

Picturing Panpsychism: New Approaches to the Combination Problem

1. Introduction

After spending the better part of a century in philosophical exile, panpsychism has recently seen something of a resurgence in the philosophy of mind. With an eye toward the so-called hard problem (i.e., the putative emergence of the mental from the physical), contemporary panpsychism holds that consciousness *simpliciter*—not self-consciousness, emotion, desire, belief, cognition, or even really awareness as known in the human case, but *bare subjective experience*—is a fundamental force of our universe, intrinsic to even the tiniest physical particles (or “ultimates”). The view remains highly controversial, accepted reluctantly even by some of its most prominent advocates. Beyond its *prima facie* strangeness—arguably due at least as much to current philosophical prejudices as to the view itself¹—panpsychism faces resistance due to a seemingly intractable puzzle known as the *combination problem*. The problem is this: how can the experientiality of countless ultimates “add up” to what we experience as humans?

Herein, I will not attempt to motivate the argument for panpsychism; rather, I will focus on developing plausible new responses to the combination problem. To facilitate this task, I suggest, following Colin McGinn, that the combination problem is best analyzed not as a single problem but as three interrelated problems, known here as the *problem of cohesion of subjects*, the *problem of derivation of experiences*, and the *problem of imagining the ultimates*. Though this work will be highly speculative, I will, throughout, draw parallels to known physical phenomena from “the real world.” These examples do not themselves *solve* the combination problem(s), by any means, but I believe they make it significantly easier to picture the shape a viable solution might take.

¹ For evidence of panpsychism’s rich “hidden history” in Western philosophical thought, see David Skrbina’s excellent *Panpsychism in the West* (Cambridge, MA: The MIT Press, 2005).

2. Introducing the Combination Problem(s)

Philosophers sympathetic to panpsychism are unanimous that the combination problem is the single greatest challenge to the view (leaving aside, that is, the “incredulous stare” of the unsympathetic). David Chalmers calls the combination problem the only “principled problem in the vicinity” of a “distinctive type-F monism,”² where the latter is to be understood as implying at least *panprotopsychism*, a.k.a. Russellian monism. And as Galen Strawson—the most prominent advocate of panpsychism—freely admits, a developed version of the view “will need to address [the] well known objection to the idea that many subjects of experience can somehow constitute a single ‘larger’ subject of experience.... we will have to wonder how macroexperientiality arises from microexperientiality, where by microexperientiality I mean the experientiality of particles relative to which all evolved experientiality is macroexperientiality.”³ Nor need we only take the word of contemporary philosophers; the challenge laid down by the venerable William James in 1890 remains the obligatory combinatory critique of panpsychism, so I shall quote it here once again:

Take a sentence of a dozen words, and take twelve men and tell to each one word. Then stand the men in a row or jam them in a bunch, and let each think of his word as intently as he will; nowhere will there be a consciousness of the whole sentence.... Where the elemental units are supposed to be feelings, the case is in no wise altered. Take a hundred of them, shuffle them and pack them as close together as you can (whatever that might mean); still each remains the same feeling it always was, shut in its own skin, windowless, ignorant of what the other feelings are and mean. There would be a hundred-and-first feeling there, if, when a group or series of such feeling were set up, a consciousness *belonging to the group as such* should emerge. And this 101st feeling would be a totally new fact; the 100 original feelings might, by a curious physical law, be a signal for its *creation*, when they came together; but they would have no substantial identity with it, nor it with them, and one could never deduce the one from the others, or (in any intelligible sense) say that

² David J. Chalmers, *The Character of Consciousness* (New York: Oxford University Press, 2010), 136.

³ Galen Strawson, “Realistic Monism: Why Physicalism Entails Panpsychism,” in *Consciousness and its Place in Nature: Does Physicalism Entail Panpsychism?*, by Galen Strawson et al., ed. Anthony Freeman (Charlottesville, VA: Imprint Academic, 2006), 26.

they *evolved* it.⁴

Is this an intractable problem for panpsychism? Many have assumed so, but it noteworthy that despite having authored this most pointed objection, James himself would actually embrace panpsychism in years to come. David Skrbina finds in James's later lecture notes such statements as "Our only intelligible notion of an object in itself is that it should be an object for itself, and this lands us in panpsychism and a belief that our physical perceptions are effects on us of 'psychical' realities," along with outright advocacy of "a great empirical movement towards a pluralistic panpsychic view of the universe" (where "empirical," Skrbina notes, "refers to James' 'radical empiricism,' in which everything consists of pure experience").⁵ How, then, did James resolve (or attempt to resolve) the combination problem he once found so problematic? Disappointingly, with a move few contemporary philosophers would likely countenance; witness Skrbina's account of James's "final solution to the combination problem":

Formerly [James] had argued that any collective experience had to be unlike the constituent experiences; they had to be "logically distinct." The result, logically speaking, was that combination was impossible. Now James realizes that this situation is "almost intolerable" because "it makes the universe discontinuous." Such logic forces one to conclude that the universe is a "contradiction incarnate." If analytic logic compels one to this view, "so much the worse for logic." For James, logic is an intellectual tool of the cynical, materialistic philosophers, and so he transcends it. He adds this: "Reality, life, experience, concreteness, immediacy, use what word you will, exceeds our logic, overflows and surrounds it." Thus, combination is possible after all, and in fact it maintains the continuity of mind throughout the universe.⁶

Whatever our sympathies regarding the analytic tradition or "cynical, materialistic philosophers," we should presumably expect more from a panpsychist account of combination than a glib "so much the worse for logic." But where might we start?

First, I think, it will be helpful to distinguish—as several authors have—the two prongs

⁴ William James, *The Principles of Psychology*, vol. 1 (New York: Henry Holt and Co., 1890; reprint 1950, New York: Dover, 1950), 160; quoted in Leopold Stubenberg, "Neutral Monism," in *The Stanford Encyclopedia of Philosophy (Spring 2010 Edition)*, ed. Edward N. Zalta, plato.stanford.edu/archives / spr2010/entries/neutral-monism/, section 5.

⁵ Skrbina 2005, 146.

⁶ Skrbina 2005, 147–148.

of James' critique. At first, James asks us to imagine jamming a bunch of *men* together; he then asks us to imagine jamming a bunch of *feelings* together ("whatever that might mean"). On the one hand, then, we have the question of whether a collection of *subjects* might be fused into a single "macro-subject," and on the other hand, the question of whether a collection of experiences might be fused into a single "macro-experience." The former, I call the *problem of cohesion of subjects*; the latter, the *problem of derivation of experiences*. I will consider approaches to both problems in the following sections.

But however much progress may be possible by considering the cohesion and derivation problems in isolation, I think there is a third challenge buried in the combination problem, one not mentioned explicitly or implicitly in James' original critique: this is the *problem of imagining the phenomenal nature of the ultimates*, or, for short, the *problem of imagining the ultimates*. After all, panpsychism is at least *prima facie* a view on which "macro-subjects" and "macro-experiences" are wholly explicable in terms of physical ultimates that are themselves "micro-subjects" with "micro-experiences." Answering the cohesion and derivation problems will thus consist in explaining the emergence of the "macro" from the "micro"—but without some rough account of what micro-subjectivity and micro-experientiality might be like *in the first place*, it's hard to see how the cohesion and derivation problems could ever be answered to the satisfaction of either advocates or skeptics of panpsychism. How, in other words, could we hope to provide a meaningful explanation of how to get from A to B if we have *no idea whatsoever* what A is? Tackling the problem of imagining the ultimates will, of necessity, be the most speculative component of an already quite speculative project, but it seems to me that any honest attempt to address the combination problem must face up to this "third prong." I should, however, be clear that I make no particular claim as to what these ultimates actually are, physically speaking: they could be cosmic strings or quarks, or even (on certain views broadly characterizable as panpsychist) as comparatively sophisticated as organic molecules or even neurons. But whatever the "ground level" of consciousness happens to be, so long as it is anything less than a brain, the cohesion and derivation problems will

arise, and any response to those problems will, I think, be incomplete without some account of the phenomenal nature of the ultimates.

As a final preliminary, I should note that Strawson, for reasons independent of his defense of panpsychism, has in recent years proposed an identity among experiences, their contents, and their subjects.⁷ That is, for any given experience e , subject s , and experiential content c , Strawson holds that $e = s = c$. If one accepts this identity, one might wonder whether the problem of cohesion of subjects and the problem of derivation of experiences are just one problem after all. But I would suggest that even if $e = s = c$ is ontologically or metaphysically true, it will still be epistemically profitable to consider the problems separately, as the concepts “subject” and “experience” have (as Strawson freely admits) intelligibly different characters, and thus pose intelligibly different problems. On the other hand, whatever one makes of Strawson’s identity formulation, there is no question that matters of subjecthood and matters of experientiality are deeply intertwined; for this reason, discussion of one problem will occasionally creep into discussion of the others, and vice versa. What follows, then, will not be three entirely discrete discussions, but rather three interlocking components of what I hope will prove a valuable overall approach to the most vexing challenge faced by panpsychism.

3. The Cohesion Problem

How can a multitude of individually experiential ultimates add up to a single, unified subject? How, that is, can we get macro-subjects like us from micro-subjective ultimates (or even micro-subjective neurons)? To this end, Strawson makes a suggestion that might perhaps be unexpected, given his usual dismissal of “emergence” in philosophy of mind:

It is at this point... that the notion of emergence begins to recover some respectability in its application to the case of experience.... For we can take it that human or sea snail experientiality emerges from experientiality that is not of the human or sea snail type, just as the shape-size-mass-charge-etc. phenomenon of liquidity emerges from shape-size-mass-charge-etc. phenomena that do not

⁷ See, *inter alia*, Galen Strawson, *Selves* (New York: Oxford University Press, 2009), 345–349.

involve liquidity.⁸

Strawson admits this doesn't get us very far and "has nothing to offer to scientific test,"⁹ but the idea is that just as liquidity is a wholly "physicSal" (read: material) property not possessed by any *individual* molecule of water, human consciousness could be a wholly non-physicSal (read: experiential) property not possessed by any *individual* ultimate. This isn't to say the ultimates would possess no non-physicSal properties of their own: indeed, they would be micro-subjects with micro-experientiality. They just wouldn't possess macro-subjective human consciousness any more than an isolated molecule of water at room temperature possesses the property of liquidity.¹⁰ Still, this analogy seems somewhat strained: put any number of water molecules together in a bucket at room temperature and liquidity will naturally emerge, yes—but put the same number of organic molecules (and some water) in a similar bucket and a human subject will most certainly *not* emerge. Mere *combination*, then, cannot solve the cohesion problem; there's simply no reason to think the mereological summing alone will suffice to yield a single, unified macro-subject from a collection of micro-subjects.

Here, I think, Chalmers' non-reductive functionalism—on which the proper organization of any kind of physical matter will suffice for human-style macro-consciousness—has much to offer Strawson's argument. After all, the obvious reason we don't get macro-subjective human consciousness from a bucket of micro-subjective organic molecules is that macro-subjectivity requires not merely the *addition* or *combination* of micro-subjectivity, but also some sort of *organization*. Of course, Strawson might resist Chalmers' suggestion that a network of beer cans and ping-pong balls, suitably organized,

⁸ Strawson in Freeman 2006, 27.

⁹ Strawson in Freeman 2006, 28.

¹⁰ That Strawson would treat the intrinsic, non-relational "stuffing for matter" (that which purportedly *just is* experience) as a *property* may seem quite odd until one has fully digested Strawson's revisionary metaphysics, on which: "there is nothing more to a thing's being than its intrinsic, non-relational propertiedness." One needs, he insists, "a vivid sense of the respect in which... every object is a process; one needs to abandon the idea that there is any sharp or categorial [sic] distinction between an object and its propertiedness." In this approach, Strawson sees himself as "following Nagarjuna, Nietzsche, James, Ramsey and many others"; see Strawson in Freeman 2006, 28.

would yield a humanlike macro-subject in virtue of both (1) the system's organization and (2) the fact that micro-subjectivity permeates all the system's material components. But Strawson's own preferred story involves, as it clearly must, "relatively unorganized matter" that, via evolutionary processes, "organized into increasingly complex forms," such that "just as there was spectacular enlargement and fine-tuning of non-experiential forms (the bodies of living things), so too there was spectacular enlargement and fine-tuning of experiential forms."¹¹ Whether or not we accept Chalmers' radical beer-pong suggestion, then, at some point his non-reductive functionalism needs to enter the story. As our above consideration of the "bucket of organic molecules" makes clear, there's simply no room for that level of sophistication in Strawson's analogy to liquidity—but perhaps we can find a better analogy.

Strawson himself provides a hint, in an especially bold bit of speculation: "The heart of experience, perhaps, is electromagnetism in some or all its forms; but electromagnetism in all its forms is no doubt just one expression of some single force whose being is intrinsically experiential, whatever else it is or is not."¹² Now, given the strong correlation between electrical activity and consciousness in the human brain, Strawson might not be far off here—but whether or not consciousness is *literally* "electromagnetism from the inside" will be irrelevant to the present analogy. And the analogy is this: while electromagnetism is a fundamental and pervasive force in all matter, its most interesting effects occur when complex conditions obtain, e.g., in an electrical circuit. Electromagnetism is undoubtedly *present* in an electron or rock, but not the way it is in a thermostat, hair dryer, computer, or human brain; these latter constitute electromagnetic *systems* in a way the electron and rock do not. Likewise, we might posit, with experientiality.

This way of thinking about panpsychism seems to me a powerful way to defuse the cohesion problem. For consider the simple electric current supplied to your home, in

¹¹ Strawson in Freeman 2006, 27.

¹² Ibid. Strawson dryly adds that "I do not, however, foresee any kind of scientific research programme."

which electrons are carried via a conducting wire from a generating plant to an electrical device such as your computer. Each individual electron is an elementary particle (that is to say that an electron is, so far as science is aware, not divisible into any smaller parts), and each carries a fixed charge of -1 (or, depending on one's level of precision, $-e$, where $e = 1.602 \times 10^{-19}$ coulombs). And that's all: from various manipulations of these electrons, each identically simple in its negative charge, emerges every type of electrical system ever conceived by mankind. Yet while I am admittedly not an electrical engineer, I am confident that not a single electrical device currently in manufacture relies on *brute emergence* for its effect. That is, I am confident that in every case, a sensible story of the emergence of like from like can be told, in which *something* in the nature of electrons (and the substrates through which they flow or with which they interact) accounts for the light coming from my lamp, the sound coming from my stereo, the calculations being performed by my computer, etc. Nor, I am confident, is it necessary that every electron participating in the function of a given electrical device “contain,” in any way, the whole or even any portion of the aforementioned light, sound, calculations, etc. The electrons themselves contain none of these: they just have their uniform simple negative charge (as well, of course, as mass and spin, but neither do I suppose these properties carry the aforementioned light, sound, calculations, etc.). And so somehow—albeit in a way perhaps only intelligible to electrical engineers—it seems as though the flow of countless simple electrons, via proper *combination* and *organization* in one or more substrates, “gives rise to” discrete electrical devices with novel emergent properties entirely predictable from intelligible (i.e., non-brute) laws of nature.

Where, then, is the cohesion problem for electrical devices? Do we remain skeptical that each individual negatively charged electron could somehow “add up” to, say, a computational system capable of teraflop speeds? We do not, I trust. Partly this is because we defer to the expertise of electrical engineers when it comes to explanations (explanations we, if we are not electrical engineers, likely do not want to hear and would not understand anyway). Partly, though, it is because we see clear evidence around us

every day that somehow all this electrical functionality *does* emerge from the flow of innumerable simple electrons through the sockets in our walls, and we (if we are not given to magical thinking) tend to assume that this emergence of discrete, novel properties from countless homogenous ultimates isn't just brute magic, and represents no contradiction in analytic logic. We understand, too, that even though electromagnetism is literally everywhere in the universe, not everything is an electromagnetic *device*. And it seems natural to us that the *fundamental electromagnetic force* underlying all electromagnetic devices needn't itself possess—nor possess in its “constituent” electrons—all the novel emergent properties to be found in electromagnetic devices.

The intended analogy should by now be obvious. I must, of course, concede that at present, we lack the equivalent of electrical engineers: when it comes to consciousness, no one can yet offer us an analog to the ubiquitous elementary school demonstration of a simple electrical circuit. If we are panpsychists (and even if we are not), we may count ourselves as “knowing” that such a demonstration is, in principle, possible, though likely not without presently unimaginable breakthroughs and/or paradigm shifts in science. Then again, it may be the case, as “mysterians” like McGinn suggest, that we will just *never* have the equivalent of electrical engineers (experiential engineers?) when it comes to consciousness; our youngsters will never build simple “experiential devices” for their science-fair projects. But whether or not the analogy I offer could be rendered into any sort of research program, the force of it against the cohesion problem remains untouched: whether or not we could ever understand *how* the combination and organization of micro-subjective ultimates (or a micro-subjective “force”) yields a discrete macro-subjective “device,” by analogy to electromagnetic devices we can at least appreciate the in-principle *possibility* of such an explanation.

Still, this leaves an important question in the vicinity: how does the sense of being a *whole conscious entity*—rather than (1) of being a composite of (un?)conscious subparts or (2) of not even “realizing” one is such a composite—emerge in us? I would note first that this is not a problem faced by panpsychists alone. Arch-materialist Daniel Dennett,

for instance, has claimed that “This ‘I’ you speak of is not... something in addition to the team of busy, unconscious robots whose activities compose you.”¹³ Dennett needs to explain how we get from a team of unconscious robots to macro-subjects; panpsychism need only get us from micro-consciousness to macro-consciousness. This is still a big problem, of course, but it is everyone’s problem, and panpsychism at least *prima facie* has less to account for. That said, for now I can only appeal to some sort of “experiential engineering” on the part of Mother Nature: whatever conditions must be met to instantiate an “experiential circuit,” they were apparently reached and subsequently manipulated to great effect. A circuit is, after all, a closed loop, and thus perhaps any “experiential circuit” would *just be* an “experiential device”—a.k.a. a macro-subjective conscious entity of the simplest sort (something, that is, along the lines of Chalmers’ notorious thermostat). Or perhaps the combination and organization of several simple “experiential circuits” might be necessary to yield a true macro-subject. Either way, if there are experiential laws analogous to electromagnetic laws, and if these laws entail that at least one “experiential loop” must be closed to constitute a conscious entity, this would seem to account for the better part of the mystery of the mind/body problem—specifically, our intuitive sense of being unified subjects who “stand apart” from the “outside world” (a world which, assuming panpsychism, is both phenomenal and physical—and of which, assuming only science, we know ourselves to, despite appearances, in fact be nothing more than a part). If being an experiential device—a conscious entity—entails being a closed experiential circuit (“insulated,” as it were, from the experiential “current” of others), then even the problem of other minds begins to look at least theoretically tractable. What’s more, one needn’t even be a panpsychist to see the appeal of this “experiential circuit” model: Douglas Hofstadter’s *I Am a Strange Loop* presents a sustained analogy between human consciousness and the peculiar phenomenon known as *video feedback* (wherein a video camera is pointed at a television display of the

¹³ Daniel C. Dennett, *Sweet Dreams* (Cambridge, MA: MIT Press, 2005), 75.

very signal the camera is filming).¹⁴ The mind-boggling images yielded by video feedback defy description, but I think Hofstadter would agree that, in a sense, they often do “look like” consciousness (see, e.g., youtu.be/sfmAf7CMLp4), or at least like the mandalas used for centuries by Eastern spiritual traditions to guide and focus meditation upon consciousness.

Finally, I would like to offer another analogy from physics that may be of use in contemplating the cohesion problem. Recall James’ observation to the effect that we could jam a group of men together as closely as we liked, but each would still remain his own subject, isolated from the rest, and no “macro-subject” would emerge. If panpsychism is to be a plausibly “naturalistic” theory—one that phenomenologically mirrors physical reality—this might seem an insurmountable problem, for what natural phenomenon could give us any reason to believe that the boundaries of the micro-subjective ultimates could ever be breached so as to yield a truly unified macro-subject? Yet there is one phenomenon we might turn to for a precedent: the Bose-Einstein condensate, or BEC. In brief, the BEC is the fifth state of matter (distinct from plasma, gas, liquid, and solid) that occurs when a group of atoms is cooled to near absolute zero. Under such conditions, the various atoms become so utterly quantum-entangled as lose their individual boundaries and identities. Rather than a collection of atoms jammed tightly together (as with a solid), they become what is sometimes called a “super-atom.” Not only are no meaningful distinctions left between separate atoms, but there is not even any *theoretical* form of measurement that could differentiate one atom from the next. Difficult as it is to imagine, it is a proven scientific fact that just as photons cohere in a laser, atoms cohere in a BEC.

Coherence, then, might well be the key to answering the *cohesion* problem. Of course, the human brain cannot naturally generate the extreme conditions necessary for the formation of BECs. But the point here is to draw an analogy: if it is naturally possible for

¹⁴ See Douglas Hofstadter, *I Am a Strange Loop* (New York: Basic Books, 2007). Consider also, in this context, Uriah Kriegel’s “self-representational” theory of mind.

individual physical ultimates (under certain conditions) to really and truly “fuse” into one, then why should we assume it naturally *impossible* that individual phenomenal ultimates (under certain conditions) do the same? Given our everyday understanding of physics—indeed, even given a fairly advanced understanding of physics!—such a phenomenon as BECs might have seemed analytically impossible. Likewise, given our everyday understanding of consciousness—of the nature of subjectivity in our own macro-scale case—the assimilation of micro-subjects into a genuinely unified macro-subject might seem like the kind of thing we can know *a priori* to be false. But if matter can behave as strangely as it does in BECs, there seems to be no in-principle reason to reject the possibility that experience and subjectivity can behave just as strangely. Needless to say, in the absence of any good theory of “psycho-physical laws” of nature, the idea that subjective cohesion could operate similarly to atomic coherence remains pure speculation. Nevertheless, the reality of BECs seems to tell against any claim that subjective cohesion is a natural impossibility.

4. The Derivation Problem

The emergence of macro-subjects from micro-subjects is only part of the puzzle posed by the combination problem. We also need to address what McGinn has called the *derivation problem*: “how are higher-level experiences derived from lower-level ones?”¹⁵ Any explanation of the derivation of macro-level experiences will, as Chalmers has noted, require “a much better understanding of the compositional principles of phenomenology: that is, the principles by which phenomenal properties can be composed or constituted from underlying phenomenal properties, or protophenomenal properties.”¹⁶ As daunting a task as that would be in itself, it is further complicated by several factors elucidated by McGinn:

¹⁵ Colin McGinn, “Hard Questions,” in Freeman 2006, 96.

¹⁶ Chalmers 2010, 136.

[In the spatial world] we can get a lot of different things by spatially arranging a smallish number of physical primitives. But there is no analogous notion of combination for qualia—there is no analogue for spatial arrangement (you can't put qualia end-to-end). We cannot therefore envisage a small number of experiential primitives yielding a rich variety of phenomenologies; we have to postulate richness all the way down, more or less. An easy way to see this is to note that you can't derive one sort of experience from another: you can't get pains from experiences of colour, or emotions from thoughts, or thoughts from acts of will. There are a large number of phenomenal primitives. Accordingly, we cannot formulate panpsychism in terms of a small number of phenomenal primitives—say, one for each type of elementary particle—and hope to derive the rest. We have to postulate richness at the basis. It would be impossible, say, to begin with simply an array of faint experiences of shades of grey and then hope to derive all of human phenomenology! For the same reason, we cannot suppose that the particles have an alien phenomenology perhaps more suitable to their limited and peculiar 'form of life'... because there is no coherent way to derive from such an alien form of experience the kinds of familiar experiences that we enjoy. To suppose otherwise is to fall victim to the kind of magical thinking that the brute emergentist indulges in; there can be no miraculous transformation of one type of experience into some other quite distinct type.... (and if anyone mentions synaesthesia at this point I will scream).¹⁷

McGinn insists we not retreat to “faint and blurry qualia”—some vague, infinitesimal analogs to our experience—for “even the faint and blurry is phenomenology too much for the humble electron.”¹⁸ Rather, “we can solve the emergence problem only if we credit the ultimates with a rich enough phenomenology to form an adequate basis for a full-bodied human mind, or else we have to suppose input from outside to pump up the volume (and hence relinquish emergence [of like from like])”; therefore, McGinn concludes his attempted *reductio*, “there is really no alternative but to accept that particles have minds in much the same way we (and other animals) do.”¹⁹

I do not believe this to be our only option. In light of the analogy to electromagnetism drawn in the previous section, the point to be put to McGinn is clear: the “humble electron” is somehow capable, physicially, of yielding an astonishing array of modalities in physicial devices—including, for example, the images, sounds, mechanical fan-spinning, and sundry calculations that “emerge” in/from/via my computer. One might

¹⁷ McGinn in Freeman 2006, 95–96.

¹⁸ McGinn in Freeman 2006, 95.

¹⁹ *Ibid.*

even note, to McGinn's chagrin, a certain synesthetic aspect in the way both audio and visual data can be reduced to "modality-neutral" media files, but we needn't yet push the analogy that far. What is crucial here is that McGinn would presumably never posit that the richness of modalities clearly emergent from the combination and organization of electromagnetic ultimates into/from/via electromagnetic devices requires "richness all the way down"; it would be ludicrous to insist that every electromagnetic process involving a given electron must somehow be fully *present* in that electron. The sound and picture emerging from the electromagnetic device in front of me is, I take it, a naturally emergent property of that device—emergent in virtue of the organized operation of electrons that do not, each individually, bear either the sound or the picture. Likewise, there seems no compelling reason to accept McGinn's insistence that panpsychism requires "full-bodied" minds all the way down. If *physically non-audiovisual* electrons can be harnessed to yield either an auditory or visual *physical* result—which we perceive and phenomenally experience as either a sound or an image—there seems no reason that *phenomenally non-audiovisual* electrons could not be harnessed to yield either an auditory or visual phenomenal result (i.e., our very experience of that sound or image).

Nor is it clear that it matters whether one can "put qualia end-to-end"; can one really put even the aforementioned functions of my computer "end-to-end," much less all permutations of electromagnetic activity "end-to-end"? We may grant McGinn's assertion that "you can't get pains from experiences of colour," but likewise you can't get word processing from artificial light—yet both, indubitably, are emergent properties of electromagnetic devices whose very *status* as functional electromagnetic devices depends upon the simple charge of electrons and, ultimately, upon the fundamental force of electromagnetism. You don't need to get word processing from artificial light to get *both* from the proper electromagnetic combinations and organizations, nor do you need word processing and artificial light to be "full-bodied" properties of any individual electron or of the electromagnetic force itself.

What the electromagnetic analogy leaves vague, I admit, are the criteria by which a given

arrangement of fundamentally experiential matter (particles, say, with an “experiential charge” of 1, -1, or neutral) is properly to be understood as an “experiential device.” We might not seem to have any example in the offing of what even a simple “experiential circuit” might look like (although, again, I am tempted to side with Hofstadter in seeing the phenomenon of video feedback as a potential model, if not outright instantiation, of such a circuit). But the point, again, is (1) that McGinn’s talk of “phenomenal primitives” may well be misguided, and (2) that his insistence that “the honest panpsychist”²⁰ must commit to “full-bodied” (i.e. human) phenomenology in the ultimates needn’t be taken seriously. Indeed, the very notion of “phenomenal primitives” seems to stand in contrast to a certain reading of “full-bodied” phenomenology: one needn’t invoke synesthesia to recognize the complexity of, e.g., taste phenomenology, which involves a combination not only of five (or more) senses of taste but the indispensable and fiendishly holistic olfactory sense(s), with texture and temperature making tactile contributions as well. The taste of a Granny Smith apple is not just the *taste* of a Granny Smith apple, but also its smell and, to at least some extent, its texture and temperature. McGinn’s insistence on “phenomenological primitives” is intended to do justice to the many facets of human conscious experience, but it threatens to do the opposite by ignoring the crucially holistic aspect of phenomenology that is, after all, the very heart of the combination problem! Furthermore, we must ask: given that flavor, smell, and tactile phenomenology can and do *combine* in our experience to yield the “taste” of a Granny Smith apple, do we really find ourselves, as McGinn claims, entirely without a meaningful “notion of combination for qualia”? It seems to me that the combination of qualia, even and *especially* of different modalities, makes for the better part of the “richness” of conscious experience as we know it.²¹

In addition, though McGinn would surely not want to hear it, recent research has offered confirmation of the longstanding hypothesis that humans are born synesthetic—that the

²⁰ McGinn in Freeman 2006, 95.

²¹ In a similar vein, Skrbina 2009 notes how the flavors of beef and wine pleasingly combine on the palate to yield a flavor that seems to be more than the sum of its parts.

differentiation of our experience into (more or less) discrete sensory modalities is not some analytic metaphysical truth, but rather the contingent result of the gradual pruning and specialization of our neural pathways.²² And in a philosophical context far removed from any discussion of panpsychism, Fiona Macpherson has recently suggested that “the differences between the senses amounts more to a difference of degree rather than a difference of kind,” proposing instead a “multidimensional space within which we can locate each of the senses that we are familiar with and which also defines the space of possible senses there could be.”²³ Likewise, despite previously favoring a view he calls “relation-content intentionalism,” Adam Pautz has, in recent lectures, advocated for a “modality-neutral relation [of] experientially entertaining.” As he explains:

Suppose that I hear a loud noise and I simultaneously see a yellow flash. It is not an accurate account of the first-person perspective to say simply that I have an auditory experience of something loud and simultaneously I have a visual experience of something yellow. For it is part of the phenomenology of my experience that the loudness of the noise and the yellowness of the flash are experienced *together*.²⁴

Even entirely leaving aside questions of panpsychism, then, it is far from clear that McGinn is justified in insisting on the fundamental discreteness of sensory modalities. And as we shall see in the next section, the notion that the differences among these modalities may be of degree rather than kind offers the panpsychist a compelling new way to answer another of McGinn’s worries: the problem of imagining the phenomenal nature of the ultimates.

5. The Problem of Imagining the Ultimates

That the question of the phenomenal nature of the ultimates should even be considered is,

²² Katie Wagner and Karen R. Dobkins, “Synaesthetic Associations Decrease During Infancy.” *Psychological Science* (July 2011).

²³ Fiona Macpherson, “Taxonomizing the Senses.” *Philosophical Studies* (2011) 153: 123–142.

²⁴ Adam Pautz, unpublished lecture notes, fall 2012.

for many, a self-evident *reductio* of panpsychism: the “incredulous stare” tends to be accompanied with a rhetorical question along the lines of, “Does that mean there is *something it is like* to be an electron?” We are meant to find it utterly unimaginable that there could be something it is like to be an electron—for how could anything that small, that simple, that primitive, possibly constitute any sort of locus for phenomenal experience? The notion of conscious electrons just doesn’t seem to make sense, and however loaded the question may be in the mouth of the skeptic, it seems a fair-minded panpsychist needs to acknowledge this *prima facie* difficulty. Chalmers does just that in his discussion of thermostat (as opposed to human) phenomenology:

We should really expect something much simpler, for which there is no analog in our experience. We will likely be unable to sympathetically imagine these experiences any better than a blind person can imagine sight, or than a human can imagine what it is like to be a bat; but we can at least intellectually know something about their basic structure.²⁵

Beyond this table-turning *embrace* of unimaginability, however, I believe there are valid moves open to the panpsychist when presented with this “argument from imaginability.” First and foremost, the panpsychist should be sure the rules of the dialectical game are fair and consistent; specifically, the panpsychist might ask whether (or to what extent) the objector can imagine the uncontroversial *physicality* of an electron. I suspect that for most of us, the physical smallness of an electron is *every bit as unimaginable* as its proposed “phenomenological smallness.” Speaking for myself, as I stare at the glass of water on my desk, I have serious doubts as to whether I can really properly imagine the scale of an individual water molecule—an object orders of magnitude larger than, say, an individual electron. It seems uncontroversial to say that none of us would even *suspect* the existence of physical entities as small as electrons had we not learned (directly or indirectly) of them through science. But because we’ve been told electrons exist—because some very smart people *discovered* that electrons exist—we blithely assume we can *imagine* the physicality of an electron. I’m not so sure we can; I’m not even sure

²⁵ David J. Chalmers, *The Conscious Mind: In Search of a Fundamental Theory* (New York: Oxford University Press, 1996), 294.

physicists who “work with electrons,” as it were, can *properly imagine* their physicality in the relevant sense. Try it: try imagining the smallest object you can possibly imagine, and I’ll bet you won’t even come close to properly imagining the true physical *infinitesimality* of an electron (or even an atom, or even a water molecule). Now, this is not to say that one cannot have a perfectly valid set of calculations demonstrating precisely how small an electron is—but just as there is a big difference between having a calculation that yields ∞ and actually *imagining infinity*, or between having a calculation that yields i or $-i$ and actually *imagining the square root of -1* , there is a big difference between having calculations that imply (or experiments that verify) the existence of electrons and actually *imagining an electron*.

Note that so far, I’ve spoken only of imagining the electron as a determinate object, a “Newtonian” particle, which it most certainly is not; to properly imagine the physicality of an electron, we need not only to scale down our imagination by vast orders of magnitude (so vast as to themselves be arguably unimaginable), but must also wrap our minds around the reality of wave/particle duality. So again, try imagining the smallest object you can imagine—except that the “object” isn’t really even an “object” so much as a *presence*, a wavelike smear of matter. If you (or anyone) should happen to possess such expansive powers of imagination, it should hardly be a problem to imagine human conscious experience “scaled down” by equivalent orders of magnitude—but more likely, you are like me, and simply *cannot think that small*. Stubenberg makes a similar point in his *SEP* entry on panpsychism: “After all, the effects of gravitation are invisible at the level of extremely small sizes and masses but this does not mean that gravitation is insignificant in the universe, nor that it is not a ubiquitous and fundamental feature of the world, of which every existing thing partakes.”²⁶

The upshot of this is that the “argument from imagination” appears to rely on a rather arbitrary double standard. It is only, I contend, because science *tells us* things as small as electrons physically do exist that we assume we *can* properly imagine the physicality of a

²⁶ Stubenberg 2010, section 5.

electrons—but we cannot, not really, not *properly*. What force, then, is the argument from imagination supposed to have against panpsychism? “If you can’t even properly imagine the *physicality* of an electron,” the panpsychist might ask the skeptic, “why should your inability (or just plain unwillingness?) to properly imagine the *experientiality* of an electron matter a whit here?”

Still, we should prefer *some* sort of positive account of the phenomenology of the ultimates. And merely saying the ultimates are “potentially experiential,” as Chalmers-style “panprotopsychism” would imply, simply will not do; as McGinn acerbically notes:

[P]lease don’t say that the particles are only required to be *potentially* experience-endowed for panpsychism to be true, since this is common ground for *any* view of the relation between experience and the wider world—*of course* matter must have the potential to generate mind, since it patently does (unless we are radical dualists). The whole question is, in virtue of what sort of property—and the honest panpsychist at least has a nontrivial answer, viz. experiential properties. The potentiality move simply says that particles produce minds when combined into brains, and hence have that potential; but that is not a *theory* at all, just the datum we are trying to explain.²⁷

What’s more, McGinn insists, the retreat to “watered-down... faint and blurry qualia, along the lines possibly of those in the nascent mind of a foetus” is a “weaselly line.”²⁸ Certainly, it would seem at odds with the arguments against fading, dancing, and absent qualia marshaled by Chalmers²⁹—arguments that provide crucial support for his nonreductive functionalism, which we have here recommended as a much-needed adjunct to the general panpsychist framework. Let us not, then, take the weaselly line.

Now, for reasons already discussed, we needn’t postulate full phenomenal richness all the way down; the ultimates needn’t be credited with recognizable human consciousness. But instead of postulating that phenomenology “fades out” as one moves down the scale of complexity, we might consider that the simplest, most fundamental phenomenology is a sort of “whiteout.” In other words, perhaps experientiality in its most basic form is

²⁷ McGinn in Freeman 2006, 95–96.

²⁸ Ibid.

²⁹ See Chalmers 1996, 247–275.

modally, intentionally, and informationally *undifferentiated*: not watered-down at all, but rather a super-saturated ur-experientiality. Consider what it would be like to experience *everything at once*: hot and cold, rising and falling, quiet and loud, light and dark, wet and dry, happy and sad, etc., *ad infinitum*. Not, again, that we wish to claim the humble electron actually feels any of *those* specific things; the point, rather, is to get a sense for what “experiencing everything at once” actually implies: an utter *undifferentiation* that is, in a certain sense, the antithesis of consciousness as we know it. To experience every experiential state *E* simultaneously with every experiential state *not-E* would be to have *no useful phenomenal content* concerning either oneself or one’s environment. It would be a senseless seething stasis of phenomenology—but phenomenology it would be!

If we think of our putative experiential ultimates this way, the natural emergence of our own modally, intentionally, and informationally *differentiated* consciousness, with all its dynamic richness, seems more sensible than if we posit watered-down qualia (or, per the anti-panpsychist, none at all) in the ultimates. That is, it might be the case that complex phenomenology (of, e.g., the human sort) requires not only experiential *addition* and *combination* but, more crucially, experiential *subtraction* and *differentiation*. Perhaps differentiated experiences—simple at first, but evolving in tandem with an organism’s complexity—emerge from undifferentiated ones. McGinn would likely protest that it simply *can’t* be the case that our sense modalities could be derived via differentiation from some pan-modal, synesthetic ur-experience; he seems quite resolute in his claim that “there are a large number of phenomenal primitives.” But perhaps he’s wrong: perhaps the apparent differences of kind are indeed only differences of degree. After all, we don’t find radical differences of kind in the brain’s gray matter, nor in matter in general (for the most part)—so why posit that experiences alone analytically *must* come in such ontologically distinct flavors? Why *can’t* there be ur-experientiality in the electron? Such an explanation is, of course, entirely speculative, and perhaps McGinn would still find it weaselly, but I think it shows we can posit a sort of phenomenal “richness” (overabundance, really) in the ultimates without needing to *anthropomorphize*

electrons, quarks, etc.

Now, if this proposed phenomenological “whiteout” in the ultimates seems just too hard to imagine, consider this explanation of the whiteout phenomenology associated with near-death experiences (NDEs), courtesy of David Hovda of the UCLA Brain Injury Research Center:

...a white light at the end of a tunnel... is the only thing we can really expect a person to see as they get closer and closer to death. Given that the rest of the higher brain regions are essentially shut down, if visual areas... are suddenly activated, no higher-level processing can exist, and a bright light is all we would be able to see.³⁰

This certainly suggests that the high-level richness of our ordinary visual experience is a matter of differentiation—and that without such differentiation, all colors and shapes blend into undifferentiated whiteness. Now, in light of our discussion in the previous section of Macpherson’s multidimensional pan-sensory manifold and Pautz’s modality-neutral relation of experientially entertaining, it should at least seem possible that the visual whiteout associated with NDEs could be extended to all phenomenological modalities. Not only would all visual experience merge into whiteness, but all sounds would merge into “auditory whiteness,” all smells into “olfactory whiteness,” and so on. Moreover, all *these* sense-modal whiteouts could, in turn, blend into a single modality-neutral whiteout—a super-synesthetic ur-whiteout. This might well be what death is like: seeing as how the evidence suggests we come into the world with some residual synesthesia, perhaps our exit takes us back down that path as well, back to what we might call the “center point” of Macpherson’s sensory manifold. But whether or not this state lies in our own futures, if we can conceive of it, I think we can get some grip on what the phenomenal nature of the ultimates might be like.

Again, though, I should stress that in suggesting that “what it is like to be an electron” (or whatever the relevant “ultimate” happens to be) is to experience everything at once, I do *not* mean to say that an electron would literally experience such specific phenomena as

³⁰ Cara Santa Maria, “What Happens When You Die?” *Huffington Post*, May 23, 2012.

happiness and sadness, redness and greenness, etc. simultaneously. Rather, the undifferentiated ur-experientiality would be that from which all such specific experiences are *derived*. After all, the number of possible specific experiences is perhaps infinite, and to crowd them all into each and every ultimate seems unparsimonious if not absurd. Pat Lewtas has made an admirable effort to motivate this phenomenological overcrowding, suggesting there is no principled reason to think that “a plurality of conscious properties” in the ultimates should “create problems where a plurality of physical properties doesn’t.” But his proposal requires that we “attribute multiple and wholly separate phenomenal fields, one occupied exclusively by red, another by yellow, and so on”—one for each basic conscious property—and “further, since each phenomenal field needs a subject of experience... we must recognize as many completely disconnected subjects [in each ultimate] as... conscious properties.” This gives us a picture on which the ultimates “simultaneously experience a plurality of distinct basic types of experiences,” and where “each such experience occupies its own, wholly separate phenomenal field with its own, wholly separate object.”³¹ Not only, then, does each ultimate contain countless experiences, but also countless subjects. Lewtas finds this picture “encouraging,” but I imagine skeptics of panpsychism will find it a *reductio*, and I personally find such overcrowding of experiences and subjects deeply unsatisfying. Much better, I think, to strive for simplicity in the ultimates—albeit a simplicity that carries the potential for boundless variety, an *e unibus pluram*.³²

Yet how might the proposed process of differentiation actually work? One cannot, of course, be sure, but consider here one final analogy to a known physical process. *Subtractive analog synthesis* lies behind the distinctive sound of the classic synthesizers of the late 1960s, 1970s, and early 1980s, and even many digital synthesizers of today simulate its method of sound creation. The online documentation for Apple’s Logic Express 9 software explains the process as follows:

³¹ Pat Lewtas, “What It Is Like to Be a Quark.” Unpublished.

³² With apologies to the late David Foster Wallace.

According to legend, when Michelangelo was asked how he managed to carve David out of a block of stone, he replied, “I just cut away everything that doesn’t look like David.” In essence, this is how subtractive synthesis works: You filter (cut away) the parts of the sound that you don’t want to hear. In other words, you subtract parts of the frequency spectrum, consisting of the fundamental tone and associated harmonics.³³

By filtering a single waveform—and then further processing the signal via various other envelopes and effects—analogue synthesizers can yield an impressive array of distinctive voices. Filtered one way, the waveform might sound like a brass section; filtered another way, like strings; filtered another way, like a strong gust of wind. And, of course, many synthesizers permit multiple simultaneous waveforms to be filtered, so that one could combine, say, the brass and strings into a fuller, more orchestral sound. Yet were one to listen just to the unfiltered, raw waveform—as often as not, a jarring electronic buzz—one would surely not guess that so many different sounds could result. By analogy, then, perhaps the undifferentiated ur-experientiality of the ultimates is something like the analogue synthesizer’s raw waveform: were we to experience it directly, we might hardly believe it could be “filtered” into different modalities and specific experiences, much less subsequently combined to yield holistic, multimodal phenomenology. Yet such a process would be just the thing to bring us from ultimate whiteout to the vivid richness of human consciousness, and from infantile synesthesia to the seemingly discrete sense modalities of everyday experience.

6. Closing Thoughts

Needless to say, even if this speculative account of ur-experientiality happens to be on target, many details will need to be worked out, not least the “laws of experiential differentiation.” And while Strawson might happen to be right that experience is just electromagnetism from the inside, Chalmers is more inclined to think of consciousness as a fundamental force *distinct from* any of the known fundamental forces (though, of

³³ documentation.apple.com/en/logicexpress/instruments/index.html#chapter=A%26section=3%26tasks=true

course, amenable to assimilation with them into a Grand Unified Theory). So the ur-experience could be that of an electron, but it might be the case that we're dealing with a different sort of "ultimate" here: a *qualion*, perhaps.³⁴ This suggestion, it must be said, brings us within spitting distance of substance dualism, but certainly nothing supernatural or "homuncular" is being posited.

But again, this is all speculation—and perhaps, in the end, there is no shame in just admitting the relative unimaginability (though not the inconceivability!) of, e.g., an electron's phenomenology. While I confess I find the extended analogy from electromagnetism and subtractive synthesis compelling, I cannot disagree with Chalmers' assessment that the combination problem, in all its guises, remains "easily the most serious problem for the [panpsychist] view, and at this point, it is an open question whether or not it can be solved."³⁵ I also, however, agree with Chalmers that "this is an area that deserves much close attention,"³⁶ and it is to that end that I offer the above speculations, whatever use they may be.

³⁴ Chalmers prefers "psychon" (see Chalmers 2010, 137 f.34), but given his qualms about the "psyche" part of "panpsychism," I'd think "qualion" would be the better choice.

³⁵ Chalmers 2010, 136.

³⁶ Ibid.