'prehension,' an intrinsic part of cosmogenesis from the get go. Deacon criticizes Whitehead for projecting “micro humunculi” down to the level of quantum events, arguing that his panexperientialism obfuscates the need for an explanation of “why the [characteristics] of physical processes associated with life and mind [differ] so radically from those associated with the rest of physics and chemistry” (Deacon 2012, 79). Deacon admits that Whitehead in fact does offer an explanation for these differences in terms of the organizational complexity of enduring 'societies' of actual occasions of experience that emerge in the course of evolution. “Yet, if specific organizational complexity is what matters, then little explanatory significance is added by the assumption that some level of micro intentionality was suffused throughout all the component processes” (Deacon 2012, 78). While Deacon's approach succeeds in narrowing the distance between physical causality and conscious intentionality, an explanatory gap still remains. Whitehead's wager is that this gap is extreme enough to require fully undoing modern science's “bifurcation of Nature” (Whitehead 1920, 30) by affirming that feeling or prehension is as intrinsic to natural processes as causality. Indeed, Whitehead's experiential concept of prehension is meant to account for the very possibility of causal relation as such (Whitehead [1938] 1968, 164-165): prehension is what allows the real potentiality of the objectified past to pass back into the subjective immediacy of a new actual occasion of experience. Prehension is akin to the 'information processing' of computationalists, only it avoids the vagaries of epiphenomenalism by rendering the detection of form into a process of feeling, thus embodying information in an experiential horizon. While his *Philosophy of Organism* does grant some degree of mentality to even the simplest of actual occasions, Whitehead's panexperientialism doesn't add anything extra to the natural world we find ourselves within: “the operation of mentality is primarily to be conceived as a diversion of the flow of energy” (Whitehead [1938] 1968, 168). In other words, mentality is an absential constraint upon energy's otherwise entropic tendency. Were this entropic tendency the final word in Nature's becoming, we would not be here to regret the fact. Whitehead is thus attempting to render the true nature of the physical universe transparent to us as the ongoing aesthetic achievement of a vast nexus of experiential occasions: “these unities of existence, these occasions of experience, are the really real things which in their collective unity compose the evolving universe, ever plunging into

the creative advance” (Whitehead [1938] 1968, 151). Quarks, photons, protons, electrons, neutrons and the like appear to be our most ancient ancestors, close to the “primate organisms” (Whitehead [1925] 1967, 132) of our cosmic ecology. Out of their co-evolution emerged elements, stars, and galaxies, all examples of the complex social achievements of actual occasions.. The evolution of these astrophysical organisms proves that Nature’s capacity for emergent value and organizational complexity long predates the arrival of biological cells. These atomic and galactic organisms may be minimally or maximally conscious. The point is that at whatever scale it occurs, information processing is an experiential process, with the intensity of experience depending on the degree of integration of prehended data achieved by any given society of occasions.<sup>8</sup>

### **3. The Physics of Experience: Avoiding Inflationary and Deflationary Accounts of Consciousness**

“The doctrine I am maintaining is that neither physical nature nor life can be understood unless we fuse them together as essential factors in the composition of ‘really real’ things whose interconnections and individual characters constitute the universe.”

—Whitehead ([1938] 1968, 150)

For panpsychists, the idea of humans devoid of consciousness is far more difficult to take seriously than the at first strange possibility that stars and galaxies have minds.<sup>9</sup> If Whitehead’s panexperientialist alternative turns out to have philosophical advantages over scientific materialism, perhaps we can learn to live with these mind expanding implications. After all, if materialism is true, we are not really alive, anyway. Another advantage of panexperientialism is that it can help philosophy avoid the excesses of Absolute idealism by not expanding mind *too* much. This section introduces Whitehead’s attempted analogy between energy and experience in the hope of laying down a middle path between extremes.

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<sup>8</sup> In this sense, Whitehead’s ontology is suggestive of Giulio Tononi’s “integrated information theory” (Tononi et al. 2016). But such connections must be left for future study.

<sup>9</sup> See the recent interview of Rupert Sheldrake where he muses about the consciousness of the Sun (10min29sec). “On Panpsychism: Rupert Sheldrake, Donald Hoffman, Philip Goff, James Ladyman, Mary Jane Rubenstein” by The Institute of Art and Ideas (uploaded to YouTube 9/13/2019), <https://youtu.be/B7KaNnFij2Q?t=629> (accessed 9/28/2019).

Whitehead's panexperientialism is an attempt to take consciousness at face value without unduly inflating or deflating its significance in the universe. The most inflationary accounts tend toward Absolute idealism, while the most deflationary tend toward eliminative materialism. The Kantian transcendental or critical approach views consciousness (with its categories of understanding and forms of intuition) as an *a priori* condition for knowledge of anything, including the physical world. It is thus an important compromise position, holding materialism at bay by preventing us from ever knowing anything about a mind-independent reality, while also checking the mind's tendency to declare itself the ground of being. Kant admitted that via introspection we can only ever access an 'empirical me,' but he nonetheless posited a 'transcendental I' or Ego as the necessary correlate of everything thought or experienced, whether in myself (temporal intuition) or outside (spatial intuition). Kant's transcendental Ego is no longer a clear and distinct substantial reality, as Descartes had imagined when he declared "I am a thing that thinks" (Descartes [1641] 1996, 24). So what is it? From James' radically empirical perspective, the Kantian Ego "is simply nothing: as ineffectual and windy an abortion as Philosophy can show," for if it be granted any other status, given Kant's transcendental premises, there is little to prevent the Fichtean and Hegelian move to "call it the First Principle of Philosophy, to spell its name in capitals and pronounce it with adoration, to act, in short, as if [we are] going up in a balloon whenever the notion of it [crosses our] mind" (James 1890, 365). The Kantian compromise is thus an inherently unstable position. It saves mind from ever being reduced to matter, but at the cost of leaving us in total ignorance regarding the ground of our own consciousness or the substantial reality of Nature. Philosophers are left poised in a vulnerable state of metaphysical indecision, only a moderate dose of nitrous oxide away from floating into the mania of Absolute idealism, and only a mildly depressive mood away from succumbing to eliminative materialism. Might Whitehead's "organic realism" (Whitehead [1929] 1978, 309) put philosophy on more solid experiential ground?

Presented with the general panpsychist hypothesis of a "pervasive perhaps ubiquitous" (Seager 2016, 229) subjectivity inherent in Nature, the first thing the incredulous tend to ask is whether the view entails that stones are conscious, or that tables and chairs stand at attention before us contemplating existence, or that spoons enjoy the flavor of the tea they stir. Few panpsychist philosophers actually uphold such views about stones and human artifacts, at least not without all the necessary qualifications (alchemists and astrologers notwithstanding). The proper panpsychist response to the skepticism of physicalists about the extent of mind's reach into Nature is to ask

whether it is really possible for them to conceive of their own consciousness as an illusion. For if the computational model of mind is true and experience contributes nothing to the functioning of the brain, if our consciousness is really just a complex set of what William Seager calls “bare recognitional capacities” evolutionarily elaborated “into a rich but delusive system of beliefs,” then when it comes down to it we human beings “are actually no more conscious than rocks” (Seager 2016, 231).

Which is more believable? That you and I are no more ‘alive’ than a pile of stones? That we and the stones are merely finite appearances in the infinite substance of the Absolute? Or that stones are more ‘alive’ than we think? From the perspective of Whitehead’s panexperiential organic realism, deflationary materialism and inflationary idealism are equally out of line. What, after all, does contemporary physics tell us about the materiality of a stone?: “[Vanished] from the field of ultimate scientific conceptions is the notion of vacuous material existence with passive endurance, with primary individual attributes, and with accidental adventures”; in short, physics has “[displaced] the notion of static stuff by the notion of fluent energy” (Whitehead [1929] 1978, 309). Stones, understood scientifically, are thus more like attenuated energy events whose relative stability is the effect of reiterated vibratory patterns of activity. For Whitehead, “the energetic activity considered in physics is the emotional intensity entertained in life” (Whitehead [1938] 1968, 168), though of course the emotional intensity realized in a stone is quite negligible due to the lack of any evolved organization for channeling and amplifying its scattered feelings into the more or less unified consciousness evident in animals. The physicist may retort that these patterns are merely mathematical equations and that we have no scientific basis for attributing experience or anything else concrete to the activity they describe. Indeed, many panpsychists are happy to admit that physics tells us only about the abstract aspects of matter and thus “can’t characterize the intrinsic nonstructural nature of concrete reality in any respect at all” (Strawson 2016, 85). In that case, it turns out ‘matter’ is among the most abstract ideas ever imagined by human minds. But in Whitehead’s way of thinking, this “divergence of the formulae about nature from the appearance of nature has robbed the formulae of any explanatory character” (Whitehead [1938] 1968, 154). Energetic activity is not just a mathematical abstraction but an abstract description of something real: “Nature is full-blooded. Real facts are happening” (Whitehead [1938] 1968, 144). Further, unlike some panpsychist readings of Russell’s neutral monism (Russell 1927), Whitehead’s process-relational rendering doesn’t claim experience is a ‘primary attribute’ or ‘intrinsic property’ of matter. This is because in Whitehead’s view, physics has moved beyond the substantialist view of matter,

and talk of essential or accidental properties only made sense given such an ontology. The twentieth-century quantum and relativistic revolutions in physics dispensed with the ideas of “simple location” (Whitehead [1925] 1967, 51) and “nature at an instant” (Whitehead [1938] 1968, 145). There are no simply located, instantaneously present material particles or configurations of material particles, just as there are no simply located, instantaneous experiential states or properties. Both energy and experience are activities with fuzzy boundaries, and our panpsychist ontology should reflect this fact. Yet the substance-property ontology is difficult to shake, even for the physicists who know very well that it no longer captures what their equations are describing. The substance-property mode of thought is pervasive in Western philosophy. Descartes, so critical of Aristotle for other reasons, is fully infected by it, and many contemporary analytic philosophers who similarly consider their thinking to be free of any unexamined tradition nonetheless continue to construe reality in its terms. This mode of thought comes naturally since it is woven into the subject-predicate grammar of most of our languages. It is no surprise that Whitehead’s process-relational alternative is at first difficult to grasp.

While there was an “essential distinction between [substantial] matter at an instant and the agitations of experience,” with this conception of matter having been swept away, a door is opened to analogies between energetic activity and concrete experience (Whitehead [1938] 1968, 115). Experiences, like energy vectors, are intrinsically process-relational in that they always involve transition beyond themselves: they manifest in a “specious present” (Whitehead [1925] 1967, 104) as a tension between the actualized facts of an inherited past and the potential forms of an anticipated future. Whitehead turns to our own lived bodies for a more concrete characterization of physical process, since it is the human body that “provides our closest experience of the interplay of actualities in nature” (Whitehead [1938] 1968, 115). In addition to the grammar of our language, visual experience of our immediately presented environment reinforces the scientifically mistaken idea that reality is composed of substances with qualities. The grey stone is one of Whitehead’s favorite examples: ancient Greek philosophers perceived “the grey stone” in their visual field and from that simple observation “evolved the generalization that the actual world can be conceived as a collection of primary substances qualified by universal qualities” (Whitehead [1929] 1978, 158). Modern natural philosophers beginning with Galileo elaborated this ontology into a conveniently bifurcated system of primary objective quantities (mass, velocity, dimensionality, etc.) and secondary subjective qualities (color, taste, value, etc.). Descartes’ mind/body dualism finished the job. Thenceforward it is not the stone that is grey, but the private quale of the perceiving subject that is

grey. The stone itself is just an extensional lump obeying the fixed laws of gravity and chemical decay. Scrubbing Nature clean of all qualitative residues and tucking them safely away within conscious subjects allowed modern science to make truly remarkable progress explaining those aspects of Nature amenable to precise measurement and mathematical description (Goff 2017b, 12-14). But after a few hundred years of world-transforming progress, this powerful methodology still finds itself embarrassed by the hard problem. Consciousness appears to be “a strange intrusion into an otherwise well-behaved world” (Seager 2016, 234), though of course, it can hardly be said to have *intruded* if it was the methodology of modern science itself that initially *excluded* it from the physical world. Limited to the precise measurements afforded by strict sense-perception and to mathematical modeling, science finds no enjoyment, aim, or creativity in Nature, “it finds mere rules of succession” (Whitehead [1938] 1968, 154). But this is because, by design, science deals with only half the evidence of human experience.

In addition to the relatively superficial deliverances of sense-perception granted us by the five outward facing senses, what Whitehead calls “perception in the mode of presentational immediacy” (Whitehead [1929] 1978, 121), he also describes a more primordial form of bodily experience or “sense-reception” (*ibid.*, 113-114) referred to as “perception in the mode of causal efficacy” (*ibid.*, 120). It is this latter form of human experience that modern science has all but ignored. When our eyes are functioning normally, they are transparent to the light streaming in from our environment. Nonetheless, it is evidently true that we see *with* our eyes. Causal efficacy is the feeling of our eyes blinking when we pull back the curtains and the sunlight floods onto our face. Presentational immediacy is the view of the meadow out the window after our eyes adjust. While presentational immediacy grants us perception of the grey stone as a geometrically projected patch of color, causal efficacy grants us perception of the grey stone’s weight when we pick it up in our hand, of the way this weight influences the muscle fibers and nerve endings in our arm as, “by channels of transmission and of enhancement” (*ibid.*, 119), its ‘weightiness’ is delivered to the presiding occasions of the brain wherein we consciously feel it. “It is the accepted doctrine in physical science,” Whitehead tells us,

“that a living body is to be interpreted according to what is known of other sections of the physical universe. This is a sound doctrine, but it is double-edged. For it carries with it the converse deduction that other sections of the physical universe are to be interpreted in accordance with what we know of the human body” (*ibid.*).

Modern physics tells us that “the quiet extensive stone” is more complex than it at first appears to be. Were we able to apprehend the stone in a more direct way than that afforded by visual perception, it would reveal itself as a “society of separate molecules in violent agitation” (Whitehead [1929] 1978, 78). Picking up the stone grants us no more insight into its inner life, but the feeling of its weight in our hand grants us a clue with profound metaphysical implications. Our consciousness is not separate from but “intimately entwined in bodily life” (Whitehead [1938] 1968, 21). We consciously feel the stone because the human body, acting as an experiential amplifier, transmits the stone’s energetic activity along coordinated routes of actual occasions, accruing interpretive enhancements along the way, until the activity achieves final integration in a central occasion of experience. “The human body is thus achieving on a scale of concentrated efficiency a type of social organization, which with every gradation of efficiency constitutes the orderliness” found in the wider universe (Whitehead [1929] 1978, 119). Transmission of feelings within the body can thus be understood as analogous to the transmission of energy occurring in the rest of Nature. The body, after all, is part of and continuous with the rest of the external world, “just as much part of nature as anything else there—a river, or a mountain, or a cloud” (Whitehead [1938] 1968, 21).

Those seeking a truly naturalistic account of consciousness need not rush to deflationary explanations, whether eliminativist, epiphenomenalist, or emergentist. Such deflationary accounts would be understandable if the only alternatives available were dualism or idealism. Panpsychism, especially Whitehead’s panexperiential version, provides another option. It avoids the metaphysical incoherence of dualism, the inflationary conjecture of idealism that “nature is mere appearance and mind is the sole reality,” and the deflationary conjecture of materialism that “physical nature is the sole reality and mind is an epiphenomenon” (Whitehead [1938] 1968, 150). It begins its explanation of consciousness modestly by examining our intimate feelings of bodily inheritance, and it concludes that these feelings provide a clue as to the functioning of energy in the rest of Nature. The conclusion seems strange at first, but the philosophical payoff might just be worth it.

#### **4. The Combination and Decombination Problems for Panpsychism and Cosmopsychism: Bugs, or Features for Whitehead?**

The philosophical payoff of panpsychism is that it dissolves the hard problem of consciousness, giving experience its proper place in Nature without undermining the scientific image of the

universe. Indeed, panpsychism may have important advantages over materialism for interpreting contemporary physical cosmology (Segall 2018). But substance-property panpsychists have their own problem to deal with: the combination problem. Chalmers' summarizes the issue: "How do the experiences of fundamental physical entities such as quarks and photons combine to yield the familiar sort of human consciousness that we know and love?" (2016, 179). Whitehead's process-relational approach doesn't so much solve this problem as it does reframe the problem's presuppositions.

First of all, many contemporary philosophers of mind appear to be working with an outdated pre-quantum understanding of 'matter.' The fundamental particles studied by physicists are not simply located bits of matter fully present at an instant but vibratory patterns of activity that are always already so intimately entangled that "[any] local agitation shakes the whole universe" (Whitehead [1938] 1968, 138). Whitehead continues:

"...the group of agitations which we term matter [whether a material particle or larger organism] is fused into its environment. There is no possibility of a detached, self-contained local existence. The environment enters into the nature of each thing. Some elements in the nature of a complete set of agitations may remain stable as those agitations are propelled through a changing environment. But such stability is only the case in a general, average way. This average fact is the reason why we find the same chair, the same rock, and the same planet, enduring for days, or for centuries, or for millions of years....The fundamental fact, according to the physics of the present day, is that the environment with its peculiarities seeps into the group-agitation which we term matter, and the group-agitations extend their character to the environment" (ibid.).

Rather than struggling to understand how abstract little bits of extended matter with mental intrinsic properties might combine to form bigger bits of minded matter, Whitehead begins with a more concrete conception of energetic activity that is more easily analogized to agitations of experience. Neither 'matter' nor 'mind' is composed of simply located bits or states. The ongoing composition of the cosmos is achieved not through the summation of tiny parts, nor through subtraction from some larger whole (as cosmopsychists would have it), but by a dipolar relational process with both a stability providing material pole and a novelty inducing mental pole.

The next place to look for Whitehead's dissolution of the combination problem is in James' original statement of it in *Principles of Psychology*: there is a 101st feeling, a "totally new fact," and "the 100 original feelings might, by a curious physical law, be a signal for its creation, when they came together" (1890, 160). Whitehead's process-relational ontology, in particular his genetic account of mutually sensitive prehensions on their way to the concrescence of an actual occasion of experience (Whitehead [1929] 1978, 235ff), is an attempt to make good on James' psychological insight by building it out into a coherent cosmological scheme. A brief exegesis of Whiteheadian neologisms is in order. Whitehead's key notion of *concrecence* provides the curious law that James was intimating. Concrecence is Whitehead's term for "the production of novel togetherness" (ibid., 21) resultant from the growing together of the many prehensions or feelings of perished facts of experience in a given environment, termed "superjects" (ibid., 29), into a new subjective actuality in the present, which itself perishes in turn. Concrecence is the process whereby "the many become one, and are increased by one" (ibid., 21). The creation of each new actuality is "a social effort, employing the whole universe" (ibid., 223). And yet, each new occasion of experience is also self-creating, an individual recapitulation of the universe, contributing its novel perspective back to the buzzing democracy of fellow creatures. Whitehead's reframing of the metaphysical arena allows us to move beyond the false problem of having to combine spatially isolated substances to instead analyze the concrecence of temporally resonant events.

Whitehead's events, or actual occasions, have both a microscopic and macroscopic meaning. The microscopic meaning is concerned with the purposeful realization of an individual unity of experience, whether that experience be associated with a moment in the life of a hydrogen atom, our Sun, or a human being enjoying the sunset. The macroscopic meaning concerns the causal givenness of the existing universe, "which at once limits and provides opportunity for the actual occasion" (ibid., 129). The universe is a community or society of actualities, and as such constitutes an organism. "[But] it is not a static organism," Whitehead reminds us: "It is an incompleteness in process of production" (ibid., 214-215). Whitehead is neither a micropsychist nor a cosmopsychist exclusively. He tries to have it both ways. There is a universal soul, a psyche of the cosmos, a primordial actuality or God of this world, *and* there are countless creatures creating in concert with it. Creativity transcends both God and finite actualities; it is the source of all co-evolving parts, wholes, bodies, and souls. Whitehead's account of process includes moments of combination and decombination, conjunction and disjunction. For Whitehead the combination problem becomes a logic of concrecence, a feature and not a bug, a way of thinking change as more than just the

rearrangement of pre-existing parts or the fragmentation of a pre-existing whole but as *genuine becoming*, as an “emergent evolution” or “creative advance” (ibid., 21, 30, 229) where neither wholes nor parts pre-exist their relations. The actual world is “bound together in a nexus of [physical] feelings,” and in each act of creation the past is not destroyed but re-incarnated in the novel occasion “which [transcends] it and [includes] it” (ibid., 238). Concrescence is thus a cumulative process and not a merely additive one.

## 5. The Wonder Remains

“Philosophy begins in wonder. And, at the end, when philosophy has done its best, the wonder remains. There have been added, however, some grasp of the immensity of things, some purification of emotion by understanding.”  
—Whitehead ([1938] 1968, 168-169)

The cumulative nature of the creative advance makes Whitehead an emergentist rather than constitutive panpsychist (Goff 2017a, 114). A given moment of conscious experience is not reducible to nor simply identical with its constituent parts. In Whitehead’s scheme there are no simply located parts. As was unpacked in section 4, a conscious moment of experience is a creative repetition of the past rather than a combination of parts. This does not mean that human consciousness breaks the laws of physics, but rather that Nature’s ‘laws’ are queerer than our mechanical models let on. Like Deacon (2012) with his absential constraints in an incomplete Nature, Whitehead’s knowledge of mathematical physics led him to reject the causal closure of physics. Laws are *habits* emergent from the cumulative social activity of occasions of experience, not divine decrees from heaven imposed upon passively obedient matter. But unlike Deacon, Whitehead goes further by granting life and mind some subtle congress with things from the beginning of time. Indeed, without life and mind, Nature would have no time to evolve. The laws of physics are indifferent to life, mind, and time, so the cosmic show would have been over before it even began.

Human consciousness is the achievement of the human body. The human body is the organizational achievement of a nexus of experiential occasions stretching back billions of years through the evolution of life on Earth, the birth of our Sun and planetary system, and the fusion of quarks into protons, back even to the birth of God (Whitehead [1929] 1978, 348). Consciousness is physics in

human form. Our philosophical conceptions, moral decisions, aesthetic creations, and religious concerns are no more violations of the laws of physics (which are really statistical habits, anyway) than the emergence of stars and galaxies is a violation of particle physics, or the emergence of cellular life a violation of geology. “[Nature] is never complete. It is always passing beyond itself” (Whitehead [1929] 1978, 289).

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