# Emergence and Consciousness

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**Abstract**
Most definitions of radical emergentism characterize it epistemologically. This leads to misunderstandings and makes it hard to assess the doctrine's metaphysical worth. This paper puts forward purely metaphysical characterizations of emergentism and property emergence. It explores the nature of the necessitation relation between base and emergent and argues that emergentism entails a Humean account of causation and related relations. Then it presents arguments against emergentism, both as a wider metaphysic and as an account of consciousness. These maintain that emergentism makes implausible claims about how the world works. The paper also stresses the doctrine's contemporary relevance: most current property dualists endorse views effectively identical to classical emergentism less its historical commitment to novel emergent forces.

Perhaps no major theory of consciousness has had a bumpier ride than radical emergentism. The few who endorse it often do so under different names without fully appreciating their commitment to it. Most formulations of it attend to epistemological consequences rather than metaphysical essence. Too often it suffers brusque dismissals or straw-man attacks. Even careful assessments sometimes mistake its tenets and its relations to other views. Almost everyone downplays its significance. This paper hopes to put much of this to right. It tries to spell out exactly what emergentism claims, what relations it bears to other mind-body theories, what role it plays in current debates, and why, at the end of the day, it fails, both as an account of consciousness and as a wider metaphysic.

## 1.

How does radical emergentism compare to other theories of consciousness? Let us consider its relations to physicalism and panpsychism. We will understand a basic entity as a basic building block not composed of anything else, much less anything more basic than itself. That makes a basic property a kind of basic building block; in particular, basic properties don't consist of other, much less more basic, properties. Non-basic entities, including non-basic properties, do consist of other and more basic entities. Let us understand a

doi:10.1017/S0031819113000508 © The Royal Institute of Philosophy, 2013
First published online 23 July 2013


https://doi.org/10.1017/S0031819113000508 Published online by Cambridge University Press

simple property as one conferring very few (kinds of) characteristics, powers or susceptibilities, and a complex property as one conferring more (kinds of) characteristics, powers or susceptibilities. Now, physicalism, as it concerns consciousness, holds true if consciousness exists only as a *non-basic property of non-basic physical objects* (such as brains).[1] Physicalism, in general, affirms that all basic properties are simple properties of basic physical objects. It regards all non-basic properties as complex properties of non-basic and complex physical objects. Physicalism therefore entails that all conscious properties are both non-basic and complex.

Panpsychism holds true if consciousness exists, at its simplest, as a *basic property of basic physical objects* (such as quarks). Panpsychism agrees with physicalism that (1) all basic properties are simple properties of basic physical objects; and (2) all non-basic properties are complex properties of non-basic and complex physical objects. It differs only in that it recognizes a wider range of basic properties at the bottom-most level. Panpsychism claims that (1) basic conscious properties are simple properties instantiated by basic physical objects; and (2) non-basic conscious properties are complex properties built of basic conscious properties and instantiated by non-basic (and complex) physical objects. Examples of (this kind of) panpsychism include the mind dust theory of William James, the doctrine debated by Thomas Nagel and James Van Cleve, and the less extreme panpsychism defended by Galen Strawson.[2]

Radical emergentism, as it concerns consciousness, holds true if consciousness exists, again at its simplest, as a *basic property of non-basic physical objects* (such as brains).[3] Unlike both physicalism and panpsychism, emergentism (1) allows some basic properties to

[1] Consciousness could exist as a non-basic property of non-basic physical objects but be built from basic non-physical properties instead of basic physical properties. In this case we have neutral monism or proto-phenomenalism.

[2] W. James, *Principles of Psychology* (Mineola: Dover Publications, 1890/1950); T. Nagel, 'Panpsychism', in *Mortal Questions* (New York: Cambridge University Press, 1979); J. Van Cleve, 'Mind: Dust or Magic? Panpsychism or Emergence?', *Philosophical Perspectives* **4** (1990), 215–226; G. Strawson, 'Realistic Monism: Why Physicalism Entails Panpsychism' and 'Panpsychism? Reply to Commentators with a Celebration of Descartes', in A. Freeman (ed.), *Consciousness and its place in nature* (Charlottesville: Imprint Academic, 2006).

[3] This paper ignores a view holding that consciousness exists as a non-basic property of basic physical objects. This view reduces lowest-level properties to higher-level properties. Perhaps no one has ever defended it.



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characterize non-basic (and complex) rather than basic (and simple) physical objects; (2) countenances basic but complex properties (e.g. emergent conscious properties); and (3) doesn't token-reduce all complex entities to simple and basic entities at the bottom-most level. Thus radical emergentism provides for *ontological* property emergence, where something new comes into existence not built of pre-existing entities. Radical emergence differs from mere epistemic emergence, where the emergent token-consists of other and pre-existing entities, but where the constitutive links are too complex for us to grasp.

Emergentism gives voice to a triad of commitments: the (physicalist) conviction that only physical objects exist; the (dualist) intuition that consciousness doesn't reduce to anything more basic than itself; and (anti-panpsychist) disbelief that consciousness exists at the bottom-most level.

## 2.

Most emergentists formulate their robustly metaphysical doctrine in strictly epistemological terms.[4] This practice began with the British emergentists in the 19th century and continues today.[5] Thus most emergentists rely on notions like derivability, deducibility, predictability and explainability to home in on the phenomenon of ontological novelty.[6] Unfortunately, epistemological formulations of

[4] J. Wilson provides an exception (see 'Causal Powers, Forces, and Superdupervenience', *Grazer Philosophische Studien* **63** (2002), 53–78, and 'Supervenience Based Formulations of Physicalism', *Nous* **29** (2005), 426–459). She considers a property emergent when it bestows a causal power grounded in basic forces other than the four basic physical forces. This paper avoids her formulation for two reasons. First, her definition entails the falsity of epiphenomenalism even though most contemporary emergentists combine emergentism with epiphenomenalism. Second, an emergent property could have causal efficacy without bestowing any active powers, provided physical entities actively responded to it.

[5] For a survey of British emergentism, see B. McLaughlin, 'The Rise and fall of the British emergentists', in A. Beckermann, H. Flohr & J. Kim (eds), *Emergence or Reduction? Essays on the Prospects of Nonreductive Physicalism* (New York: de Gruyter, 1992).

[6] See, for example, A. Beckermann, 'Introduction' and 'Supervenience, Emergence, and Reduction', in Beckermann et al., op. cit. note 5; C. D. Broad, *Mind and its Place in Nature* (New York: Harcourt, Brace & Co., 1925), excerpted in J. Kim & E. Sosa (eds), *Metaphysics* (Malden:



https://doi.org/10.1017/S0031819113000508 Published online by Cambridge University Press

metaphysical phenomena fall short. They might point to a phenomenon through some accidental feature of it, or mark off the area in which it lies. But they don't identify what makes the phenomenon the thing it is. They therefore risk mismatch between epistemological definition and metaphysical referent. They make it hard to judge a notion's metaphysical worth. And they too readily lead to metaphysical error.

This paper therefore formulates emergentism in strictly metaphysical terms – in terms of objects, properties, events, relations, etc. To this end it uses *results* – results from, results in – to encompass the ways a high-level entity B can relate to lower-level entities A such

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Blackwell, 1999); D. Chalmers, 'Strong and Weak Emergence', in P. Clayton & P. Davies (eds), *The Re-emergence of Emergence* (New York: Oxford University Press, 2006); T. Crane, 'The Significance of Emergence', in C. Gillett & B. Loewer (eds), *Physicalism and its Discontents* (Cambridge: Cambridge University Press, 2001); W. Hasker, *The Emergent Self* (Ithaca: Cornell University Press, 1999); J. Kim, 'Downward Causation in Emergentism and Nonreductive Physicalism', in Beckermann et al., op. cit. note 5, 'Making Sense of Emergence', *Philosophical Studies* **95** (1999), 3–36, 'Being Realistic about Emergence', in P. Clayton & P Davies, op. cit. this note, 'Emergence: Core ideas and issues', *Synthese* **15 1/3** (2006), 347–354, and *Philosophy of Mind, 3rd ed.* (Boulder: Westview, 2010); T. O'Connor, 'Emergent Properties', *American Philosophical Quarterly* **31** (1994), 91–104, and *Persons and* Causes (Oxford: Oxford University Press, 2000); T. O'Connor & H. Wong, 'The Metaphysics of Emergence', *Nous* **39** (2005), 658–678, and 'Emergent Properties', in *The Stanford Encyclopedia of Philosophy* http://plato.standford.edu/entries/properties-emergent/, 2006); S. Shoemaker, 'Kim on Emergence', *Philosophical Studies* **108** (2002), 53–63; R. Sperry, 'Discussion: Macro- versus Micro- Determinism', *Philosophy of Science* **53** (1986), 265–270; P. Teller, 'A Contemporary Look at Emergence', in Beckermann et al., op. cit. note 5; J. Van Cleve, op. cit. note 2; R. Van Gulick, 'Nonreductive Physicalism and the nature of Intertheoretical Constraint', in Beckermann et al., op. cit. note 5, and 'Reduction, emergence, and other recent options on the mind-body problem: a philosophic overview', *Journal of Consciousness Studies* **8** (2001), 1–34; as well as the British emergentists (Alexander, Bain, Mill and Morgan, in addition to Broad) surveyed in B. McLaughlin, op. cit. note 5. M. Bedau & P. Humphreys illustrate the point: 'Emergent phenomena frequently are taken to be irreducible, to be unpredictable or unexplainable, to require novel concepts…' ('Introduction to Philosophical Perspectives on Emergence', in *Emergence: Contemporary Readings in Philosophy and Science* (Cambridge: The MIT Press, 2008)).



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that B is nothing over and above A.[7] The results-from/results-in relation covers relations like identity, composition, realization, etc. It applies where, and only where, constitutive supervenience obtains. High-level entities B constitutively supervene on lower-level entities A where the B entities are built of the A entities. Here the B objects get their properties from the properties of the A objects that make them up. Constitutive supervenience can hold globally – from the bottom level all the way up. Or it can hold locally – between two or more levels but not everywhere. For example, perhaps entities at level 2 emerge from and thus don't constitutively supervene on entities at level 1, but entities at level 3 result from and thus do constitutively supervene on entities at level 2. Constitutive supervenience of higher-level entities on lower-level entities guarantees the asymmetric dependence of the former on the latter by ensuring that all tokens/instances of the former consist solely of spatio-temporal arrangements of tokens/instances of the latter.[8]

Radical emergentism combines object monism, property dualism and property emergence. Its ontology makes room for physical objects and none others.[9] It nonetheless accepts the existence of non-physical properties. And it provides that these non-physical properties emerge from and then characterize non-basic physical objects. Classical emergentism – the emergentism of the late 19th and early 20th centuries – also speaks of emergent or 'configurational' forces over and above physical forces. For two reasons this paper largely ignores this strand of the view. First, the paper attends to emergentism as a theory of the provenance of consciousness, to which configurational forces bear no direct relevance. Second, most

[7] The paper adapts these terms from the British emergentists, who contrasted resultants with emergents. Emergents stand over and above their subvenient bases. Resultants don't.

[8] This paper includes realization as a results-from/results-in relation – despite claims for the irreducibility of multiply realizable properties and the autonomy of the special sciences – because any given instance/token of a realized entity is nothing other than the instance(s)/token(s) of its realizing entity(ies). For this reason the paper speaks of realization as involving token identity. Even if this risks distorting role-realization theories, it nevertheless captures important connections, and in any case any inaccuracies that result don't undermine the arguments made here.

[9] We can imagine emergentisms built around object dualism or even object pluralism. The key point still holds. Such emergentisms allow properties of basic type B to emerge from and then characterize objects of basic type A (where instances/tokens of entities of basic type B don't result from instances/tokens of entities of basic type A).



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contemporary emergentists embrace epiphenomenalism while otherwise cleaving to the older doctrine. Separating their views from classical emergentism would obscure important and overlooked parallels.

Property emergence involves a necessitation or supervenience relation.[10] When the right (type of) physical base obtains, the emergent supervenes with lawful necessity. Where a many-to-one base-to-emergent relation obtains, any suitable base lawfully suffices. The emergent nevertheless stands over and above its base. It doesn't result from the base and its properties. Rather, the base serves as a pretext or occasion that triggers the emergent's coming into being. The emergent, once triggered, pops into existence out of nothing and from nowhere to characterize an otherwise physical entity.

Supervenience in this context differs from the supervenience relation often deployed in philosophy of mind. That relation allegedly captures both type-irreducibility and ontological nothing-over-and-aboveness. It therefore purports to be a results-from/results-in relation. The supervenience physicalist thus claims that a suitable physical base metaphysically necessitates conscious properties. But an emergent supervenes on its base and yet stands over and above it. *Emergent* supervenience therefore amounts to lawful correlation and nothing more. The base necessitates lawfully but not metaphysically. (The paper says more about this in section 3.)

Because emergents count as basic properties, the emergence relation can't itself result from anything more basic. Emergents must therefore arise pursuant to basic laws of nature. Emergentism calls for a host of basic laws each linking a basic emergent to one of the physical bases lawfully sufficient for it.

Let *emergence level* denote the level at which property emergence occurs. If nothing simpler than full brains supports emergent properties, then the emergence level lies at the level of complex organs. If smaller and simpler brain structures support emergents, then the emergence level lies further down. It lies lower still if clusters of neurons support emergents. The emergence level might lie at different levels for different emergent properties. For all we know *a priori*, emergence levels might vary widely, even within a single domain like consciousness.

Emergentism comes in two main types. *Pure emergentism* – with respect to consciousness – holds true if all conscious properties exist as basic emergents. *Mixed emergentism* – with respect to

[10] For general background on emergence and supervenience, see B. McLaughlin, 'Emergence and Supervenience', in Bedau & Humphreys, op. cit. note 6.



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consciousness – holds true if only some conscious properties exist as basic emergents, with the rest being non-basic properties that result from the basic emergents. Mixed emergentism requires fewer and simpler emergents and fewer and simpler basic psycho-physical laws. It provides for lower emergence levels. And it builds some of the variety and complexity of high-level consciousness from simpler elements.

Most philosophers regard property emergence as a synchronic necessitation relation. But we can also attend to the *event* of property emergence. This allows us to think about emergence in terms of diachronic causation rather than just synchronic necessitation. We find precedent for this approach in the writings of J. S. Mill, the earliest of the British emergentists. O'Connor & Wong provide this summary of Mill's thought and relevance:

> It is important to note that both homopathic [non-emergent] and heteropathic [emergent] laws for Mill are *causal* laws, and homopathic effects and heteropathic effects are effects of *causal* interactions. Thus Mill's *dynamical* account of emergence (heteropathic interactions) differs importantly from the synchronic, noncausal covariational account of the relationship of emergent features to the conditions that give rise to them that C. D. Broad was to espouse in *Mind and Its Place in Nature* (1925).[11]

Let a, b and c stand for basic physical entities, C for an emergent property, and R for some relation such that R(a, b, c) serves as a base lawfully sufficient for C. We can represent the synchronic emergence relation thus:

$$\frac{C}{R(a, b, c)}$$

Let R* stand for some other relation such that R*(a, b, c) causes R(a, b, c) but doesn't itself give rise to any emergent property. And let $t_0$ represent the time when R*(a, b, c) first obtains and $t_1$ the later time when R(a, b, c) first obtains. We can represent the diachronic event of C's emergence thus:

$$t_0: \frac{}{R^*(a, b, c)} \longrightarrow t_1: \frac{C}{R(a, b, c)}$$

[11] (2006), op. cit. note 6, 2–3.



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The diachronic outlook embraces the synchronic, since C arises only because R(a, b, c) necessitates it. In a sense, R*(a, b, c) adds nothing. Not only does it bear no direct connection to C, but also C will emerge from R(a, b, c) no matter how R(a, b, c) comes about. The diachronic outlook nonetheless underlines two important facts. (1) C comes into existence at a specific time before which it had no existence of any kind. (2) C took on existence without being assembled from anything, much less anything that existed before $t_1$ or that composes R(a, b, c). Thus C's emergence, although lawfully necessitated, amounts to creation *ex nihilo*.[12] C's emergence would remain just as baffling if R(a, b, c) had existed eternally, and therefore so had C. But we grasp most clearly what property emergence involves when we watch C flash into existence at a time. Two questions then force themselves upon us. 'Out of what was C built?' And 'Whence did C come?' The emergentist has these answers only: 'Out of nothing, and from nowhere'.

A solid metaphysical understanding helps us identify and diagnose some straightforward mistakes. For instance, Jaegwon Kim has claimed that emergentism and non-reductive physicalism come to the same thing.[13] But the metaphysics proves they can't. Non-reductive physicalism insists that special science property instances are token-identical to physical property instances even though special science properties and physical properties differ as types.[14] Non-reductive physicalism wouldn't qualify as physicalism if it didn't include the token identity claim. Non-reductive physicalism therefore requires that a results-from/results-in relation hold between special science and physical properties. But emergent property instances aren't token-identical to, and don't result from, physical property instances. Emergence couldn't occur if they were and did. Token-identity therefore counts as a necessary condition for non-reductive physicalism and its absence as a necessary condition for emergentism. The two doctrines must differ.

A firm grip on the metaphysics also saves us from a more serious error. C. D. Broad[15] and Sydney Shoemaker[16] distinguish emergent

[12] Given that C is a property and not a substance, its creation doesn't violate the law of conservation of mass-energy. At least not straightforwardly.

[13] (1992), (1999), 'Being Realistic about Emergence', and (2010), all op. cit. note 6.

[14] See note 8.

[15] Op. cit. note 6.

[16] Op. cit. note 6.



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properties in the present sense from properties at the bottom-most level that remain latent until they manifest themselves at higher levels. Similarly, J.S. Mill[17] and Alexander Bain[18] distinguish emergent properties in the present sense from potentialities at the bottom-most level that manifest themselves only at higher levels. These philosophers nonetheless believe that the contrasting property types, as Broad puts it, 'in practice… are equivalent'.[19] True enough, so far as it goes. From a strictly epistemological outlook, nothing sets the contrasting property types apart. In both cases we have a property invisible below the emergence level and identically detectable at that level and above. But we still have an all-important metaphysical difference. In the one case, the emergent case, we have a property with no existence of any sort below the emergence level, but present as a basic attribute of a non-basic physical object at that level and above. In the other case, the potentiality case, we have a basic property at the bottom-most level with no effects below the level at which 'emergence' occurs, but with (presumably non-basic) effects at that level and above. So: in the emergent case we don't have a property at the bottom-most level; in the potentiality case we do. In the emergent case we do have property emergence; in the potentiality case we don't. In the emergent case the (genuine) emergent is a basic property; in the potentiality case the (apparent) 'emergent' isn't a basic property. The contrasting formulations can't refer to the same thing.[20]

## 3.

Evaluating emergentism brings us to a philosophical divide. On one side lie those who take a broadly Humean view of causation.[21] On the other lie those who find that view metaphysically unacceptable. Thus

[17] J. S. Mill, *System of Logic* (London: Longmans, 1843).
[18] A. Bain, *Logic* (London: Longmans, 1870).
[19] Op. cit. note 6, 496.
[20] O'Connor (1994, 2000) and O'Connor & Wong (2005, 2006) make this point and O'Connor & Wong (2006) criticizes Shoemaker for neglecting it. In all cases op. cit. note 6.
[21] It remains a little unclear whether Hume advanced the epistemological thesis that we can't know necessary connections even if they exist. Or whether instead he advanced the more radical metaphysical thesis that necessary connections can't and therefore don't exist. When this paper refers to Humeans, it has in mind those of Hume's contemporary followers who hold that, as a metaphysical matter, causation consists only of formal



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Nagel (1979) dismisses emergentism because he finds it causally inadequate.

> What is the view of causal explanation from which it follows that true emergence is impossible? I have said that the properties of a complex system must *derive* from the properties of its constituents, plus the way they are combined. The argument assumes that uniform correlations cannot provide an adequate basis for the explanation of complex phenomena. It therefore rejects what is often called…a Humean analysis of causation.[22]

Nagel provides the following background:

> True causes *do* necessitate their effects: they make them happen or make them the case. Uniform correlations are at best evidence of such underlying necessities…. Causal necessity operates even at the most fundamental levels. An electron is a particle with a certain charge and a certain mass. These properties imply that it will interact in a definite way with fields and with other objects. Some of the implications will be probabilistic, but that does not affect the point…. Ordinary physics and chemistry explain macroscopic phenomena, so far as they can be explained, as the necessary consequences of the properties of the particles…and their interactions. They do not rely merely on contingent correlations…. The supposition that [an object] should have truly (not just epistemologically) emergent properties is that those properties appear at certain complex levels of organization but are not explainable in terms of any more fundamental properties, known or unknown, of the constituents of the system. If causal connexions were nothing but instances of contingent regularities, such a situation would be compatible with the existence of causal explanations of the emergent properties at a complex level…. But it is not enough on a stronger view of causation.[23]

Nagel insists that constitutive relations and robustly do-something causes underlie all causal interactions. According to him, all higher-level regularities result from and thus constitutively

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relations like constant conjunction, counterfactual dependence or conditions necessary and sufficient.

[22] Op. cit. note 2, 185.

[23] Op. cit. note 2, 186–187. Note how Nagel mixes epistemology and metaphysics. He identifies lack of explainability as the hallmark of ontological as opposed to mere epistemic emergence.



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supervene on lower-level entities. Even lowest-level interactions result from and thus constitutively supervene on the basic natures of the entities involved. Nagel tolerates brute givens, of course, but only as basic natures at the bottom-most level. Van Cleve, in his defense of emergentism, parts company with Nagel precisely because he believes that contingent regularities suffice for causal connections. He thinks one can adequately explain one set of phenomena in terms of another 'with the help of bridge principles whose necessity need only be nomological'.[24]

> Of course, if the mental properties of a whole are emergent, mental properties will not be explainable or predictable by the laws of physics *alone*. One will need to appeal to special psychophysical laws of the sort that have been disparaged as 'nomological danglers.' But to be explicable only with the help of danglers is not to be inexplicable.[25]

Some philosophers think this divide more nuanced than so far allowed. Jessica Wilson, for instance, argues that property emergence might involve metaphysical rather than just lawful necessity.[26] She bases this on her (tentative) acceptance of necessitarianism and holism about the laws of nature and her understanding of emergence as a synchronic causal relation. She acknowledges that necessitarianism and holism are controversial minority views. But she maintains that philosophers of broadly naturalist bent – including, in her view, physicalists and emergentists – must treat them as live options. She therefore insists that a formulation of emergentism not rule them out.

Necessitarianism holds that (1) broadly scientific properties – in Wilson's view, physical, special-science, and conscious properties – are essentially individuated by their causal potentialities; (2) the laws of nature express these potentialities; and therefore (3) broadly scientific properties are essentially individuated by their actual governing laws. It follows that any world with the very same scientific properties would also have the very same laws of nature. So any physical property that actually figures in a law of emergence necessarily so

[24] Op. cit. note 2, 218.

[25] Ibid. Note how Van Cleve mixes epistemology and metaphysics. He supports the claim that contingent regularities suffice for causal connections (metaphysics) by arguing that lawfully necessary bridge principles suffice for explanation (epistemology).

[26] (2005), op. cit. note 4.



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figures. The emergent therefore arises from its base with metaphysical necessity.

Holism maintains, on empirical grounds, that the laws of nature come as a single package.[27] This makes a physical property's emergent effects as necessary as its physical effects: the relevant laws of emergence will obtain whenever the relevant physical laws obtain.

If either necessitarianism or holism holds, then – Wilson claims – Nagel can't argue that everyday causation and physicalistic supervenience each involve a stronger type of necessitation than property emergence. He must instead admit that all three relations involve metaphysical necessitation. And this undercuts his objections to emergentism.

But here we must step with care. Nagel and Van Cleve touch upon deep metaphysical differences that survive Wilson's claims. Suppose necessitarianism and holism right. Then the emergent will arise in every world where its physical base obtains. But contrast this with a case where some non-emergent higher-level property supervenes on a lower-level physical property the way physicalists believe special science properties supervene on physical properties. The higher-level property instance consists of (or, as Nagel puts it, derives from) the lower-level property instance. This has two consequences. (1) The higher-level property is nothing over and above the lower-level property. (2) The supervenience correlation obtains precisely because of the underlying constitutive relation; the two relations obtain together, with the supervenience correlation a surface symptom of the constitutive relation. But it doesn't work this way with emergence. Even if the emergent arises with metaphysical necessity, it still bears only a single relation to its physical base – a correlation. And this also has two consequences. (1) The correlation is metaphysically brute because it doesn't result from anything. (2) The correlation connects two entities where, because they don't stand in a results-from/results-in relation, each is over and above the other.

[27] Holism rests on (some) physicists' working assumption of supersymmetry. This expresses the belief (or wish) that all physical forces unify at high energies – in which case these apparently distinct forces represent distinct facets of a single underlying force (see Wilson (2005), op. cit. note 4, 446). If physical supersymmetry holds, Wilson argues, then any emergent forces will likely manifest this same underlying force. (This possibility in fact *threatens* emergentism. If emergent forces unify with physical forces, then the emergent can't stand over and above the physical. It must result from the physical.) Supersymmetry has lately taken some hard knocks (see D. Castelvecchi, 'Is Supersymmetry Dead?', *Scientific American* **306** (2012), 16–18).



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This entitles us to distinguish different types of metaphysical necessity. With emergence, we have *one* relation, brute correlation, linking two entities each *something* over and above the other. With physicalistic supervenience, we have *two* relations, a surface correlation underlain and caused by a more basic constitutive relation, linking two entities each *nothing* over and above the other. Thus necessitarianism and holism don't collapse, into a single type, the necessities at work in emergence and physicalistic supervenience. Philosophers like Van Cleve accept the (possible) reality of both types of necessity. Philosophers like Nagel countenance only the second.[28]

The difference goes deeper. Philosophers like Nagel necessarily understand laws of nature as mere *expressions* of the powers and susceptibilities of natural entities. They believe that instances/tokens of lower-level entities constitute and thereby necessitate instances/tokens of synchronically supervenient higher-level entities. They also believe that the powers of a diachronic cause, given by the natures of the entities involved, regroup existing entities into a new configuration constituting and thereby necessitating its diachronic effect. In both cases the powers and susceptibilities at each level result from powers and susceptibilities at lower levels, with bottom-level powers and susceptibilities resulting from the basic natures of bottom-level entities. Nagel-style thinkers therefore won't accord laws of nature any status over and above the causal potentialities they express. If they did, they would have to allow causal powers to float free of properties, they couldn't insist on the universality of constitutive supervenience and necessitating causes, and their *a priori* case against emergentism would crumble.

Humeans, by contrast, see no necessary connections between properties and causal relations, and hence none between properties and laws of nature.[29] Their laws of nature float free of properties,

[28] D. Stoljar (*Physicalism*, New York: Routledge, 2010, ch. 8) also understands property emergence in terms of metaphysical rather than lawful necessitation (he thus uses the label 'necessitation dualism'). He bases this on his belief – mistaken, in this author's view – that property emergence involves a relation of *brute* necessitation. Two remarks are apt. (1) Emergentists *could* endorse brute necessitation, but nothing about their doctrine forces the move. (2) In any case, this paper's arguments about the significance of Wilson's claims apply equally to Stoljar's.

[29] Humeans *will* see necessary connections where higher-level entities constitutively *and* synchronically supervene on lower-level entities. Thus physicalist Humeans will insist that low-level physical properties necessitate special science properties.



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determining the causal effects a given property will have. Humeans thus allow an entity with constant properties to have different causal effects under different nomological regimes. Whether this obliges Humeans to reify natural laws is a nice question not pursued here. But Humeans do need something besides the underlying property to give it its causal profile, and to that extent must accord laws of nature a status more robust than that envisioned by Nagel-style thinkers. Otherwise Humeans would have to chain causal powers to properties, recognize universal constitutive supervenience and necessitating causes, and reject emergentism from the outset.

It seems that some objections to emergentism entail a non-Humean view of causation. And that Humeans can have no *a priori* objection to emergentism. But *must* emergentists be Humeans? Those who say 'no' necessarily classify property emergence as a non-causal relation. This follows from the fact that non-Humeans recognize more-than-merely-correlational connections between cause and effect whereas emergentists deny more-than-merely-correlational connections between base and emergent. But is it legitimate to consider property emergence a non-causal relation? It might seem so if we understand property emergence synchronically. For then property emergence might seem to involve correlation and necessitation at a time whereas causation involves change or continuation through time. But things change when we adopt the diachronic outlook. We then see that the *event* of property emergence involves a genuine change through time. The diachronic outlook thus reveals property emergence as a species of causal relation. The emergentist can avoid Humeanism, then, only if the diachronic outlook is itself illegitimate. But of course it isn't! It highlights aspects of property emergence just as real, just as important, as those highlighted by the synchronic outlook. If anything, the diachronic outlook is the more legitimate of the two. By including the synchronic outlook as a proper part, it conveys everything the synchronic outlook conveys, as well as additional facts the synchronic outlook misses. It follows that the emergentist must endorse a Humean account of causation.

## 4.

This paper presents arguments against emergentism. Some will build upon Nagel-style views even though those views go undefended here. (Supporting them would force a lengthy and inapt detour through



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the metaphysics of causation, reduction, the layered worldview, and the principle of sufficient reason.) These arguments therefore presuppose views the emergentist must and can deny. They might, however, sway the undecided, and in any case they expose troubling aspects of emergentism. The paper's other arguments don't presuppose anything the emergentist must deny. These might threaten his doctrine on its own ground.

We begin with four arguments that rely on Nagel-style views.

*Whence emergents?*

An emergent comes into existence when triggered by a suitable base. But where does the emergent come *from*? Emergentism imposes an answer. The emergent doesn't come from anywhere. It doesn't exist before it emerges. Nor does it consist of anything that did exist before. The emergent pops into existence, out of nothing, from nowhere, to characterize the physical base.

Nagel-metaphysics rules this out. In Nagel-friendly worlds all higher-level entities result from lower-level entities. Now, perhaps high-level properties could pop out of nothing without running afoul of the law of conservation of mass-energy. But Nagel-metaphysics doesn't let anything pop. It proscribes violations of the law of conservation of mass-energy only as part of a wider commitment to universal constitutive supervenience. It thus forbids any sort of creation *ex nihilo* or destruction *ad nihilo* (even of so-called virtual particles[30]).

*Why emergents?*

*Why* does the emergent emerge? Emergentism again imposes an answer. There is no *why* beyond the fact of the correlation. Nature just works that way. For this reason the emergentist must posit a basic law for each type of base-emergent pair.

Nagel-metaphysics forbids this too. In Nagel-friendly worlds, high-level events don't happen unless brought about by do-something causes resulting from lower-level entities. Even bottom-level

[30] Which shouldn't raise eyebrows. Physics tells us that virtual particles arise from pre-existing mass-energy (the vacuum energy) pursuant to pre-existing forces and natures as described by pre-existing quantum laws.



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events require do-something causes provided for by basic bottom-level natures.

The emergentist couldn't find a do-something cause even if he wanted one. No concrete entity could play the part. R(a, b, c) – C's subvenient base – couldn't serve without stripping C of ontological novelty (and thereby turning emergence into something else). R*(a, b, c) – R(a, b, c)'s diachronic cause – doesn't have a close enough tie to C. And C would have to exist before existing in order to bring itself into existence. Might other entities serve? Only the relevant law of emergence, about which next.

## *Trouble with the law?*

Could the emergentist say the laws of emergence themselves create emergents? After all, if these laws changed, R(a, b, c) might trigger something else or nothing at all. We've seen that Humeans must accord natural laws more-than-epistemic standing, and that emergentism entails Humeanism. So the emergentist might not flinch.

But Nagel-metaphysics forbids this. It construes natural laws as expressions of the powers and susceptibilities of concrete entities. It rules out laws with any metaphysical clout.

The Nagel-thinker might also question how laws *could* wield causal muscle. If abstract objects, laws would seem incapable of causal traffic with the space-time world. If not abstract objects, then what are they and how do they qualify as laws? Are they just the base-emergent correlations? But how could a correlation cause itself? Or do they have physical existence over and above the correlations they cause? But wouldn't they then be concrete entities with powers governed by other and higher laws? And wouldn't this deprive the original laws of lawful status – or at least of status as *basic* laws?

## *Patterns*

The emergent not only pops into existence when a suitable base obtains. It pops into existence whenever that base obtains. What accounts for this exceptionless, high-level pattern? The emergentist has only two answers on offer. He can give credit to muscular laws. Or he can dispute the need for a cause and say nature just works this way.

We've seen already that Nagel-metaphysics won't accommodate muscular laws. It just as surely clashes with avowals of natural piety. A Humean can stomach mere correlation at high-levels



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because – for him – causation goes no further anyway. But a Nagel-thinker demands that high-level patterns result from lower-level causes. Otherwise – in his view – these patterns are massively improbable coincidences. He would compare them to a fair die that always rolls six. Richard Dawkins has argued for a gradualist view of evolution by asking whether a freak gust in a scrap metal yard could assemble a working jetliner.[31] According to the Nagel-thinker, the emergentist claims that gust after gust – every gust in fact – yields an identical plane.

Here we glimpse a deep motif of Nagel-style thinking, a commitment to the principle of sufficient reason as a metaphysical rather than epistemological constraint.[32] Underlying the Nagel-thinker's unease with Humean causation and emergentist 'nomological danglers' lies the conviction that everything in nature unfolds in step to sufficient (i.e. constitutively necessitating) causes. An emergentist can tolerate – even delight in – a world that scorns probability. The Nagel-thinker dismisses that world as all-but impossible.

Now for arguments that don't presuppose Nagel-metaphysics.

### *Weird laws*

Laws of emergence display a form at odds with that of all other (known) basic laws. Laws of emergence link non-basic and complex entities (in their antecedents) to basic but complex properties (in their consequents). We have no empirical reason to think such laws exist. All the basic laws we know of link basic and simple entities to other basic and simple entities. Admittedly, science does uncover laws linking non-basic and complex entities to other non-basic and complex entities. But these laws aren't basic. They result from basic laws of the standard form.[33]

The emergentist will, of course, reply that our world possesses metaphysical richness not yet probed by science.

[31] R. Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976).

[32] Victor Caston (personal communication) pointed out the relevance of the principle of sufficient reason.

[33] See, for example, J.J.C. Smart, 'Sensations and Brain Processes', *Philosophical Review* **68** (1959), 141–156, and J. Bennett, *A Study of Spinoza's Ethics* (Indianapolis: Hackett Publishing Co., 2006). The point needn't run afoul of the irreducibility or autonomy of the special sciences. Recast it as the claim that every token instance of a higher-level law results from basic physical events obeying basic laws of the standard form.



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*Proliferation, coordination and a dilemma*

Emergentism entails an explosion of basic entities – a basic property for every emergent and at least one basic law for each of those (more if some emergents arise from more than one base). This seems ontologically extravagant. Some philosophers argue, however, that norms of parsimony apply not to numbers of distinct entities, but to numbers of *types* of distinct entities – that parsimony pinches at the level of genera rather than species.[34] So an emergentist might claim that all emergents fall under a single type (or at least fewer types than first appears), as do all laws of emergence. This makes sense, but only so far. We should still squirm if our ontology includes a handful of distinct basic physical entities and laws but untold trillions of distinct emergent entities and laws. But this problem has more to it than first meets the eye.

Pure emergentism – according to which, in this context, all conscious properties are emergents – entails a run-away explosion of basic properties and laws. Your conscious states at times $t_1$, $t_2$, and $t_3$ qualify as distinct basic properties with distinct basic laws, as do all of my conscious properties, and Fatima's, and Igor's, and Bruno's parrot's, etc. Every possible distinct conscious property adds to nature's stock of basic properties and laws. Vast numbers of these basic properties are all but identical, with associated basic laws that do almost exactly the same thing. And even vaster is the set of basic properties and basic laws never instantiated. We can call this the *proliferation problem*. It offends our standards of parsimony even if it doesn't render pure emergentism impossible.

The *coordination problem* is worse. If all conscious properties are basic emergents with associated basic laws, then coherent, high-level, conscious thought would seem miraculous. Coherent, high-level, conscious thought involves a transition through distinct conscious states semantically appropriate one to another. Since emergentists accept mind-brain supervenience, they allow that neural processes underlie these transitions. Their view therefore requires a match-up between the subvenient neural states and the semantic properties of the supervening conscious thoughts. That is, as the mind transitions from conscious-thought$_1$ to semantically appropriate conscious-thought$_2$, the brain must transition from subvening neural-state$_1$ to subvening neural-state$_2$. But what makes it the case that neural-state$_1$ and neural-state$_2$ are similar enough – sit close

[34] See C. Hill, *Sensations: A Defense of Type Materialism* (New York: Cambridge University Press, 1991), 28.



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enough in 'neural space' – that transitions from one to the other are biologically possible? (Or biologically practicable. Even if the transitions are possible, they might not be practicable in 'real time'. They might take so long, or involve so much processing, that they couldn't support biologically feasible thought.)

An obvious and partly correct answer adverts to natural selection. But this just pushes the real problem back. For what guarantees natural selection the material it needs to work on? Why should conscious thoughts close enough in 'semantic space' to serve as stages in coherent thought supervene upon neural states close enough in neural space to allow biologically possible (or feasible) transitions from one to another? Since each psycho-physical link is provided for by a basic law, and nothing stands above basic laws giving order to the totality of basic laws, we should expect an arbitrary 'allocation' of conscious properties to neural states. That is, it should occasion no surprise if the neural correlates of the conscious thoughts 'P or Q' and 'not-P' could obtain in human brains, but the neural correlate of 'Q' could obtain only in a brain one mile across. Similarly, we should not wonder if the neural correlates of the conscious thoughts 'P', 'Q' and 'P & Q' could all obtain in human brains, but differed so radically that human brains couldn't make real-time transitions through them. The point is simple. Evolution can't achieve the impossible. It can only explore biologically possible paths through biological design space. If nothing stands above, and 'shepherds', the basic laws of emergence, we should expect a random match-up between neural states and conscious thoughts. And a random match-up would almost certainly deprive natural selection of the raw material it needs. Coherent, high-level conscious thought would be biologically impossible.

The emergentist will accept our good luck with natural piety, of course. But he stands on much weaker ground than he did earlier when he accepted with natural piety the systematic correlation between a given neural base and its supervening emergent. For there he could fall back on his Humean views. Here he can't. His opponent doesn't argue that the pattern of basic psycho-physical laws needs a cause. His opponent accepts that nothing can cause a pattern amongst basic laws, precisely because the buck stops when you come to basic entities. Rather, his opponent points out that any pattern amongst basic laws necessarily holds by chance alone. Any other pattern would have been just as likely. But the actual pattern has features vanishingly few such patterns have. The complexity, flexibility, and compositionality of conscious thought bespeak an astonishingly intricate and special pattern – a pattern not only as-though-structured, but also as-though-structured in a



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very particular way. Almost all possible 'patterns', lacking the right kind of 'order', would render coherent conscious thought impossible. But coherent conscious thought isn't impossible. So the emergentist must admit that his metaphysic holds true only as a result of the slimmest coincidence. Not much to hang a philosophy on.[35]

The emergentist might think he can go partway towards taming some of these problems by opting for mixed emergentism instead of pure emergentism. (Where pure emergentism treats all conscious properties as basic emergents, mixed emergentism envisions a core subset of relatively few and relatively simple basic emergents, with the more complex conscious properties resulting from those in the core.) Insofar as mixed emergentism posits relatively few basic properties and laws, it mitigates the proliferation problem. Insofar as it builds high-level conscious properties out of simpler and fewer elements, it might seem to reduce the need for the kind of pattern that occasions the coordination problem.

But mixed emergentism may face troubles of its own. Besides, at the end of the day, it seems to leave the coordination problem as bad as ever. Let us deal first with the former issue. As mixed emergentism posits fewer and simpler emergent properties, it attributes consciousness to smaller and simpler objects. Thus we must ask whether it can sufficiently mitigate the proliferation and coordination problems without undermining emergentists' objection to panpsychism. Recall that both panpsychism and physicalism avoid the difficulties that come with property emergence by adopting a reductive outlook. Both reduce high-level consciousness to basic entities at the bottom-most level. Physicalism reduces high-level consciousness to non-conscious basic entities at the bottom-most level. Panpsychism reduces high-level consciousness to conscious basic entities at the bottom-most level. The emergentist, like the panpsychist, doesn't believe that consciousness reduces to anything other than itself. The emergentist, like the physicalist, doesn't believe that consciousness can characterize overly-simple objects. Now, if the mixed emergentist can sufficiently mitigate the proliferation and coordination problems only by attributing consciousness to very simple objects, objects simple enough to offend his original anti-panpsychist intuitions, then he'd do better to ditch emergentism and embrace panpsychism. If he goes panpsychist, he need shoulder only the

[35] For a good discussion about grounding metaphysical views on coincidence, see J. Leslie, *Universes* (London: Routledge, 1989).



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problems of panpsychism. But if he sticks with emergentism, he must shoulder those problems as well as the problems of emergentism.

Well, how far down must the mixed emergentist go? It depends on the neural mechanisms underlying experience, of course, mechanisms about which we don't yet know nearly enough. So the following thought experiment might err grossly. But this shouldn't matter.[36] The paper aims only to make the conceptual point that the mixed emergentist may have to go down too far. Imagine some very complex conscious property. Suppose you have a visual experience of a large and gaudy room. Colorful paintings adorn the walls. Ornate rugs and fancy furniture cover the floor. Bric-a-brac clutters every surface. From the frescoed ceiling spinning chandeliers cast rainbow shards of light. The place is tacky. Suppose your whole visual center supports the experience. The mixed emergentist must say that smaller neural structures support elements of the experience. More, he must keep these structures simple enough that the brain can easily enough manipulate the experiences they support. Now, take the entire experience as a two-dimensional canvas three meters by six meters (roughly the apparent size of the visual representation) and divide it into pixels. Assume that each element of the experience fills one pixel. Let each pixel occupy a square two millimeters long (a rough approximation of normal visual resolution). That makes 4,500,000 pixels. The mixed emergentist must therefore say that one 4.5-millionth part of the visual center supports a stand-alone visual experience. Now, the visual center takes up roughly 10 cubic centimeters.[37] So a cube of neurons 130 microns across supports a visual experience. The soma of a brain neuron – the cell body – ranges in size from 50 microns in diameter up.[38] This means that a cluster of about 34 neurons supports a visual experience. Should this make the mixed emergentist uncomfortable? At 34 neurons we don't have anything like a brain. Moreover, when we look into the brain we don't find 34 contiguous neurons that could plausibly support a stand-alone experience. Groups of contiguous visual neurons discharge specialized functions necessary for some aspect of an overall experience.[39] So even a one-

[36] Nor should it matter that the next paragraphs aren't informed by deep knowledge of neuroscience.

[37] See T. Andrews, S. Halpern & D. Purves, 'Correlated Size Variations in Human Visual Cortex, Lateral Geniculate Nucleus, and Optic Tract', *The Journal of Neuroscience* **17**(8) (1997), 2859–2868.

[38] See E. Kandell, J. Schwartz & T. Jessel, *Principles of Neural Science, 4th ed*. (New York: McGraw-Hill, 2000), 22.

[39] Ibid.



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pixel experience would have components which call upon different visual faculties – those responsible for borders, vertical lines, horizontal lines, colors, etc. Now imagine the same thought experiment applied to an eagle scanning the ground for prey. The eagle's visual cortex is much smaller than ours yet its sight far more acute. So the eagle would have more pixel-experiences with less brain to support them. The mixed emergentist might end up with fewer neurons than pixels. He might have to attribute stand-alone experiences to sub-cellular clumps of molecules.

You might think, of course, that functional specialization and parallel processing undermine this thought experiment by undermining the assumption that each component experience forms a pixel of an overall experience. But that would only show that the mixed emergentist can't go down much, even though he needs to. In any case, the point remains that the mixed emergentist needs simpler neural structures and simpler experiences in order sufficiently to mitigate the proliferation and coordination problems. The thought experiment takes one stab at calculating how far down he must go. At the very least, it demonstrates that the mixed emergentist can't assume himself in the clear.

Now for the second and bigger issue. We have independent reasons to think the mixed emergentist *can't* make it into the clear. He might manage to tame the proliferation problem, at least if he goes down far enough. But it would seem that he can't tame the coordination problem, no matter how far down he goes. So long as the mixed emergentist sticks with emergentism (of any kind), he stands hostage to the arbitrary allocation of emergent conscious properties to subvenient neural states. It doesn't help that mixed emergentism envisions fewer and simpler conscious properties emerging from fewer and simpler neural states. The mixed emergentist still has no grounds to expect that these conscious properties link to similar enough neural states to undergird coherent conscious thought. In fact, going down might even make things worse, since some conscious properties might emerge only from large and complex structures. The emergentist has no reason to think not, given the random allocation of conscious properties to subvenient states. Overall, the coordination problem appears intractable for any type of emergentism about consciousness.

## 5.

Many philosophers write off emergentism without arguing much against it. Jonathan Bennett dismisses it as 'defeatist and



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unscientific'.[40] Strawson spurns it because it 'seems to turn the relation between the experiential and the nonexperiential into a guaranteed mystery, where before it was merely a mystery'.[41] Colin McGinn casts it aside almost as quickly.

> [We] do not want to acknowledge radical emergence of the conscious with respect to the cerebral: that is too much like accepting miracles *de re*. Brain states cause conscious states, we know, and this causal nexus must proceed through necessary connections of some kind – the kind that would make the nexus intelligible *if* they were understood.[42]

Other philosophers have advanced fuller arguments. Many think emergentism incoherent or otherwise impossible. Some base this on a belief that emergentism conflicts with contemporary physics. However, Brian McLaughlin,[43] Terrence Horgan,[44] David Papineau[45] and Wilson[46] show that it doesn't. Emergentism does recognize basic laws and properties beyond those recognized by physics. But nothing in physics prohibits this. Wilson argues that, in fact, 'recent scientific theorizing provides a blueprint for how conservation laws might support the warranted posit of emergent configurational forces'.[47]

Some critics, targeting versions of emergentism that postulate novel emergent powers, maintain that an emergent property can't bestow powers not had by its base. This objection often builds on the claim that, through transitivity, the base has every power of the emergent. Thus Kim tells us that the powers of the base overdetermine and therefore exclude the powers of the emergent, leaving the emergent powerless and therefore ontologically otiose.[48] Wilson points out, however, that we can avoid overdetermination notwithstanding causal transitivity.[49] Not only don't links in causal chains

[40] Op. cit. note 33, 136.
[41] G. Strawson, *Mental Reality* (Cambridge: MIT Press, 1994), 72.
[42] C. McGinn, 'Can We Solve the Mind-Body Problem?', *Mind* **98** (1989), 531.
[43] Op. cit. note 5.
[44] T. Horgan, 'From Supervenience to Superdupervenience: Meeting the Demands of a Material World', *Mind* **102** (1993), 555–586.
[45] See D. Papineau, 'The Rise of Physicalism', in Gillett & Loewer. op. cit. note 6.
[46] (2002), (2005), both op. cit. note 4.
[47] (2005), 431, op. cit. note 4.
[48] 'Being Realistic about Emergence', op. cit. note 6.
[49] (2005), 431, op. cit. note 4.



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overdetermine one another. But also, insofar as emergent powers stand over and above basic physical forces, Kim's concerns can't arise.

Many philosophers look askance at emergent downward causation (which occurs where emergent causal powers have effects at lower levels). Some thinkers worry that downward causation clashes with the causal closure of the physical. Wilson acknowledges that it does. But she points out that nothing prevents emergentists from denying causal closure: the falsity of causal closure runs afoul of physicalism but not physics.[50] Other critics claim that downward causation renders emergentism incoherent by conflicting with the upward determination of the emergent by its base.[51] Arguments to this effect seem obliged to make substantial metaphysical assumptions. Many philosophers, including some otherwise unfriendly to emergentism, therefore defend it against these charges.[52] For two reasons this paper avoids these kinds of criticisms. First, because it asks whether emergentism can account for consciousness, it doesn't see much point in arguments that bounce harmlessly off epiphenomenalist versions of emergentism – currently the most popular (see section 6). Second, even if an emergent can't coherently affect its own base, nothing stops it from affecting other entities at the same level as its base. Thus, if $E_1$ emerges from $P_1$, then maybe $E_1$ can't affect $P_1$. But nothing keeps it from affecting $P_2$ at the same level as $P_1$. And if $P_2$ supports $E_2$, and $P_3$ supports $E_3$, and $E_1$ turns $P_2$ into $P_3$, and thus $E_2$ into $E_3$, then $E_1$'s downward causal powers let it affect entities at its own level. Similarly, if $E_1$ emerges from $P_1$, and $E_1$ affects $P_2$, and $P_2$ in turn affects $P_1$, then $E_1$ can affect its own base, although not directly or synchronically.

## 6.

Emergentists once put forward a robust metaphysic about the properties met in science and everyday life. They told us that chemical properties emerge from and stand over and above physical properties; that biological properties emerge from and stand over and above chemical properties; that mental properties emerge from and stand over and above biological properties; and that social properties

[50] Ibid, 433.

[51] See J. Kim, (1999), 'Emergence: Core ideas and issues', and (2010), all op. cit. note 6.

[52] See Crane, Shoemaker, and O'Connor & Wong 2006, all op. cit. note 6.



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emerge from and stand over and above all these other properties.[53] The march of science has hit this metaphysic hard.[54] Quantum mechanics taught us that chemical properties result from physical properties.[55] The life sciences reduced biology to complex biochemistry. Many social scientists understand communities as groups of human agents interacting under sundry conditions in pursuit of sundry goals. Only in the mental realm does emergentism retain much of a toehold.[56]

Most philosophers thus regard emergentism as a historical oddity staging a modest if dubious comeback.[57] But the doctrine in fact captures the views of most contemporary property dualists. Consider Joseph Levine's characterization of property dualism:

> Property dualism… is the view that certain physical states give rise to certain mental states by virtue of their instantiating a basic law of nature. Since the psycho-physical laws involved are basic, there is no deeper explanation of their workings, no lower-level mechanisms to appeal to.[58]

Levine describes a view combining object monism, property dualism and property emergence, the hallmarks of radical emergentism. Contemporary emergentists include the early Jackson[59] and the

[53] See especially C. L. Morgan's doctrine of emergent evolution, according to which ontological novelties arise through time as evolution, biological and otherwise, leads to increasingly complex physical structures giving rise to new categories of increasingly complex emergents (*Emergent Evolution* (London: Williams & Norgate, 1923)).

[54] See McLaughlin (1992), op. cit. note 5.

[55] Some philosophers maintain that quantum phenomena themselves involve property emergence. See, for example, P. Humphreys, 'How Properties Emerge', in Bedau & Humphreys, op. cit. note 6, 111–126, and J. Ladyman, D. Ross, D. Spurrett & J. Collier, *Metaphysics Naturalized: Everything must go* (Oxford: Oxford University Press, 2007), although the latter would resist this characterization of their views. This author judges otherwise, for reasons beyond the scope of this paper.

[56] Bedau & Humphreys, op. cit., note 6, 12, note that most contemporary thinkers have a 'sparse' view of emergence: if it occurs at all, it occurs only with unusual types of phenomena not amenable to scientific study.

[57] See P. Davies, 'Preface', in Clayton & Davies, and J. Kim, 'Being Realistic about Emergence', both op. cit. note 6.

[58] J. Levine, *Purple Haze: the puzzle of consciousness* (New York: Oxford University Press, 2001), 22.

[59] F. Jackson, 'Epiphenomenal Qualia', *Philosphical Quarterly* **32** (1982), 127–136.



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later Kim[60]. Emergentism also captures the major strain in Chalmers' 'naturalistic dualism'.[61] Chalmers tells us that consciousness comes into existence pursuant to basic psycho-physical (or psycho-informational) laws linking it to low-level but non-basic and physically-realized organizational (or informational) structures relevant to global control in physically-realized cognitive systems.[62] All these thinkers embrace epiphenomenalist emergentism. Jackson and Kim seem to endorse pure emergentism. Chalmers opts for mixed.[63]

British emergentism may have petered out in the 1920s and 1930s when its wider claims crumbled before the march of science. But the very same view, limited to consciousness, has staunch defenders today.[64] Most physicalist philosophers of mind, when thinking about property dualism, in fact have in mind a view effectively identical to classical emergentism (shorn of emergent or configurational forces). This has several consequences. First, it reveals 'standard' property dualism as much more fully elaborated than most physicalists (or even standard property dualists) allow. They forget that some of Britain's finest minds put over 80 years of thought into the view. Second, it accords emergentism a contemporary relevance few philosophers appreciate. And third, it does a disservice to other forms of property dualism. Most physicalists, having gestured towards the shortcomings of emergentism, take themselves to have rebutted property dualism. But 'property dualism' serves as a label for a family of doctrines having little in common beyond the claim that consciousness exists as a property over and above the physical. Recall, for example, the incompatible metaphysics underlying emergentism and panpsychism. No philosopher should

[60] J. Kim, *Physicalism or Something Near Enough* (Princeton: Princeton University Press, 2005).

[61] D. Chalmers, *The Conscious Mind* (New York: Oxford University Press, 1996). Chalmers also flirts with proto-phenomenalism, neutral monism and panpsychism, as well as theories equating consciousness with the categorical underpinnings of physical causation.

[62] Chalmers generally withholds consciousness from the bottom-most level (e.g., ibid, 295). In a few places he does toy with bottom-level consciousness (e.g., ibid, 293–301).

[63] Ibid, 275.

[64] A few stalwarts, such as Sperry, op. cit. note 6, still defend property emergence in other special sciences.



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assume that attacks against one form of property dualism threaten the others.[65]

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[65] The author wishes to thank Glenn Hartz for stressing the importance of doing metaphysics metaphysically, and Nadiya Slobodenyuk for help with matters neuroscientific.



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