

The Radical Wing of Consciousness Studies: Idealism, Panpsychism and Emergentism

1 Why Consider Radical Approaches?

There is always a legitimate philosophical interest in the history of significant doctrines and there is no doubt that all of idealism, panpsychism and emergentism have illustrious pasts. They have been championed by very heavy weight thinkers; no history of philosophy could ignore them. But unlike topics that have, as we say, purely historical interest (for example, Aristotle's views on spontaneous generation) the problem of consciousness remains the subject of intense investigation and despite staggering advances in the scientific study of the brain remains fundamentally unsolved. Why is that? The answer lies in a certain understanding of the physical and the roadblock this throws up when we try to integrate subjective experience into a world whose nature is restricted to that conception of the physical. The modern locus of this concern is Thomas Nagel's (1974) famous reflection on our inability to get a grip on the subjective nature of non-human consciousness despite the openness to investigation of the objective world specified in our physical theories¹.

This way of problematizing consciousness shows that it can be understood in quite simple terms: not 'self-consciousness' or 'transcendental subjectivity', or awareness of the self as a subject, or awareness of one's own mental states, or the ability to conceptualize one's own mental states as such. Consciousness is simply sentience, or the way things are present to the mind (abstracting from the question of whether anything exists which matches what is present). So as I am thinking of it, there should be no difficulty about wondering whether bees, for example, are conscious (which I'm pretty sure they are).

The worry is hardly new. The mismatch between the nature of the physical as revealed by science and the subjective nature of consciousness was frequently pointed out in the 19th century. A well known but still resonant remark of Thomas Huxley's holds that '...how it is that any thing so remarkable as a state of consciousness comes about as the result of irritating nervous tissue, is just as unaccountable as the appearance of the Djin when Aladdin rubbed his lamp' (1866, p. 210). The physicist John Tyndall is more blunt: 'the passage from the physics of the brain to the corresponding facts of consciousness is inconceivable' (1879, v. 2, pp. 86-7)².

If we think that advances in physics and the sciences of the brain have erased this worry we will be disappointed. Nothing that modern physicalist philosophers have to say about how consciousness arises through 'nervous irritation' could not equally have been adduced to defend a hypothetical mechanistic theory of consciousness advanced in, say, 1875. Of course, there are now quantum theories of consciousness and various 'information' based

accounts which were unthinkable in the 19th century. And we have uncovered a host of brain mechanisms undreamt of before the 20th, sometimes even the 21st, century. But the philosophical arguments linking these to the nature of consciousness do not essentially depend on any scientific advances. Instead, new accounts of consciousness either lead towards one of our radical options, as in the Penrose-Hameroff theory (Hameroff and Penrose 1996) or Tononi's Integrated Information Theory (Tononi 2012) which tend towards panpsychism or, much more commonly, they endorse the hope for a standard emergentist account. For example, in recent work on a 'Semantic Pointer' theory of consciousness (Thagard and Stewart 2014), the qualitative aspect of consciousness is regarded as an emergent property but it is added that 'there is nothing mysterious about emergent properties' which 'result from the interactions of the parts' (p. 78). These authors offer no account of how consciousness could result from the interactions of, ultimately, mass, spin and charge. One might satirize the background physicalist attitude as: 'I don't know how matter implements consciousness but I am a physicalist for other reasons. It somehow works. You can't prove I am wrong'.

That last point is true. But what someone who is not already committed to physicalism needs is an intelligible account of how consciousness is a purely physical phenomenon, just as we have an intelligible outline of how, for example, the liquidity of water is purely physical even though liquidity is not a property found within fundamental physics. Such an identity might be regarded as inexplicable but harmlessly so. Even though it was a surprising astronomical discovery, there is no question of why, or how it could be that Hesperus is identical to Phosphorus (see Block and Stalnaker 1999). This is wrong for at least two reasons. First, suppose that, to all appearances, Hesperus had a property which Phosphorus should, by its scientifically given nature, lack. This is the situation with consciousness and the physicalist thus owes an account of how subjectivity attaches to a physical nature which is, in its basic form, entirely devoid of it. Second, the brain is a complicated organ with a multitude of parts. If consciousness is not a fundamental physical feature we need a story of how it emerges from the interactivity of the brain's purely physical constituents, whether or not the final complex state is *identical* to a conscious state, just as we need (and to a great extent have) an account of how it is that water is liquid given the entirely non-liquid nature of its constituents and their interactions.

The famous anti-physicalist arguments all stem from considerations that highlight the disconnect between the received understanding of 'the physical' and our direct acquaintance with the subjective aspect of the world revealed in consciousness. These arguments are so well known that they need not be repeated here³. Granted the intuitive difficulty of understanding consciousness as a purely physical phenomenon, could we deny that we have any direct knowledge of consciousness as such? Could we be wrong about the very *existence* of consciousness? Obviously we could be wrong about many things connected to our states of consciousness, but we cannot be mistaken about the existence of an immediately available source of information present to the mind. Consider your belief that something exists or that something is happening right now. As Descartes famously noted, this proposition is in a different category from most quotidian knowledge. It is in the category of things that you *could not* be wrong about. So there must be some source of information that vouchsafes your unassailable claim that something is happening. This source is the 'present to mind' we call consciousness. It is real, but how it could be or arise from an entirely un-present physical reality is a complete mystery.

The problem of consciousness can thus be summed up in a simple inconsistent triad:

1. Fundamental reality is entirely un-present.
2. There is presence.
3. There is no way to generate presence from the un-present.

Premise 2 is not negotiable. The radical approaches to the problem of consciousness which this paper addresses stem from denying either Premise 1 or Premise 3⁴.

2 Idealism

Idealism is the view that consciousness (or the conscious mind as the entity which has consciousness) is a fundamental feature of reality (denying Premise 1 of the triad). Idealism goes further by asserting that consciousness (or the minds which support it) is all there is to reality. Historical idealism is a famous and well known doctrine, championed in one form or another by Leibniz, Berkeley, Kant, Hegel (and a host of associated German philosophers), Mill, Bradley (and a host of associated British philosophers), not to mention serious proponents beyond the Western philosophical tradition. The history of idealism is necessarily convoluted and complex and many variants can be discerned (see Guyer and Horstmann 2015). Idealism still retains some defenders and may be seeing something of a resurgence of philosophical interest (see e.g. Sprigge 1983, Foster 2008, Pelczar 2015, Chalmers *ming*). I have not the space nor the expertise to survey this history but rather want to situate idealism in the modern debates about consciousness.

Leaving aside suspect epistemological motivations⁵, what would lead one to endorse idealism? It might be natural to consider that if the physical world has no place for consciousness, perhaps instead the realm of consciousness can assimilate the physical. It is a simple exercise for budding philosophers to think of ways that identical experiences can be produced by many different possible ‘underlying’ situations (the world, dreams, the matrix, the evil genius). Perhaps what this suggests is that what we call the physical world, the world we experience in everyday life, has its core being in the realm of experience itself rather than some putative background which can vary independent of experience. Following John Foster (2008), let us define ‘physical realism’ as the view that the physical world is (1) independent of consciousness and (2) fundamental or not reducible to anything non-physical. This is evidently a way of stating some of the core theses of physicalism which would typically add that the basic nature of the physical is exhaustively revealed by the science of physics and, crucially, that there is nothing ‘over and above’ the physical. That is to say: once the fundamental physical features of the world – entities, properties and the laws relating them – are put into place, everything else in the world is logically necessitated⁶.

Foster argued that physical realism could not support what he called the ‘empirical immanence’ of the world we experience. Roughly speaking, this means that physical realism does not support a view of the world ‘which allows it to be the world which our ordinary physical beliefs are about’ (Foster 2008, p. 164). To support this claim, consider two worlds one of whose physical underpinning is in accord with perception and another in which two regions of physical space are exchanged with instantaneous, video-game like, transfer from

the boundaries of the exchanged regions. There is no perceptible difference between the worlds (see Foster 2008, pp. 125 ff.) but in the underlying space Oxford is in a region east of Cambridge. Such a world would, of course, violate physical laws as we understand them but that is irrelevant to Foster's point. His claim is that in the second world reality would correspond not to the bizarre underlying state but rather to our standard conception of locations and paths of travel. Oxford would really be west of Cambridge. In general, reality would be correctly aligned with experience, not the putative underlying reality. As Foster says:

The physical world, to qualify as *the* physical world (as the world that forms the target of our ordinary physical beliefs) has to be *our* world, and it can only be our world in the relevant sense, if it is ours *empirically* – if it is a world that is, as we might put it, *empirically immanent* (p. 138).

There is something right about this thought. The world which science uncovers has got to match up with the world we experience, not the other way around. Even if the world as physics reveals it is mighty strange, in the end the scientific conception answers to our experience. But surely this only shows that there must be an intelligible route from what physical science reveals to what Wilfrid Sellars called the 'manifest image' – the world as we experience it. This does not seem to require that the world be *constituted* by experience. But Foster regards his thought experiment (along with considerable argumentation) as showing that it is experience and its organization which is metaphysically fundamental; experience itself is what 'ultimately determine[s] what physically obtains' (p. 191).

Idealism does not then deny that the physical world exists. It lays out the metaphysical ground for this world which turns out to be ultimately experiential. This means there will always be two ways of thinking about the physical world and its inhabitants. One is from the point of view of the metaphysical ground which sustains the physical world: experience. The other is the 'internal' viewpoint from within the physical world itself (cf. Foster 2008: 183 ff.). A number of traditional objections can be tackled in this framework. For example, one must distinguish metaphysical from physical time. The metaphysical basis for physical time is the world-suggestive system of experience. But within physical time itself, consciousness comes after the Big Bang. Connections between neural states and states of consciousness are similarly a feature of the physical world's causal structure, even as that entire world constitutively depends on experience. The unity of the physical world is also explicable within this framework, roughly along Leibnizian lines. The experiential metaphysical foundation comprises many minds whose totality of different viewpoints underpins a single physical world by joint concordance and consilience. Sometimes idealists are supposed to have particular difficulty with the problem of other minds. But since mind is constitutive of the world for idealism, the only problem is about the plurality of minds and the mere refractoriness of the world we all experience would seem to offer a ground for believing in many minds. These minds are then assigned to appropriate physical bodies in standard ways from within the physical worldview.

All these objections, however, point to a central issue. For Foster it is the world-suggestiveness of the system of experience which metaphysically underpins the existence of the physical world⁷. But, as he recognized, this leaves open the question of what controls or generates the world-suggestive system of experience. The physicalist can here almost agree

with Foster, can grant that in a way the system of experience provides a mandatory outline of a world which must be accepted as metaphysically primary just in the sense that any full conception of the world must be in accord with that outline. However, the physicalist account of the generator of world-suggestiveness will be the familiar one: the arrangement of the basic physical entities along with the laws which govern them (e.g. quantum field theory for the ‘small’ and general relativity for the ‘large’). This we might call the ‘proud’ Kantian position which asserts that physics has revealed to us the nature of the thing-in-itself ‘beneath’ and generating the empirically accessible and rightfully called ‘real world’.

Unfortunately, Proud Kantianism carries a terrible load of perpetual failure, leading to the so-called pessimistic induction (see Laudan 1981). The history of science, if taken as a history of attempted revelation of the ultimate nature of reality, shows us that these accounts are always eventually falsified. One of the worlds greatest physicists, Maxwell, wrote that ‘there can be no doubt’ about the existence of the ‘luminiferous aether’ whose properties ‘have been found to be precisely those required to explain electromagnetic phenomena’ (1878). The almost equally famous chemist Antoine Lavoisier wrote that the phenomena of heat ‘are the result of a real, material substance, of a very subtile fluid, that insinuates itself throughout the molecules of all bodies and pushes them apart’ (Lavoisier 1790, p. 5). These apparently solid results of physical science, vouchsafed by such eminences, turned out to be not only false but deeply false, at least according to *our* lights. There is no reason however to think that finally, *now*, we have got to the ‘real truth’. Science is manifestly still incomplete and our grandest and deepest theories, the best candidates for a description of fundamental reality, are not merely disconnected, they are jointly inconsistent. And nowadays quantum field theory itself is regarded as merely empirically adequate within a delimited sector of nature: ‘we have learned in recent years to think of our successful quantum field theories. . . as “effective field theories”, low-energy approximations to a deeper theory that might not even be a field theory’ (Weinberg 1995, p. xxi). It is not likely that successor theories, if there will be any that do better empirically, will represent ultimate reality as being anything like our current bizarre system of quantum fields sitting in a classical spacetime.

This history of epistemic woe is compounded by a more general and philosophically significant feature of science, which is that it reveals only the structural or relational properties of the world. The structuralist insight goes back a good way in philosophy, at least to Poincaré (e.g. 1905), Russell (e.g. 1927b) and Eddington (e.g. 1928)⁸. Bertrand Russell lamented that ‘physics is mathematical not because we know so much about the physical world, but because we know so little: it is only its mathematical properties that we can discover. For the rest, our knowledge is negative’ (1927a, p. 125). Arthur Eddington concurred: ‘physical science consists of purely structural knowledge, so that we know only the structure of the universe which it describes’ (1939, p. 142). We can think of structural features in terms of dispositional properties. Science maps out a network of dispositions, ultimately of the kind that tell us that in such-and-such a configuration so-and-so will happen.

What, for example, is an electron? Leaving aside its ‘true’ nature as mere probability excitation of a certain matter-field, the electron is an entity of mass $9.10938356 \times 10^{-31}$ kg, charge $1.60217662 \times 10^{-19}$ coulombs and intrinsic angular momentum of $\pm \hbar/2$. But mass is defined as the ‘resistance’ a body has to acceleration when a given force is applied; electric charge is that property in virtue of which a body which has it is disposed to move in a certain way in an electromagnetic field; angular momentum is defined directly in terms of

position, motion and mass. All the properties which physics deals with are dispositional in this way, and the dispositions are all ultimately encountered and measured in Foster's immanent empirical world.

This is nicely in line with what is often called 'Kantian Humility' (see Lewis 2009; Langton 1998, 2004) which says that although we know a lot about the mathematical structure of the system of dispositions which define the fundamental physical properties sciences deals with, we know nothing about the intrinsic nature of whatever it is that the world is made of. Don't let the everyday familiarity of garden variety physical objects mislead you. They resolve into mystery. The odyssey of physics from the mechanical world view of discrete objects interacting by contact to the system of quantum fields, rather than particles, possessed of non-local holistic features is the external image of this mystery. The world is not made of miniature Lego pieces or tiny bouncing billiard balls. It is evidently more akin to David Bohm's characterization in which the 'entire universe must, on a very accurate level, be regarded as a single indivisible unit in which separate parts appear as idealizations permissible only on a classical level of accuracy of description' (Bohm 1951, p. 167). It seems likely that space and time themselves will not appear as fundamental in the presumed successor theory, which underlines that we have absolutely no positive conception of the basic nature of the physical world.

The retreat to a humble structuralism is hard to avoid. The question of the background which generates the world-suggestiveness of our experiences remains open. Foster's own answer is to make the rather giant leap to a theistically grounded idealism. The *minimal* answer would be that the background, as intrinsically characterized, is restricted to generating the dispositions which are revealed in fundamental physics, and no more. The thought is that once these dispositions in the empirical realm are set up all other phenomena we could ever encounter are metaphysically determined by them. This entails that all properties other than those referred to in fundamental physics are purely relational or structural properties. In the philosophy of mind, for example, this would essentially amount to an endorsement of a broadly understood functionalism for all mental properties. This broad understanding leaves open whether the proper functional account is computational, causal role based or bio-functional. The bottom line is just that whatever mental properties are in detail, on this view they can be completely characterized in relational or structural terms with no residual appeal to intrinsic properties required beyond those grounding the dispositions of physics.

Of course, the difficulty with this approach is that it leaves the problem of consciousness in exactly the same place we started. The primary challenge that consciousness intuitively presents is precisely that there seems to be an intrinsic residue left over after we have tried to characterize it in purely structural or relational terms. The venerable inverted color-spectrum thought experiment is clearly supposed to illustrate this unavoidable lacuna. Such qualities do not reduce without remainder to their place in some abstractly definable structure.

In fact, we can prove this. Let us suppose a species, perhaps not so different from our own, with a perfectly symmetrical experiential color space⁹. For reductio, suppose that the abstract structure of these creatures' color quality space is an exhaustive representation of the phenomenology associated with their color vision. Then we can immediately adapt an argument of Hilbert and Kalderon (2000). If the quality space is perfectly symmetrical then any wholesale transformation, such as inversion (or even small shifts), will make no difference to the overall relational structure. Then by our assumption there can be no difference in

experiential quality due to the shift, which is absurd since one region of the space maps to, say, the reddish quality and another to the green. The situation would be akin to having a sphere with one hemisphere painted red and the other green but where it is claimed that the features of every point on the sphere are exhaustively represented by the relational properties of that point with respect to all other points on the sphere. Since every point stands in exactly the same such relation to its fellows, rotating the sphere should not change anything yet one such sphere set beside a rotated one would obviously be different.

Opponents of the idea that experiential qualities outstrip relational structure, such as Hilbert and Kalderon, will read the argument the other way: if the relational structure is an exhaustive representation of phenomenology, then a perfectly symmetrical quality space will be qualitatively uniform and inversion will be impossible. Each side will accuse the other of begging the question.

But without a preexisting commitment to physicalism, the view that in consciousness there are intrinsic features present to the mind is the natural option. However, while this may cast doubt on the minimal answer it does not force acceptance of idealism. Two alternative responses that respect the problem of consciousness are panpsychism and some form of emergentism.

3 Panpsychism

A picture of the world grounded on physics may not fund a satisfactory answer to the problem of consciousness. But it is a vastly intricate and staggeringly comprehensive view of the natural world, in which an awful lot of what it suggests is going on has little or nothing to do with consciousness. One way to acknowledge the gravity of the problem of consciousness while respecting the advances of physical science is to adopt panpsychism.

Panpsychism is the view that some form of consciousness is a fundamental and ubiquitous feature of nature. But unlike idealism, panpsychism denies that consciousness exhausts fundamental reality. To the modern sensibility, steeped in materialism and sometimes an unfortunately scientific cultural background, panpsychism is, as we used to say, hard to get your head around. Like idealism, panpsychism is a venerable doctrine with philosophically important defenders down through the 20th century (see Skrbina 2005) which fell out of favor with the general rise of materialism. It has enjoyed a remarkable renaissance over the last twenty years or so, especially after David Chalmers, without endorsing it, explored panpsychism as a possible response to his famous ‘hard problem’ of consciousness (see Chalmers 1996, ch. 8 and discussion in Seager 1995)¹⁰.

There is a straightforward argument in favor of panpsychism which was nicely codified by Thomas Nagel (1979) and which in basic form closely resembles the inconsistent triad above:

1. Consciousness is either an emergent feature or a fundamental feature.
2. Consciousness is not an emergent feature.
3. Therefore, consciousness is a fundamental feature.

Of course, this does not get us quite all the way to panpsychism since fundamentality does not entail ubiquity. However, if we maintain our respect for physical science we would expect that the fundamental psychic feature will be coupled to some fundamental physical feature and will thus be more or less spread out across the entire universe. For example, if – as current theory has it – the world is made of a small number of interacting quantum fields which pervade all of spacetime then the panpsychist should hold that some or all of these fields partake in some measure a quantum of consciousness.

Panpsychism is hard to believe, or worse. John Searle calls it ‘absurd’ and claims that the view ‘does not get up to the level of being false’ (2013); Colin McGinn labels panpsychism as ‘ludicrous’ (McGinn 1999, p. 97). Neither critic seems to have really granted much sympathetic thought to the doctrine however. But they illustrate some common misconceptions, which McGinn presents as a dilemma for panpsychism: either it is wildly implausible or trivial (McGinn 1999, pp. 95 ff).

Panpsychism is absurd, says the critic, because it claims that rocks are conscious beings. This is somewhat like the claim that since electric charge is a fundamental feature of the world everything must be charged and have more or less the same charge. That would indeed be absurd. Similarly, the panpsychist should hold that the relation between the ‘elementary units’ of consciousness and more complex forms is not identity¹¹.

Now the charge will be vacuity. According to this complaint, the panpsychist is only saying that matter possesses an indefinable *something* which ‘grounds’ consciousness, a claim shared with orthodox physicalism. This complaint misses the mark if we are able to point to some common feature of consciousness: what I called ‘presence’ or the ‘what it is likeness’ of experience that constitutes the subjective aspect of nature¹². The problem of consciousness suggests this undeniably real aspect of nature is missing from the standard physicalist picture. Subjectivity in this sense does not call for complexity or an introspecting sophisticated subject. But it is far from a mere empty name for what explains consciousness without consciousness.

It is also objected that the simple physical entities of the world exhibit no sign of possessing consciousness. There is just no empirical evidence in favor of panpsychism. Now, there is question of what counts as evidence here. Exactly what kind of behavior shows that something has a subjective aspect? Notoriously in philosophy, it is possible for something to act conscious without being conscious and for something to be conscious without being able to act conscious. Consider another analogy with the physical case. What empirical evidence is there that individual electrons gravitate? They give, one by one, absolutely no detectable trace of a gravitational field. Why expect the elementary units of consciousness to give signs of consciousness discernible to us? We fully believe that electrons gravitate because of their place in our overall theoretical scheme. Similarly, the panpsychist assigns to fundamental entities a low-level or ‘weak’ consciousness, presumably of a form of unimaginable simplicity and self-opacity.

There is a kind of reverse of this negative argument in favor of panpsychism. Complex consciousness exists, and, in the words of William Kingdon Clifford, since ‘we cannot suppose that so enormous a jump from one creature to another should have occurred at any point in the process of evolution as the introduction of a fact entirely different and absolutely separate from the physical fact’ (Clifford 1886, p. 266), consciousness must be presumed to exist at the fundamental level of reality.

Of course, the set of fundamental features which physics assigns is set via experimentation and theorizing, and mental features play no part in that system¹³. Does that mean that consciousness must be epiphenomenal? That is a large philosophical question. If all the motion which matter undergoes is fully explained, or at least determined, by the fundamental interactions then there is *never* any need to appeal to consciousness to explain any behavior, or its determination at least, no less of human beings than of electrons.

But this line of thought ignores a critical feature of the history of physics. At its inception, consciousness was, so to speak, self-consciously excluded from consideration. The experiential side of nature was quarantined from scientific investigation since it formed a recalcitrant realm resistant to mathematization (because not purely structural). In the famous words of Galileo, as he began the development of mathematical physics:

... tastes, odors, colors, and so on are no more than mere names so far as the object in which we place them is concerned, and... they reside only in the consciousness. Hence if the living creature were removed all these qualities would be wiped away and annihilated (Galilei 1957, p. 274).

Physics henceforth concerned itself with material motion and its causes. Physics is built, so to speak, to describe and explain a world without consciousness. One might say that physics provides the recipe for building a world of philosophical zombies, creatures whose bodies, and the particles which make up their bodies, move exactly as we do but who entirely lack the subjective aspect which is the core of consciousness. Within such a picture of the world, subjectivity has got to appear as something which has no effect on the motion of matter and, essentially, the motion of matter is all there is.

One intriguing reply to the charge of epiphenomenalism begins by recalling the point that science is restricted to revealing the structure of the world but not its intrinsic nature. If we then note that structure requires something non-structural in order to make the transition from mere abstraction to concrete existence, presence, the core of subjectivity common to all consciousness, can be postulated as the intrinsic ground of the structural features outlined by physical science¹⁴. One of the main historical advocates of such a view was Bertrand Russell and in its various forms the view has become known as Russellian Monism. It too has seen a remarkable renaissance of interest as the problem of consciousness refuses to release its bite (see e.g. Alter and Nagasawa 2015).

Panpsychist Russellian Monism holds that consciousness, in its most basic form of pure presence or bare subjectivity, is the intrinsic nature which ‘grounds’ or makes concrete the system of relationally defined structure discerned by physics. By and large, we have no access to this level of reality except for a limited acquaintance with it in our own experience which is why Russell once wrote that we really ever only perceive our own brains (e.g. 1927b, p. 383)¹⁵. A perceptive interpreter of Russell, Michael Lockwood, explains the point as ‘consciousness... provides a kind of “window” on to our brains’ thereby revealing ‘some at least of the intrinsic qualities of the states and processes which go to make up the material world’ (1989, p. 159). This view undercuts the charge of epiphenomenalism by giving consciousness a role in the metaphysical grounding of causal powers, while leaving the relational structure of causation entirely within the realm of physical science.

Note that this view is quite distinct from idealism. Physical objects are not sequences, or potential sequences, of experiences. They have a mind independent reality in the ordinary

sense of this phrase. Stars, galaxies and planets did really exist before any consciousness which could experience them came into being.

However, it is possible to begin with a panpsychist Russellian Monism and infer from it, along with some additional premises, that idealism must be the ultimate consequence. One can interpret Leibniz as taking this inferential path. On this, perhaps somewhat forced, interpretation Leibniz begins by noting that since matter is entirely passive and infinitely divisible there must be some ‘active’ and ‘atomic’ features lurking within it. These intrinsic aspects of nature are what distinguish organisms (as opposed to mere conglomerates or aggregates) and they are expressed in perceptual consciousness¹⁶. From there, it is not a huge leap to the idealist conclusion that the material world is itself but a construct of the system of organismic perceptions with the organisms replaced by his famous monads.

Timothy Sprigge also traveled from panpsychism to idealism, but the argument is quite different, essentially depending on his view that only a form of holistic absolute idealism could accommodate the genuine relatedness of conscious beings within a single universe. Only by being literal parts of a cosmic consciousness could minds ever commune (see 2010, pp. 209-11).

So, although it is not unnatural to go from panpsychism to idealism, it is an intellectual move that demands substantial additional assumptions.

A natural question to ask within the context of panpsychist Russellian Monism is just how much humility is advisable. Granting that in consciousness we catch a glimpse of the intrinsic bedrock of the world, are there further, unknown and unknowable intrinsic natures lurking behind our structural understanding of the physical world? Such there may be, but it’s a good policy not to add unnecessary hypotheses to one’s theories. An intrinsic nature is needed to concretize otherwise abstract structure. We have one already to hand: presence or basic subjectivity. In the absence of positive reasons to posit additional and distinct intrinsic natures, we should refrain from such excesses of theoretical zeal.

In the face of this general scheme, what is perhaps the most serious objection to panpsychism unavoidably looms and it leads to our final major subject.

4 Emergence

I have emphasized that panpsychism does not ascribe consciousness as we know it to everything. In fact, it is compatible with panpsychism that very few physical entities are in any way conscious at all. This is because most entities, and all the ordinary objects we encounter in experience, are not fundamental and are composite. To use another physical analogy, although the fundamental entities which physics posits as the constituents of familiar composites (electrons, quarks) are electrically charged, the composites themselves generally lack charge. Mass is another feature possessed of the building blocks of material composites, but in this case, it steadily, though not purely additively, increases as larger, more complex, bodies are formed. Evidently, there is some system of relatedness which governs how the fundamental features combine in composite entities. Needless to say, throughout nature there are much more complex systems of relatedness leading to ever more complex properties increasingly remote from, though ultimately based upon, the properties deployed in fundamental physics.

Since panpsychism introduces an elementary form of consciousness (presence or bare subjectivity) which is associated with elementary physical entities, and since it wants to allow for a distinction between conscious and non-conscious composites, panpsychism too faces the challenge of explicating how ‘mental chemistry’ works, or is even possible. This has become known as the ‘combination problem’ (Seager 1995)¹⁷.

The general problem which both the deceptively familiar physical and contentious mentalistic cases point to is that of emergence. In very broad terms, a property of X is emergent if none of X’s constituents possess it. Liquidity is an emergent feature of water; neither oxygen nor hydrogen atoms (let alone their constituent quarks and electrons) have the property of being liquid. Our world is awash in emergence since almost no macroscopic properties of interest are shared by the fundamental entities of physics.

It is impossible here to give a comprehensive survey of the vast literature, both scientific and philosophical, on emergence (see O’Connor and Wong 2015; Gillett 2016). I will only describe a key distinction between two forms of emergence and apply this distinction to the problem of consciousness. The distinction is necessary to understand why emergence belongs within the ‘radical wing’ of consciousness studies.

The idea of ‘mental chemistry’ as an explicit system describing the emergence of complex states of consciousness goes back to John Stuart Mill. His views on emergence are very interesting, prefiguring the more sophisticated and worked out accounts of the so-called British Emergentists (see Morgan 1923; Alexander 1920; Broad 1925; for a general discussion see McLaughlin 1992). The essence of this form of emergence is that it denies that the emergent properties of X are determined solely by the properties of X’s constituents and the laws which govern their interactions. That is, in order for the emergent property to appear, there must be ‘extra’ laws of nature which specifically govern ontological emergence.

A useful way to think about this is in terms of computer simulations. We can imagine simulating parts of the world in terms of fundamental physics. Emergence of the kind we are considering predicts that the simulation will fail to duplicate real world behavior because it neglects the extra, cross level, laws. We can call this conception ‘radical emergence’ to contrast it with the uncontroversial and very widespread ‘conservative emergence’.

The linchpin and supposedly obvious example which Mill (and all the British Emergentists) used was that of chemistry. They regarded it as evident that chemical properties were not determined by, and *a fortiori* could not be explained by, the physical properties of the elementary constituents of a chemical substance. Taking the case of chemistry as given, they then advanced the view that a host of properties ‘above’ the chemical were also radically emergent, especially including the case of consciousness.

After about 1925, the success of quantum mechanics in explaining chemical properties largely undercut any claim that radical emergence was commonplace and made it unlikely that it existed at all. Although the exact relation between physics and chemistry remains controversial, it seems that Dirac expressed the basic situation correctly, if somewhat hyperbolically, when he wrote that the ‘underlying physical laws necessary for the mathematical theory of a large part of physics and the whole of chemistry are thus completely known. . .’ (Dirac 1929, p. 714). Note that there is no claim here that chemistry is reducible in the sense that there is a tractable translation and hence elimination of chemistry in favor of physics, nor that there is no need for distinctive chemical concepts and theories to aid explanation and prediction. Rather the claim is that the entities of physics and the laws which govern

them at the fundamental physical level suffice to strictly determine the chemical features of the world.

Although I think we are lucky to live in a world that supports many semi-autonomous levels of complexity, it is not deeply surprising to find chemistry depending upon physics insofar as they both reside within the structural domain. There is no metaphysical barrier blocking determination of the complex structural patterns that chemistry picks out by the more basic structural patterns fixed on by fundamental physics. At the same time, the conservation laws militate against radical emergence. For example, if a radically emergent property is to be causally efficacious it will have to in some way alter the motion of physical matter. This requires some flux of energy which would appear to come from nowhere and thus *prima facie* violate the conservation of energy. At a high level of generality, this is why we should expect that all the structure in the world should be determined by the fundamental physical structures discovered by physics¹⁸.

However, if consciousness cannot be exhaustively characterized in purely structural terms, then this does put up a kind of metaphysical barrier between it and what physics can describe. The panpsychist thus sees basic consciousness or bare subjectivity as ontologically fundamental in its own right. It is also evident that there is complex consciousness which has its own relational structure, in terms of which it can be largely but not exhaustively described (as e.g. in the case of color experience discussed above). The combination problem for panpsychism is to explain, or even make plausible, how complex consciousness can conservatively emerge from the postulated simpler forms.

Here we can note another misplaced complaint against panpsychism which is often presented as a dilemma. Since there are complex states of consciousness, panpsychism must either assign them as the basic form of consciousness ubiquitous in nature or develop some account of how the complex states emerge from some much simpler forms of consciousness. If the former, panpsychism becomes even more implausible, supposing that electrons for example enjoy a rich interior life. If the latter, then panpsychism, embracing emergence, should be replaced with the orthodox view that consciousness emerges from the physical. We can see that panpsychism should embrace emergence. It should embrace conservative emergence. The emergence of consciousness from the purely structural features outlined in physics would, however, be a very strange form of radical emergence, of doubtful coherence insofar as it holds that intrinsics emerge from the relational. On the other hand, if consciousness is, so to speak, already in play then we can hope for an account of mental chemistry which appeals to a more plausible conservative emergence, the general existence of which everyone should accept. But this approach only works if the combination problem can be solved.

It is impossible here to canvas all the efforts to solve the combination problem, and the criticisms of them, which have been put forward (see the collections referred to above in note 11). Let me conclude here with some basic approaches to the problem. One sort of solution is ‘constitutive’ in the sense that the elements of basic consciousness are synchronically present in the resultant state of complex consciousness, perhaps in some way blended or ‘added’ (see Coleman 2012, Roelofs 2014). Our own experience of the unity of consciousness already hints that diverse simpler conscious states can unite into a more complex form in an intelligible way.

The second approach sees mental chemistry as a kind of ‘fusion’ of the elementary states

into a new resultant in which the original states are eliminated (see Mørch 2014, Seager 2016). This is not a retreat to radical emergence if the fusion operation is a feature of the laws which govern these elementary states. One analogy is that of the classical black hole, in which the properties of the constituents are ‘erased’ and all that remains are the total mass, charge and angular momentum. This obliteration is the consequence of underlying laws of nature. Another is that of quantum entanglement in which new systems irreducible to their parts are formed under certain conditions, again, as a consequence of the basic laws governing the basic entities of quantum physics¹⁹.

Yet another approach takes the combination problem to be looking at things backwards. On this view, sometimes called ‘cosmopsychism’ the fundamental entity is the entire world regarded as metaphysically primary, and the problem is then one of de-combining cosmic consciousness into individual minds of the sort we are introspectively familiar with (see Goff 2017; Miller 2017).

Radical emergentist options remain open as well. In light of the distinction between structural and intrinsic features, an emergentist could hold that there are non-mentalistic intrinsic features which ground the relational structures which science investigates. Then, upon attaining certain configurations, these intrinsic features have the power to generate wholly novel properties, those of consciousness. Although a logical possibility, both parsimony and theoretical elegance would suggest that a conservatively emergentist panpsychism is preferable.

Of course, those of a standard physicalist persuasion will hold out hope for a conservative emergentist account of consciousness based solely upon the structural features of the world as revealed by fundamental physics. One should ‘never say never’, but our growing knowledge of the brain and its intimate connections to states of consciousness, gives no indication of a theoretical apparatus which makes subjective consciousness an intelligible product of basic physical processes. The investigation of radical approaches remains both interesting and essential to progress in our search to understand consciousness and its place in nature.

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Notes

¹This specific worry was ‘in the air’ well before ‘What Is It Like to Be a Bat?’ was published, recognized by philosophers such as Brian Farrell (1950), Herbert Feigl (1958), Timothy Sprigge (1971). Daniel Stoljar (2016) reminds us that Wittgenstein – writing in English – used the ‘what it is like’ expression in his *Remarks on the Philosophy of Psychology* (1980) written around 1946. Wittgenstein pretty directly expresses the worry when he writes in *Philosophical Investigations* (2010, § 412) of the ‘feeling of an unbridgeable gulf between consciousness and brain-process. . . This idea of a difference in kind is accompanied by slight giddiness’.

²This sentiment was very common in the late 19th century. See in addition to the above Shadworth Hodgson (1870), Charles Strong (1903), George Stout (1899) and there are many others.

³There are three major strands of argumentation, conveniently associated with Nagel (1974), Jackson (1982) and the triumvirate of Descartes (1985, Meditation 6), Kripke (1980, Lecture 3) and Chalmers (1996, especially Ch. 4).

⁴All the non-radical approaches to the problem of consciousness proceed by denying premise 3, but as we shall see there are both radical and non-radical ways to articulate this denial.

⁵Without doubt, one of the perennial motivations for idealism has been epistemological. The fear of skepticism has provided an obvious reason to endorse a vision of reality in which experience itself is the bedrock. I don’t think that this motivation is especially compelling however. Why not go all the way to a solipsism of the present moment if one wishes to secure an indubitable system of beliefs? Or, at least, what stops the slide towards this lonely and stultifying endpoint? Plus, I think it is bad epistemology that demands all of our beliefs be unassailable. If we are epistemically responsible (admittedly, what that amounts to in detail is hard to spell out) then we can retain our beliefs even if they can be imagined to be false in more or less peculiar albeit possible situations.

⁶Perhaps we should also add, which fleshes out further the idea of ‘nothing over and above’, that everything is *constitutively* physical, to avoid the (faint) chance that there are some rogue brute necessities which link, with the modal strength of logical necessity, the physical to some non-physical aspect of nature (see Wilson 2005; the distinction is labeled as that between ‘correlative’ and ‘constitutive’ supervenience in Seager 1991).

⁷There is no claim here that there are experience-level statements of regularity that ‘reduce’ physical object talk to experience talk. That experience is the metaphysical foundation of the physical world does not require that we can step outside that world and generate a theory which refers only to experience and within which all talk of physical objects can be recast. We do live in a world of physical objects, but this world’s empirical immanence means that metaphysical bedrock is experience itself rather than an inscrutable and hidden world of ‘pure physics’. Thus, although much more could be said, I do not think that a phenomenalist idealism such as Foster’s succumbs to the famous anti-phenomenalist arguments in Sellars (1963).

⁸For a guide to the history of this idea see French (2014), ch. 4. A forceful presentation of this line of thought in the context of the problem of consciousness can be found in the work of Galen Strawson (e.g. 2003; 2006).

⁹It is well known that the human color space of hue, saturation and brightness is not symmetrical. For example, there are more discriminable colors between blue and red than between yellow and green even though inversion should take blue into yellow and red into green (see Byrne 2016 for an overview of inversion arguments). The issue here is clearest in the case of a symmetrical quality space but it does not really matter since there are (rather trivial) mathematical ways to generate correspondence between asymmetrical spaces that preserve reactive dispositions by widening the scope of allowable transformations (see e.g. Hoffman 2006).

¹⁰Evidence of the renewed interest can be found in dedicated publications, e.g. Rosenberg 2004; Freeman 2006; Skrbina 2009; Blamauer 2011; Brüntrup and Jaskolla (2016); Seager (ming).

¹¹‘Elementary units’ is just a term of art standing for whatever the minimal aspect of consciousness might be. There is no implication that consciousness comes in atom like parts.

¹²Of course, the more ‘watered down’ one’s idea of the pan-X ground of consciousness the more on-target the charge of vacuity appears (see Chalmers 2015).

¹³This is actually a controversial claim. Some interpretations of quantum mechanics hold that the consciousness of observers is a fundamental feature of reality required to make measurements of quantum systems determinate (see Wigner 1962, London and Bauer 1983).

¹⁴It is possible to deny this ‘argument from concreteness’ (see e.g. Ladyman et al. 2007) but then some account of ‘concrete structure’ is required which makes mathematics, some of it but not all of it, ‘real’. One must do this carefully to avoid making all possible structures trivially instantiated because of what is known as Newman’s Problem (1928): structure is abstractly definable in terms of ordered sets which exist as soon as their members do. Structure unconstrained by some intrinsic reality is too easy to come by.

¹⁵It’s important to point out that while Russellian Monism is nicely adaptable to panpsychism, Russell himself was not a panpsychist. Following William James he endorsed Neutral Monism, in which the most fundamental features of reality are neither mental nor physical. These latter are constructs from the neutral material (for exploration of Russell’s views see Tully 2003). James’s relation to panpsychism is somewhat murky but it seems that he ends up accepting it (see Cooper 1990).

¹⁶As I would put it; Leibniz himself reserved the term ‘consciousness’ for self-consciousness or awareness of own’s one perceptions.

¹⁷The problem was first advanced against panpsychism by William James (1950, ch. 6). For a host of discussions of the combination problem see Brüntrup and Jaskolla (2016), Seager (ming). For a sustained and deep investigation of the general problem of whether conscious subjects could ‘combine’ see Roelofs (2015).

¹⁸This is not to say that radical emergence lacks contemporary defenders; see e.g. O’Connor (1994); O’Connor and Wong (2005); Silberstein and McGeever (1999).

¹⁹Although developed in an entirely different context, something like the idea of fusion appealed to here is presented in work of Paul Humphreys (1997b; 1997a).

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