

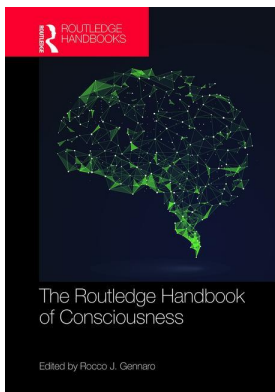
This article was downloaded by: 10.3.97.143

On: 02 Dec 2023

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



## **The Routledge Handbook Of Consciousness**

Rocco J. Gennaro

### **Idealism, Panpsychism, and Emergentism**

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9781315676982-6>

William Seager

**Published online on: 26 Mar 2018**

**How to cite :-** William Seager. 26 Mar 2018, *Idealism, Panpsychism, and Emergentism from: The Routledge Handbook Of Consciousness* Routledge

Accessed on: 02 Dec 2023

<https://www.routledgehandbooks.com/doi/10.4324/9781315676982-6>

**PLEASE SCROLL DOWN FOR DOCUMENT**

Full terms and conditions of use: <https://www.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

# 5

## IDEALISM, PANPSYCHISM, AND EMERGENTISM

### The Radical Wing of Consciousness Studies

*William Seager*

#### 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. But, unlike topics that have purely historical interest (e.g. Aristotle on spontaneous generation), the problem of consciousness remains the subject of intense investigation. Despite staggering advances in the scientific study of the brain, it 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 theories.

Thus 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 that matches what is present). So, 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. Thomas Huxley wrote that, "...how it is that anything 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: 210). John Tyndall was more blunt: "the passage from the physics of the brain to ... consciousness is inconceivable" (1879, v. 2: 86–87).

If we think that advances in physics and the brain sciences 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 1875. Of course, there are novel quantum and 'information' based theories of consciousness. 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 Hameroff and Penrose (1996) or Integrated Information Theory (Tononi 2012), which tend towards panpsychism or, more commonly, 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 claimed that “there is nothing mysterious about emergent properties,” which “result from the interactions of the parts” (78). These authors offer no account of how consciousness could result from the interactions of, ultimately, mass, spin and charge. One might satirize the physicalist attitude as: “I don’t know how matter generates 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 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 how it could be that Hesperus is identical to Phosphorus (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 fundamentally entirely bereft 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.

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 here.<sup>1</sup> Granted the intuitive difficulty of understanding consciousness as a purely physical phenomenon, could we audaciously deny the very *existence* of consciousness? Obviously, we could be wrong about many things connected to our states of consciousness, but not about the existence of an immediately available source of information present to the mind. Consider your belief 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.

Proposition 2 is not negotiable. The radical approaches to the problem of consciousness which this chapter addresses stem from denying either Proposition 1 or Proposition 3.

## 2 Idealism

Idealism is the view that consciousness is a fundamental feature of reality (denying Proposition 1). Idealism goes further by asserting that consciousness is all there is to reality. Historical idealism is a famous 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 complex (see Guyer and Horstmann 2015), it still retains some defenders and may be due for a resurgence of philosophical interest (see e.g. Sprigge 1983; Foster 2008; Pelczar 2015; Chalmers forthcoming). I have not the space nor the expertise to survey this history, but will situate idealism in the modern debates about consciousness.

Leaving aside suspect epistemological motivations,<sup>2</sup> what would lead one to endorse idealism? It is natural to consider that if the physical world has no place for consciousness, then perhaps the realm of consciousness can assimilate the physical. Budding philosophers delight to think of ways that identical experiences can be produced by many different possible ‘underlying’ situations (the world, dreams, the matrix, the evil genius). This may suggest 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 remote 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) 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 are put into place, everything else in the world is logically necessitated.<sup>3</sup>

Foster argued that physical realism could not support what he called the “empirical immanence” of the world we experience. 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: 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 (Foster 2008: 125ff.), but in the underlying space Oxford is in a region east of Cambridge. Such a world would, of course, violate physical laws but that is irrelevant to Foster’s point. His claim is that in that world reality would correspond not to the bizarre underlying state but rather to standard conceptions 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 ... 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*.

(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 the world as we experience it. This does not seem to require that the world be *constituted* by experience. But Foster takes his thought experiment (and considerable argumentation) to show

that experience, and its organization, is metaphysically fundamental; experience itself is what “ultimately determine[s] what physically obtains” (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: 183ff.). 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 that metaphysically underpins the existence of the physical world. 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, and grant that in a way the system of experience provides a mandatory outline of a world which must be accepted as metaphysically primary in the sense that any full conception of the world must be in accord with it. 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 (quantum field theory for the ‘small,’ 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 pessimistic induction (Laudan 1981). The history of science shows us that our current understanding of physical reality is always eventually falsified. 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 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: 5). These apparently solid results of physical science turned out to be not only false but deeply false, at least according to *our* lights. There is no reason to think that finally, *now*, we have got to the ‘real truth.’ Science is manifestly still incomplete and our grandest and deepest theories are not merely disconnected, they are jointly *inconsistent*.

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, at least to Poincaré (1901/1905), Russell (1927b) and Eddington (1928).<sup>4</sup> 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: 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: 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  $9.1 \times 10^{-31}$  kg, charge  $-1.6 \times 10^{-19}$  C and intrinsic angular momentum of  $\pm\hbar/2$ . But mass is defined as the ‘resistance’ a body has to acceleration when a force is applied; electric charge is that property in virtue of which a body 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 dealt with by physics 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 have vast knowledge of the mathematical structure of the system of dispositions which define the fundamental physical properties science deals with, we know nothing about their intrinsic natures. 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 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” (Bohm 1951: 167). The bottom line is 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 was to make a 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. Once these dispositions in the empirical realm are set up then, hopefully, all other phenomena we could ever encounter would then be metaphysically determined. 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 amount to an endorsement of a broadly understood functionalism for all mental properties. Whatever the details, on this view all mental properties can be completely characterized in relational or structural terms with no residual appeal to intrinsic properties 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. Experiential 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, not so different from our own but with a perfectly symmetrical experiential color space.<sup>5</sup> 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 red hemisphere 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.

Oponents 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 (Skrbina 2005) which fell out of favor with the general rise of materialism. It has enjoyed a remarkable renaissance over the last 20 years or so, especially after David Chalmers tentatively explored panpsychism as a possible response to his famous “hard problem” of consciousness (Chalmers 1996, ch. 8; Seager 1995).<sup>6</sup>

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 a fundamental feature or it emerges from the fundamental.
- 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 of consciousness.

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

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. The panpsychist should hold that the relation between the “elementary units” of consciousness and more complex forms is not identity.

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 nature.<sup>7</sup> Bare 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 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, 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 believe that electrons gravitate because of their place in our overall theoretical scheme. Similarly, the panpsychist assigns to fundamental entities a ‘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 it is hard to see how it would leap into existence by some small change in material organization. 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: 266), consciousness must be presumed to exist at the fundamental level of reality.<sup>8</sup>

Of course, the fundamental features of physics are discovered via a system of experimentation and theorizing in which mental features play no part.<sup>9</sup> Does that mean that consciousness – or any other physically non-fundamental aspect of the world – 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 incident in the history of physics. At its inception, consciousness was self-consciously excluded: the experiential side of nature was quarantined from scientific investigation as a recalcitrant realm resistant to mathematization (because not purely structural). In the words of Galileo, at the birth 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 1623/1957: 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. 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 any subjective aspect. 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 that science is restricted to revealing the structure of the world but not its intrinsic nature. Since 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 science.<sup>10</sup> 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 (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. We have no access to this level of reality, except for a limited acquaintance in our own experience, which is why Russell wrote that we really only ever perceive our own brains (1927b: 383).<sup>11</sup> 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: 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.

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 subject.

#### 4 Emergence

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 are not fundamental and are composite. Consider that although the fundamental entities (electrons, quarks) which physics posits as the constituents of familiar composites are electrically charged, the composites themselves generally lack charge. Mass is another feature possessed of these constituents, but in this case, it steadily, though not purely additively, increases as larger bodies are formed. Evidently, there is some system of relatedness that governs how

the fundamental features combine in composite entities. Throughout nature there are intricate systems of relatedness leading to ever more complex properties increasingly remote from, though 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 is the “combination problem” (Seager 1995).<sup>12</sup>

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 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 on emergence, which remains controversial in both science and philosophy (see O’Connor and Wong 2015; Gillett 2016). I will focus on a distinction between two forms of emergence and apply it 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 (1843/1963: ch. 4). His views on emergence prefigure the more sophisticated and worked out accounts of the so-called British Emergentists (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 that 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 a fundamental physics simulation of parts of the world. 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 ‘radical emergence’ to contrast it with the uncontroversial and very widespread ‘conservative emergence,’ by which emergents are fully determined by their submergent domain.

The linchpin and supposedly obvious example which these 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 advanced the view that a host of properties “above” the chemical were also radically emergent, especially including the case of consciousness.

After 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 whole of chemistry are thus completely known” (Dirac 1929: 714). Note that there is no claim here that chemistry is reducible in the sense that there is a translation and hence eliminability 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 that govern them at the fundamental physical level suffice to strictly determine the chemical features of the world.

Perhaps 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 physics.<sup>13</sup>

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 in color experience). 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 declare them to be a fundamental form, and hence 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, say, 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 canvass all the efforts to solve the combination problem, and the criticisms of them, which have been advanced (see work referred to in note 6). 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” (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 (Mørch 2014; Seager 2016). This is not a retreat to radical emergence if the fusion operation is a feature of the laws that 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 physics.<sup>14</sup>

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 (Goff forthcoming; 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 that 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.

### Notes

- 1 The three major strands of argumentation are conveniently associated with Nagel (1974), Jackson (1982) and the triumvirate of Descartes (1641/1985, Meditation 6), Kripke (1980, Lecture 3) and Chalmers (1996, especially ch. 4).
- 2 Without doubt, one motivation for idealism has been epistemological: fear of skepticism. 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?
- 3 Perhaps we should also add that everything is *constitutively* physical, to avoid the (faint) chance that there are some rogue brute absolute necessities which link the physical to some non-physical aspect of nature (see Wilson 2005; ‘correlative’ vs. ‘constitutive’ supervenience is discussed in Seager 1991).
- 4 For the history see French (2014, ch. 4). A forceful presentation of this viewpoint in the context of the problem of consciousness can be found in Galen Strawson (2003, 2006).
- 5 The human color space of hue, saturation and brightness is asymmetrical. 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). 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 (Hoffman 2006).
- 6 Evidence of renewed interest can be found in dedicated publications: Rosenberg (2004); Freeman (2006); Skrbina (2009); Blamauer 2011; Brüntrup and Jaskolla (2016); Seager (forthcoming).
- 7 Of 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).
- 8 An interesting contrast here is with the emergence of life. As we now know, life is fully and intelligibly explicated in terms of purely chemical processes. Unlike the case of consciousness, these exhibit no ‘enormous jump’ as they increase in structural complexity from the non-living to the living.
- 9 This is actually controversial. Some interpretations of quantum mechanics hold that consciousness is a fundamental feature of reality required to make measurements of quantum systems determinate (see Wigner 1962, London and Bauer 1939/1983).
- 10 It is possible to question this ‘argument from concreteness’ (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.
- 11 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 (see Tully 2003). James's relation to panpsychism is somewhat murky but it seems that he ends up accepting it (see Cooper 1990).
- 12 The problem was first noted by William James (1890/1950, ch. 6). For discussions see Brüntrup and Jaskolla (2016), Seager (forthcoming). For a sustained investigation of the general problem of whether conscious subjects could 'combine' see Roelofs (2015).
  - 13 This is not to say that radical emergence lacks contemporary defenders; see O'Connor (1994); O'Connor and Wong (2005); Silberstein and McGeever (1999).
  - 14 Although developed in a different context, something like the idea of fusion is presented in work of Paul Humphreys (1997b, 1997a).

## References

- Alter, T. and Nagasawa, Y. (eds.) (2015) *Consciousness in the Physical World: Perspectives on Russellian Monism*, Oxford: Oxford University Press.
- Blamauer, M. (ed.) (2011) *The Mental as Fundamental: New Perspectives on Panpsychism*, Frankfurt: Ontos Verlag.
- Block, Ned and Stalnaker, R. (1999) "Conceptual Analysis, Dualism, and the Explanatory Gap," *Philosophical Review* 108: 1–46.
- Bohm, D. (1951) *Quantum Theory*, Englewood Cliffs, NJ: Prentice-Hall.
- Brüntrup, G. and Jaskolla, L. (eds.) (2016) *Panpsychism*, Oxford: Oxford University Press.
- Byrne, Alex (2016) "Inverted Qualia," In Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*. Stanford, CA: Metaphysics Research Lab, Stanford University, Winter ed. URL: <https://plato.stanford.edu/archives/win2016/entries/qualia-inverted/>.
- Chalmers, D. (1996) *The Conscious Mind: In Search of a Fundamental Theory*, Oxford: Oxford University Press.
- Chalmers, D. (2015) "Panpsychism and Panprotopsychism," In T. Alter and Y. Nagasawa (eds.) *Consciousness in the Physical World: Essays on Russellian Monism*, Oxford: Oxford University Press.
- Chalmers, D. (forthcoming) "Idealism," In W. Seager (ed.) *The Routledge Handbook of Panpsychism*, London: Routledge.
- Clifford, W. (1886) "Body and Mind," In L. Stephen and F. Pollock (eds.) *Lectures and Essays*, London: Macmillan, 2nd ed. (Originally published in the December 1874 issue of *Fortnightly Review*).
- Coleman, S. (2012) "Mental Chemistry: Combination for Panpsychists," *Dialectica* 66: 137–166.
- Cooper, W. (1990) "William James's Theory of Mind," *Journal of the History of Philosophy* 28: 571–593.
- Descartes, R. (1641/1985) "Meditations of First Philosophy," In J. Cottingham, R. Stoothoff and D. Murdoch (eds.) *The Philosophical Writings of Descartes, Vol. 2*. Cambridge: Cambridge University Press. (J. Cottingham, R. Stoothoff, D. Murdoch, trans.).
- Dirac, P. A. M. (1929) "Quantum Mechanics of Many-Electron Systems," *Proceedings of the Royal Society of London. Series A, Containing Papers of a Mathematical and Physical Character* 123 (792): 714–733.
- Eddington, A. (1928) *The Nature of the Physical World*, New York: Macmillan & Co.
- Eddington, A. (1939) *The Philosophy of Physical Science*, New York: Macmillan & Co.
- Foster, J. (2008) *A World for Us: The Case for Phenomenalist Idealism*, Oxford: Oxford University Press.
- Freeman, A. (ed.) (2006) *Consciousness and Its Place in Nature*, Exeter: Imprint Academic.
- French, S. (2014) *The Structure of the World: Metaphysics and Representation*, Oxford: Oxford University Press.
- Galilei, G. (1623/1957) "The Assayer," In D. Stillman (ed.) *Discoveries and Opinions of Galileo*, New York: Anchor Books (D. Stillman, trans.).
- Gillett, C. (2016) *Reduction and Emergence in Science and Philosophy*, Cambridge: Cambridge University Press.
- Goff, P. (forthcoming) "Cosmopsychism, Micropsychism and the Grounding Relation," In W. Seager (ed.) *The Routledge Handbook of Panpsychism*, London: Routledge.
- Guyer, P. and Horstmann, R. (2015) "Idealism," In Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*. Stanford, CA: Metaphysics Research Lab, Stanford University, Fall ed. URL: <https://plato.stanford.edu/archives/fall2015/entries/idealism/>.
- Hameroff, S. and Penrose, R. (1996) "Conscious Events as Orchestrated Space-Time Selections," *Journal of Consciousness Studies* 3: 36–53.
- Hilbert, D. and Kalderon, M. E. (2000) "Color and the Inverted Spectrum," In S. Davis (ed.) *Color Perception: Philosophical, Psychological, Artistic and Computational Perspectives*, Oxford: Oxford University Press.
- Hoffman, D. (2006) "The Scrambling Theorem: A Simple Proof of the Logical Possibility of Spectrum Inversion," *Consciousness and Cognition* 15: 31–45.

- Humphreys, P. (1997a) "Emergence, Not Supervenience," *Philosophy of Science* 64: S337–345.
- Humphreys, P. (1997b) "How Properties Emerge," *Philosophy of Science* 64: 1–17.
- Huxley, T. (1866) *Lessons in Elementary Physiology*, London: Macmillan.
- Jackson, F. (1982) "Epiphenomenal Qualia," *Philosophical Quarterly* 32: 127–136.
- James, W. (1890/1950) *The Principles of Psychology*, vol. 1, New York: Henry Holt and Co. Reprinted in 1950, New York: Dover. (Page references to the Dover edition.)
- Kripke, S. (1980) *Naming and Necessity*, Cambridge: Cambridge University Press.
- Ladyman, J., Ross, D., Spurrett, D., and Collier, J. (2007) *Everything Must Go: Metaphysics Naturalized*, Oxford: Oxford University Press.
- Langton, R. (1998) *Kantian Humility: Our Ignorance of Things in Themselves*, Oxford: Oxford University Press.
- Langton, R. (2004) "Elusive Knowledge of Things in Themselves," *Australasian Journal of Philosophy* 82: 129–136.
- Laudan, L. (1981) "A Confutation of Convergent Realism," *Philosophy of Science* 48: 19–49.
- Lavoisier, A. (1790) *Elements of Chemistry*, Edinburgh: William Creech. R. Kerr (trans.).
- Lewis, D. (2009) "Ramseyan Humility," In D. Braddon-Michell and R. Nola (eds.) *Conceptual Analysis and Philosophical Naturalism*, Cambridge, MA: MIT Press (Bradford Books).
- Lockwood, M. (1989) *Mind, Brain and the Quantum*, Oxford: Blackwell.
- London, F. and Bauer, E. (1939/1983) "The Theory of Observation in Quantum Mechanics," In J. Wheeler and W. Zurek (eds.) *Quantum Theory and Measurement*, Princeton: Princeton University Press. Originally published as 'La théorie de l'observation en mécanique quantique' in *Actualités scientifiques et industrielles*, no. 775, Paris: Heinemann, 1939.
- Maxell, J. C. (1878) "Ether," In T. Baynes (ed.) *Encyclopædia Britannica, Ninth Edition*, Vol. 8, Edinburgh: A. & C. Black.
- McGinn, C. (1999) *The Mysterious Flame: Conscious Minds in a Material World*, New York: Basic Books.
- McLaughlin, B. (1992) "The Rise and Fall of British Emergentism," In A. Beckermann, H. Flohr and J. Kim (eds.) *Emergence or Reduction*, Berlin: De Gruyter.
- Mill, J. S. (1843/1963) *A System of Logic*, vols. 7–8 of *The Collected Works of John Stuart Mill*, Toronto: University of Toronto Press.
- Miller, G. (2017) "Can Subjects Be Proper Parts of Subjects? The De-Combination Problem," *Ratio*. URL: <http://dx.doi.org/10.1111/rati.12166>. DOI = 10.1111/rati.12166.
- Morch, H. (2014) *Panpsychism and Causation: A New Argument and a Solution to the Combination Problem*, Ph.D. thesis, University of Oslo. URL: <https://philpapers.org/rec/HASPAC-2>.
- Nagel, T. (1974) "What Is It Like to Be a Bat?" *Philosophical Review* 83: 435–450. (This article is reprinted in many places, notably in Nagel's *Mortal Questions*, Cambridge: Cambridge University Press, 1979.)
- Nagel, T. (1979) "Panpsychism," In *Mortal Questions*, Cambridge: Cambridge University Press. (Reprinted in D. Clarke *Panpsychism: Past and Recent Selected Readings*, Albany, NY: SUNY Press, 2004.)
- Newman, M. (1928) "Mr. Russell's Causal Theory of Perception," *Mind* 37: 137–148.
- O'Connor, T. (1994) "Emergent Properties," *American Philosophical Quarterly* 31: 91–104.
- O'Connor, T. and Wong, H.Y. (2005) "The Metaphysics of Emergence," *Noûs* 39: 658–678.
- O'Connor, Timothy and Hong Yu Wong (2015). 'Emergent Properties'. In E. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*. Stanford University: The Metaphysics Research Lab, Summer ed. URL: <https://plato.stanford.edu/archives/sum2015/entries/properties-emergent>.
- Pelczar, M. (2015) *Sensorama: A Phenomenalist Analysis of Spacetime and Its Contents*, Oxford: Oxford University Press.
- Poincaré, H. (1901/1905) *Science and Hypothesis*, New York: Walter Scott Publishing Co. Ltd. (W. J. Greenstreet, trans.).
- Roelofs, L. (2014) "Phenomenal Blending and the Palette Problem," *Thought: A Journal of Philosophy* 3: 59–70.
- Roelofs, L. (2015) *Combining Minds: A Defence of the Possibility of Experiential Combination*, Ph.D. thesis, Univ. of Toronto, Toronto. URL: <https://tspace.library.utoronto.ca/handle/1807/69449>.
- Rosenberg, G. (2004) *A Place for Consciousness: Probing the Deep Structure of the Natural World*, Oxford: Oxford University Press.
- Russell, B. (1927a) *An Outline of Philosophy*, London: George Allen & Unwin.
- Russell, B. (1927b) *The Analysis of Matter*, London: K. Paul, Trench, Trubner.
- Seager, W. (1991) *Metaphysics of Consciousness*, London: Routledge.
- Seager, W. (1995) "Consciousness, Information and Panpsychism," *Journal of Consciousness Studies* 2 (3): 272–288. (Reprinted in J. Shear (ed.) *Explaining Consciousness*, Cambridge, MA: MIT Press, 1997.)

- Seager, W. (2016) "Panpsychist Infusion," In G. Brüntrup and L. Jaskolla (eds.) *Panpsychism*, Oxford: Oxford University Press.
- Seager, W. (ed.) (forthcoming) *The Routledge Handbook on Panpsychism*, London: Routledge.
- Searle, J. (2013) "Can Information Theory Explain Consciousness," *New York Review of Books* (January 10).
- Silberstein, M. and McGeever, J. (1999) "The Search for Ontological Emergence," *Philosophical Quarterly* 49: 182–200.
- Skrbina, D. (2005) *Panpsychism in the West*, Cambridge, MA: MIT Press.
- Skrbina, D. (ed.) (2009) *Mind That Abides: Panpsychism in the New Millennium*, Amsterdam: John Benjamins.
- Sprigge, T. (1983) *The Vindication of Absolute Idealism*, Edinburgh: Edinburgh University Press.
- Sprigge, T. (2010) "Absolute Idealism," In L. McHenry (ed.) *The Importance of Subjectivity: Selected Essays in Metaphysics and Ethics*, Oxford: Oxford University Press.
- Strawson, G. (2003) "Real Materialism," In L. Anthony and N. Hornstein (eds.) *Chomsky and His Critics*, Oxford: Blackwell. (Reprinted, with new postscript, in T. Alter and Y. Nagasawa (eds.) *Consciousness in the Physical World: Perspectives on Russellian Monism*, Oxford: Oxford University Press, 2015, 161–208.)
- Strawson, G. (2006) "Realistic Monism: Why Physicalism Entails Panpsychism," *Journal of Consciousness Studies* 13 (10–11): 3–31. (Reprinted in A. Freeman (ed.) *Consciousness and Its Place in Nature*, Exeter: Imprint Academic, 2006.)
- Thagard, P. and Stewart, T.C. (2014) "Two Theories of Consciousness: Semantic Pointer Competition vs. Information Integration," *Consciousness and Cognition* 30: 73–90.
- Tononi, G. (2012) *Phi: A Voyage from the Brain to the Soul*, New York: Pantheon Books.
- Tully, R. (2003) "Russell's Neutral Monism," In N. Griffin (ed.) *Cambridge Companion to Bertrand Russell*, 332–370. Cambridge: Cambridge University Press.
- Tyndall, J. (1879) *Fragments of Science: A Series of Detached Essays, Addresses and Reviews*, London: Longmans, Green & Co., 6th edition.
- Wigner, E. (1962) "Remarks on the Mind-Body Problem," In I. Good (ed.) *The Scientist Speculates*, London: Heinemann. (Reprinted in J. Wheeler and W. Zurek (eds.) *Quantum Theory and Measurement*, Princeton: Princeton University Press, 1983, 168–181.)
- Wilson, J. (2005) "Supervenience-Based Formulations of Physicalism," *Nous* 39: 426–459.

## Related Topics

Dualism  
Materialism  
Consciousness in Western Philosophy  
Quantum Theories of Consciousness