

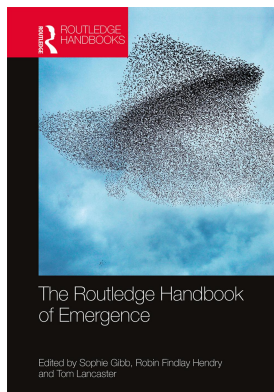
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INTENTIONALITY
AND EMERGENCE*Lynne Rudder Baker*

Intentionality and emergence are both huge and contested topics in philosophy. Rather than surveying the enormous literature that each topic has generated, I'll begin with some general remarks about the idea of intentionality, followed by a brief sketch of a mainstream construal of emergence (Jaegwon Kim's). Then I shall consider four possible ways that intentionality and emergence may be related and criticize three of them. The remaining view – the one that I support – is strong emergence based on my constitution view of the material world.

Intentionality

Intentionality is the generic term for an important mental capacity and for properties that presuppose exercise of that capacity: the capacity is one that is manifested in thoughts, sentences, and actions; it is the property *of being about*, or representing, or being directed toward something. For example, my promising to call you tomorrow is about calling you tomorrow. My remembering that Vienna is in Austria is about Vienna's being in Austria. Your shooting at the target is directed toward the target. So intentional phenomena include not only explicitly mental properties – such as having and expressing propositional attitudes like hoping, remembering, deciding, believing, wishing, feeling, experiencing, pretending, and so on – but also thoughts, sentences, and actions.¹

Human affairs bristle with intentional properties. Someone *runs for political office*; someone *votes*; someone *is under the illusion* that she hears a ghost; the team *practices* on Friday; the Senate *confirms* a nominee; someone *pursues* a PhD.

Indeed, the category of intentional properties is even broader still. Intentional properties also comprise all manner of representational properties – for example, symbols (a crucifix *represents* the death of Christ), symphonies (Beethoven's Emperor Concerto was written *in honor of* Napoleon), novels (*Crime and Punishment* is about a person's *moral transformation*), and paintings (Goya's *The Third of May* represents the *horrors of war*). Not only do these examples illustrate the extent of intentional properties, but also the very production of symbols, symphonies, novels, and paintings requires intentionality. No artifact or artwork or institution could exist in a world without intentionality.

In light of the vast range of intentional properties, I propose that we characterize as *intentional* any entity, property, state, activity, or event that could not exist, be exemplified, or occur in a world without minded people (or animals) who can represent and misrepresent things.

Let me mention some distinctive features of intentionality. Three stand out: (1) Famously, thoughts can be about things that do not exist (unicorns, Zoroaster, phlogiston). Our amazing ability to think of things that do not exist is called “intentional inexistence.” There is an enormous literature on the status of nonexistent items and how we can think about them. (See, e.g., Reicher 2015). (2) One cannot freely substitute co-referring terms *salva veritate* in sentences that contain intentional terms. For example, you might be on the lookout for the bank robber without being on the lookout for the mayor, even though (unbeknownst to you) the bank robber is the mayor. (3) Intentional thoughts or sentences cannot be existentially generalized. For example, you may want to buy a car, but there may be no particular car that you want to buy. Although these are fascinating features of intentionality, we cannot address them here. The question at issue is this: Are intentional properties emergent properties? So let us turn to the idea of emergence.

Emergence

There are two major concepts of emergence. Both appeal to an idea of “levels,” but each conceives of levels differently. One conception (called “weak emergence”) takes levels to be determined linguistically by predicates, descriptions or concepts. The other conception (called “strong emergence”) takes levels to be determined ontologically by different kinds of causally efficacious properties (Kim 2002, 16). When we say that electrical conductivity makes its first appearance at a lower level than having a metabolism, if we are talking about the descriptions “electrical conductivity” and “having a metabolism,” we are assuming weak emergence, but if we are talking about the causally efficacious properties *electrical conductivity* and *having a metabolism*, we are assuming strong emergence.

In “Making Sense of Emergence,” Jaegwon Kim takes the core idea of emergence to be this:

[A]s systems acquire increasingly higher degrees of organizational complexity, they begin to exhibit novel properties that in some sense transcend the properties of their constituent parts, and behave in ways that cannot be predicted on the basis of the laws governing simpler systems.

(Kim 1999, 3)

Kim’s response to this “core idea” is two-fold. He agrees that there are properties that may legitimately be called “emergent” and that they cannot be predicted, but he also holds that these emergent properties fail to be genuine properties with novel causal powers. The failure of emergent properties to be genuine (or causally efficacious) follows from two of Kim’s basic assumptions.²

First, Kim endorses mereological supervenience: “the doctrine that properties of wholes are fixed by the properties and relations that characterize their parts” (Kim 2002, 18). Since Kim, along with classical mereologists, takes wholes to be aggregated out of parts, with their properties and relations, he endorses a closure principle for wholes (entities): “Any entity aggregated out of physical entities is physical” (Kim 2000, 114).

Second, Kim endorses the claim that causally efficacious properties are micro-based, where a micro-based property is a property of being completely decomposable into properties of non-overlapping proper micro-parts of a whole, *W*, and the relations between the properties of the micro-parts (Kim 2000, 84). Kim adds to this a closure principle on the physical: “Any property that is formed as micro-based properties in terms of entities and properties in the physical domain is physical” (Kim 2000, 114–115).

Since micro-properties are uncontroversially physical properties, combining the claims about micro-properties with mereological supervenience yields a strong result: Although micro-based

properties are properties of wholes, they are not on a higher level than the properties of the micro-parts into which they decompose. So an emergent property, E, is just a new way “of indifferently picking out, or grouping, first-order properties, in terms of causal specifications that are of interest to us” (Kim 1999, 17).

Indeed, Kim suggests that we “define ‘higher’ and ‘lower’ not for properties but instead for predicates and concepts” (Kim 2002, 19). In that case, there is no difficulty with supposing that two predicates, one on a higher level than the other, both designate the same property. So the hierarchy of “levels” turns out to be a hierarchy of predicates, not a hierarchy of properties at all (Kim 2002, 19).

Nevertheless, Kim does not reject emergence altogether. Rather, he refigures the levels that support emergence as linguistic, rather than ontological; he construes emergence to be a matter of predicates or concepts, not of genuine properties. So in Kim’s view – “weak emergence” – emergent properties are aggregates of physical (nay, microphysical) properties described in a higher-level vocabulary.³ In this view, emergent properties are epiphenomenal. All the causal work goes on at a microphysical level.

In sum, in a theory of weak emergence, the appearance of an ontological hierarchy of levels is dispelled as, ontologically, the levels all collapse into the basic level of microphysics. So Kim makes sense of emergence as a feature that concerns predicates or descriptions; emergence is not ontological at all.

The alternative conception of emergence is ontological. In my view – “strong emergence” – emergence is an ontological idea that is not just a matter of description. If an entity or property is emergent, it comes into being or comes to be exemplified in time, and it has causal powers. An emergent property is ontologically distinct from whatever properties it emerges from (the base properties): it is on a higher ontological level than its base properties, and is unpredictable and unexplainable from the base properties alone. So emergent properties do not reduce to microphysical properties. Thus, in my view – unlike Kim’s (Kim 1999) – emergence is an engine of genuine ontological novelty.

Is intentionality emergent?

Logically, there is a spectrum of possibilities for whether intentional properties are emergent. I’ll mention four possibilities (and criticize one and defend another):

- 1 Nonexistence: Intentional properties have never been exemplified; we are just deluded in thinking otherwise.
- 2 Weak Emergence: Intentional properties are emergent only in the sense that they lead to new ways to describe physical phenomena; they introduce no new causal powers (Kim’s view).
- 3 Strong Emergence: Intentional properties add to the basic ontology and introduce new causal powers but do not introduce any immateriality into the world (my view).
- 4 Ontological Dualism: Intentional properties not only add to the basic ontology but also add properties whose bearers are immaterial entities (e.g., souls). Let’s consider each of these construals in turn.

Eliminativism

The first alternative is that intentionality is eliminable. This alternative is known as eliminativism, a view that has a forceful proponent in Alex Rosenberg (2011b, 2011a, 2009). If, as I have urged, intentional phenomena presuppose that there are minds, then one way to express the view that intentionality is eliminable is to say that there are no intentional phenomena and never have been.

According to Rosenberg, “the foresightless play of fermions and bosons produc[e], in us conspiracy theorists, the *illusion* of purpose” (Rosenberg 2011b; emphasis his). But there really is no purpose or intentionality in the world at all: “There is no *aboutness* in reality” (Rosenberg 2011a, 191; emphasis his).

Rosenberg says: “When you consciously think about your own plans, purposes, motives, all you are really doing is stringing together silent ‘sounds’ . . . in your head” (Rosenberg 2011a, 208). But this claim contradicts his denial of intentionality. If there is anything that “you are really doing,” you are exhibiting intentionality. If you are really “stringing together silent ‘sounds,’” then you are doing something. You may be mistaken about “what you are really doing,” but what is going on is not just events occurring in your brain. Stringing together silent “sounds” is itself an intentional activity; it’s not the same sort of phenomenon as neurons firing.

Eliminativists like Rosenberg owe us an error theory of how we could be so comprehensively mistaken about aboutness. He should give us a clue in terms of bosons and fermions and the like as to how the illusion of intentionality is even possible; what is it about bosons and fermions, etc., that can give rise to such illusion?

If eliminativism about intentionality were correct, then it would be false that there is something that Dostoevsky’s *Crime and Punishment* is about. Certainly, we cannot explain what Dostoevsky was trying to do in wholly physical terms. To try to give a complete explanation, or even an accurate description, of what is going on in *Crime and Punishment* completely in nonintentional terms would only succeed, at best, in changing the subject.

Without intentionality, we would just be mute. We may emit noises, but they would not mean anything. I shall leave it to someone else to give a successful defense of eliminativism.

Weak emergence

Consider the second alternative: intentional properties are just descriptive; they have no ontological significance. This view is dominant today in Anglophone philosophy. As we have seen, Jaegwon Kim is a good example of the descriptive view. Kim holds that every material object has a microphysical description, in terms of which it can be completely described (Kim 2000, 6). Call the property referred to by the complete microstructural description of the macro-object its “total microstructural property.” “Systems with an identical total microstructural property have all other properties in common. Equivalently, all properties of a physical system supervene on, or are determined by, its total microstructural property” (Kim 2000, 7).

Kim characterizes mereological supervenience as “the doctrine that properties of wholes are fixed by the properties and relations that characterize their parts” (Kim 2000, 18). Levels are “structured by the mereological relation ‘is a part of’: Entities at level n are mereologically composed of (i.e., are aggregates of) entities belonging to lower levels” viz., $n-1$ (Kim 1993, 337).

In the mereological view, emergent properties are properties of mereological wholes, the parts of which are the emergent base. But a mereological whole is just an aggregate of entities that are its parts appropriately related. Emergent properties are had by “aggregates of basic entities standing in an appropriate ‘relatedness.’ Thus, no new concrete entities emerge . . . it’s only that some of these [basic] entities come to be characterized by novel characteristics not had by their constituents” (Kim 1992, 123). As I mentioned earlier, Kim takes emergence to be a matter of redescription.

So the levels generated by mereological supervenience are not ontological levels. Indeed, ontologically, they collapse all back into the lowest (“most fundamental”) level. A mereological conception of levels (à la Kim) will not yield any ontological differences between emergent properties and others. Emergent properties are just differently characterized from their parts.

For example, “certain aggregates of water molecules have such emergent properties as transparency . . . properties not had by individual water molecules.” What is mereologically higher is not ontologically higher. This is so because according to mereological supervenience, what is mereologically higher is just an aggregate of items at a lower level.

With this non-ontological construal of emergence, we can use intentional descriptions without adding anything to the basic ontology. All that exists in an ontologically significant way are basic (microphysical) entities. So intentional properties that (weakly) emerge must be reducible. Unreduced, they are simply at a higher *descriptive* level than their base. However, all attempts to make intentionality naturalistically acceptable by reducing intentional properties that I know of have failed (Baker 1991b, 1991a, 1989).

In any case, Kim’s whole edifice rests on the pair of assumptions that I mentioned earlier – mereological supervenience and the claim that all causally efficacious properties are micro-based. I think that these assumptions are dubious, because they restrict the domain under discussion in a question-begging way.⁴ Indeed, I think that they both fall to counterexamples.

For example, many of the properties of wholes that have causal efficacy do not depend on anything about parts, *pace* mereological supervenience. Consider legal properties (e.g., the property of being a suspect) or political properties (e.g., the property of being a registered voter) or financial properties (e.g., the property of being in debt). All of these properties obviously have effects in the world: the property of being a suspect has the effect that your telephone records can be subpoenaed; the property of being a registered voter has the effect of being handed a ballot; the property of being in debt has the effect of being turned down for loans. So mereological supervenience seems inadequate as a basis of causally efficacious properties. Likewise, the same properties – being a suspect, being a registered voter, being in debt – are not micro-based and hence are also counterexamples to the second dubious assumption. “Being a suspect” is not just an alternative description of a micro-based property, nor is it a description that lacks causal consequences.

Unless these non-micro-based properties are ruled out by stipulation, they are counterexamples of Kim’s view: some macroproperties are causally efficacious but are neither micro-based nor supervenient on parts of wholes. This fact provides evidence that we need an ontological construal of emergence and not just a language-based construal.

Strong emergence

The third alternative gives emergent properties, including intentional properties, ontological weight. If intentionality emerges and introduces new causal powers but is not reducible to something else (*pace* (Fodor 1987, 97)), it is ontologically basic. Here is my (not uncontroversial) understanding of strong emergence:

(SEP) Properties of kind K are strongly emergent if and only if: (1) they issue from already-exemplified base properties K’ ($K' \neq K$); (2) they begin to be exemplified during some time interval; (3) they confer causal powers on their bearers; and (4) they are not reducible to more fundamental – ultimately physical – properties.

Here is some background for (SEP). At the Big Bang, there were no exemplifications of intentional properties. Intentional properties did not appear until animals (perhaps birds or fish) began to respond to their environments in ways more flexible than rigid instinct. Contrast a bird’s seemingly choosing materials with which to build a nest and the *Sphex* wasp that displays only mindlessly mechanical behavior (Dennett 1984). The bird displays a flexibility in responding to

items that it could pick up; the wasp has a behavioral routine that is unalterable. The difference between the insect and the bird is each of their places on the evolutionary scale. Evolution occurs by natural selection. Since there is a time at which there is no exemplification of intentional properties and a later time at which intentional properties (e.g., the bird's) are exemplified, on the assumption that there is no outside intervention, intentional properties begin to be exemplified in the course of evolution.

Intentionality in the first instance resides at the “common-sense” level – the level at which we fall in love, children learn how to behave, young adults pursue careers, and so on. Although I believe that the common sense level is prescientific, parts of it can be made accessible to science by selecting – from the hodgepodge of reality that we share – certain properties that recur in different situations and can be measured. The sciences look for correlations (among other things), and correlations appear between items that recur. One-off properties or idiosyncratic properties are ignored. For example, sociologists do not study correlations between wearing green on Thursday and eating carrots; rather, they study correlations between wealth and philanthropy. When the correlations get robust enough, the scientists suspect that the relation in question is causal.

The top level of reality is the level at which we live our lives – the level of the midnight snack or traffic jams or comfortable offices. Although this level is not per se in any science's domain, it can partially be studied by many sciences. For example, midnight snacks may be studied by sociologists (to determine eating habits) or by biologists (to determine ingredients); although there is much to be discovered about junk food, there is also much that is not scientifically accessible or relevant (e.g., the distribution of places where it is consumed).

There is causation at every level of reality, even at the (lawless) top. Although there is no science that measures any correlations between speakers' remarks and hearers' irritation, your remark at dinner may irritate me (cause me to be irritated). So causation is not proprietary to science: we all, scientists and nonscientists alike, have causal powers (when you itch, sometimes you scratch and sometimes you don't) and make causal judgments (when you see the empty bowl and the peaceful dog, you judge that the dog ate the food).

Different levels are “home” for different kinds of causes. The relation between levels is not a matter of mereology, but of what I call “constitution.” With a nod to Aristotle, I think that each entity is of some primary kind, and the entity has its primary-kind property essentially. (X's primary kind is the answer to the question: What most fundamentally is X?) Each entity known to us is constituted by something of a different primary kind at a lower level. For example, a US dollar bill is constituted by a piece of specially treated paper. There may be multiple kinds of constituters for a single constituted kind: for example, a boat may be constituted by pieces of fiberglass, by pieces of wood, or by something else. What makes the item a boat is not what constitutes it, but rather appropriate items (constituters) that are in what I call “boat-favorable circumstances,” where boat-favorable circumstances include things like intended for transport on water. Not only concrete entities like us are constituted, but exemplifications of properties are constituted as well.

Since, in my view, levels are produced by the relation of constitution and constituted items are not reducible to their constituters, I take levels to be irreducible pieces of reality. Different kinds of properties first appear at different levels, for example, *spin* and *charge* appear on the microphysical, along with electrons; *having a brain* appears at biological levels; *having a good reputation* appears at social levels. New causally efficacious properties get exemplified at every level.

Here is what distinguishes my view from Kim's: in my view, levels are related by constitution and not, as Kim would have it, by mereological entities.⁵ (See Baker 2007, 181–198.) If x constitutes y at t , then y is on an ontologically higher level than x , and y 's primary-kind property is on a higher level than x 's. Property-constitution is analogous to entity-constitution (Baker 2000,

2007, 2008, 2013). With the addition of one more term, “nonderivatively,” we have a sufficient condition for one property’s being at a higher level than another. Say that x has F nonderivatively if and only if x ’s having F is independent of x ’s constitution relations (e.g., my being a philosopher is independent of any facts about my body or its relation to me). Now here’s the sufficient condition: property Q is a higher-level property than property P if:

There are x, y such that:

- (i) y nonderivatively has Q , and
- (ii) for any x , if x is a lower-level entity than y , then it is not the case that x nonderivatively has Q , and
- (iii) there is some z such that: z is a lower-level entity than y and z nonderivatively has P .

Now we can make more precise the idea of constitution of property-exemplifications (x ’s having F at t).

(P-C) x ’s having F at t constitutes x ’s having G at $t =_{df}$

- a G is a higher-level property than F ; and
- b x has F at t and x has G at t ; and
- c x is in G -favorable circumstances at t ; and
- d It is necessary that: anything that has F in G -favorable circumstances at t has G at t ; and
- e it is possible that: x has F at t and x lacks G at t .

We can generalize: constitution is a contingent relation between entities and property exemplifications at different levels. No constituter entails what it constitutes. Hence, no constituted object is reducible to its constituter. What is constituted is at a higher ontological level than what constitutes it. It remains to show that intentional properties are strongly emergent. Here is a superficially simple argument for the emergence of intentionality:

- 1 Intentional properties begin to be exemplified in the course of evolution.
- 2 Intentional properties confer causal powers on their bearers.
- 3 Intentional properties are not reducible to more fundamental – ultimately physical – properties.
- 4 If 1–3, then \therefore 5.
- 5 Intentional properties are strongly emergent properties.

The argument is valid. Is it sound? Here are justifications for the premises: Line 1 follows from the discussion of strong emergence earlier. Line 2 follows from what intentional properties enable us to do and the extent to which they enable us to be agents at all. Indeed, intentional properties shape all recognizable human life and hence are causally efficacious. Line 3 does not lead to any kind of dualism, but rather to (extravagant?) pluralism. It is a bad misreading of my constitution view to take it to be dualistic. My characterization of constitution itself implies nonreduction of constituted to constituting items (Baker 2013). Line 4 just follows from (SEP) earlier. So it seems that intentional properties are strongly emergent properties that belong in the ontology – as we would suspect from the counterexamples to Kim’s view.

Why is strong emergentism so unpopular? I think that there are two reasons, both stemming from the fact that strong emergence implies downward causation: (1) Downward causation has been deemed to be incoherent (Kim 1992, 136). Downward causation conflicts with certain of

Kim's (unargued for) principles, for example, "the only way to cause a [strongly] emergent property to be instantiated is by causing its emergent base property to be instantiated" (Kim 1992, 136). However, the constitution view recognizes no such principle. (2) Downward causation seems to conflict with the completeness of physics. But why, other than blind ideology, endorse the completeness of physics? We may well reject the *modus ponens*, "If physics is complete, then there are no strongly emergent properties," in favor of the related *modus tollens*, "If there are strongly emergent properties, then physics is incomplete." (Indeed, my position in Baker (2015) is tantamount to holding that the first-person perspective is strongly emergent.) We cannot make sense of human life without appealing to intentional properties, which seem not to be reducible to physics, but all we have as evidence for the completeness of physics is a (weak, I think) inductive argument. So strong emergence seems to me a better bet than the completeness of physics.

Ontological dualism

The final alternative is ontological dualism. Perhaps intentional properties have existed since the Big Bang (and hence did not emerge) and confer on their bearers irreducible causal powers. (This seems to be the view of ontological dualists, e.g., Lavassa and Robinson 2014.) Or perhaps minds, "endowed with novel causal powers" emerge from brains of biological individuals (Hasker 1999, 188), and both intentionality and teleology are "basic-level phenomena" (Hasker 1999). The emergent mind is to be part of nature, something naturally generated by natural processes; nevertheless, the mind, with its intentionality, is an "entity actively influencing the brain but distinct from it" (Hasker 1999, 193).

Although a minority view, emergent dualism is an important new form of substance dualism. Speaking for myself, however, I'll stick with the seamlessness of nature afforded by the constitution view with its commitment, not to dualism, but to ontological pluralism.

Conclusion

I conclude that intentionality is strongly emergent. Although I argued for that conclusion from my view of constitution, an argument by elimination is another path by which the same conclusion could be reached. Assuming that there are only four possible answers – eliminativism, weak emergence, strong emergence, and ontological dualism – to the question, "How is intentionality related to emergence?" there are powerful reasons against three of the possibilities: eliminativism makes illusion a mystery, weak emergence (at least Kim's version) has dubious presuppositions (for a list of six such principles, see Baker (2009, 113–114)), and ontological dualism fractures the natural world. The only remaining possibility is strong emergence.

Notes

- 1 In ordinary language, "intentional" refers to what is done deliberately or on purpose. As used in philosophy, "intentional" refers to many other kinds of phenomena.
- 2 Kim has a raft of unargued-for principles. For a detailed argument concerning Kim's assumptions, see (Baker 2007).
- 3 This feature of Kim's seems reminiscent of Davidson's view of mental events as physical events under nonphysical descriptions.
- 4 For a discussion of mereology and constitution, see (Baker 2007, 181–198, 2008, 16–22).
- 5 To see how the constitution view handles downward causation, see (Baker 2007, 115–119).

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