

Supervenience is not a modal concept

Section: “Modality and Essence”

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“What is the connection between the natural fact that an action is a piece of deliberate cruelty [...] and the moral fact that it is wrong? It cannot be an entailment, a logical or semantic necessity. Yet it is not merely that the two features occur together. The wrongness must somehow be “consequential” or “supervenient”: it is wrong because it is a piece of deliberate cruelty. But just what *in the world* is signified by this “because?” (Mackie 1977: 44)

The explanandum

“To say that the *A*-properties or facts are supervenient on the *B*-properties or facts is to say that the *A*-facts are, in a sense, redundant, since they are already implicitly specified when one has specified all the *B*-facts. *A*-facts are not fact ‘over and above’ the *B*-facts, not something ‘separate’. To state an *A*-fact, or ascribe an *A*-property, is to describe the same reality in a different way, at a different level of abstraction, by carving the same world at different joints.” (Stalnaker 1996: 87)

“...the thesis that a given domain supervenes on another is a metaphysical thesis about an objectively existent dependency relation between the two domains; it says nothing about whether or how the details of the dependency relation will become known so as to enable us to formulate explanations, reductions, or definitions.” (Kim 1984: 76)

The modal account

A set of properties *A* *weakly supervenes* upon a set of properties *B* iff, for any possible world *w*, if *x* and *y* are *B*-indiscernible in *w*, then they are *A*-indiscernible in *w*.

A set of properties *A* *strongly supervenes* upon a set of properties *B* iff, for any worlds *w* and *v* and any individuals *x* and *y*, if *x* has the same *B*-properties in *w* than *y* has in *v*, then *x* has in *w* the same *A*-properties than *y* has in *v*.

A set of properties *A* *globally supervenes* upon a set of properties *B* iff all possible worlds that are *B*-indiscernible are *A*-indiscernible.

For some set of properties Φ and worlds *w* and *w'*, some function $f : |w| \rightarrow |w'|$ is a Φ -*preserving isomorphism* iff it is one-one and for every $F \in \Phi$: $F(x)$ in *w'* iff $F(f(x))$ in *w*.

A set of properties *A* *weakly globally supervenes* upon a set of properties *B* iff, for all possible worlds *w* and *w'*, if there is a *B*-preserving isomorphism between *w* and *w'*, then there is a *A*-preserving isomorphism between *w* and *w'*.

A set of properties *A* *intermediately globally supervenes* upon a set of properties *B* iff, for all possible worlds *w* and *w'*, if there is a *B*-preserving isomorphism between *w* and *w'*, some *B*-preserving isomorphism between *w* and *w'* is also *A*-preserving.

A set of properties *A* *strongly globally supervenes* upon a set of properties *B* iff, for all possible worlds *w* and *w'*, every *B*-preserving isomorphism between *w* and *w'* is also *A*-preserving.

Modal covariance is not sufficient for supervenience

General reason: modal covariance may or may not hold in virtue of a grounding relation.

Weak supervenience is not sufficient for determination because it does not capture relational dependencies (the property of being among the tallest things weakly supervenes on height but is not determined by it) and does not support counterfactuals. Weak supervenience falls short of the condition that “fixing the base properties of an object fixes its supervenient properties” (Kim 1984: 60). Weak global supervenience of the mental on the

physical is consistent with the existence of a world that is physically indiscernible from ours, but in which some trees are conscious and some people are not (Shagrir 2002; Bennett 2004).

The surface area of a perfect sphere strongly supervenes upon its volume and conversely, but we do not want to say that either one is determined by the other (Kim 1990: 144).

Cardinality weakly, intermediately and strongly globally supervenes on every set of properties, but is not determined by every one of them.

Modal covariance is often symmetrical: not only do necessary properties of the singleton {Socrates} modally covary with those of Socrates, but also do necessary properties of Socrates modally covary with those of his singleton. But we would like to say that the way Socrates is determines the way his singleton is, not the other way round: “[The] asymmetry of supervenience may well be the core of the idea of asymmetric dependence we associate with the supervenience relation.” (Kim 1984: 67)

On standard accounts of truthmaking, the nature of anything modally covaries with what propositions it makes true but we do not want to say that natures supervene on the truthmaking potential of their bearers (but would rather prefer to say that it is the other way round).

Anti-haecceitists denying the existence of indiscernible worlds claim that the identity of possible worlds modally covary with what propositions that are true in them but do not seem to be thereby committed to say that possible worlds are supervenient entities.

Determinables modally covary with determinates but are not determined by them (but rather determine them). *Being coloured* weakly, strongly, and globally supervenes on the set of colour properties but is not determined by them.

Cases of mutual modal covariance may still differ to whether or not the determination relation holds in both or only in one direction.

Modal covariance is not necessary for supervenience

General reason: quantifier restriction is not adequate to account for the contingency of many supervenience claims.

Both Lewis and Jackson want to say that Descartes is wrong, but they do not want to say that he is necessarily wrong. We might be Cartesian egos, but we are not:

“Materialism is meant to be a contingent thesis, a merit of our world that not all other worlds share.

Two worlds could indeed differ without differing physically, if at least one of them is a world where Materialism is false.” (Lewis 1983a: 35)

“...physicalism is not a claim about every possible world, but only a claim about *our* world to the effect that its physical nature exhausts all its nature.” (Jackson 1998: 11)

To account for this feature, many analyses of e.g. materialism/physicalism – the thesis that everything supervenes on the physical – have characterised it as modal covariance across a restricted range of possible worlds, i.e. in terms of conditional necessity:

“Among worlds where no natural properties alien to our world are instantiated, no two differ without differing physically; any two such worlds that are exactly alike physically are duplicates.” (Lewis 1983a: 37)

“Any world which is a minimal physical duplicate of our world is a duplicate simpliciter of our world, where a minimal physical duplicate is what you get if you ‘stop right there.’” (Jackson 1998: 12)

As Hawthorne (2002: 112, n. 8) has remarked, the two accounts are not equivalent, at least assuming an indexical reading of ‘actual world’ in Lewis’ criterion. Lewis’ but not Jackson’s account rules out a scenario where we have two worlds in which no alien properties are exemplified, which are not minimal duplicates of the actual worlds, but which are physical duplicates, though not duplicates simpliciter, of each other.

If physicalism is contingent, there are some worlds in which it is false. *Prima facie*, there is no reason to assume that no such world can be a minimal physical duplicate or that all such worlds must contain alien properties. Both definitions, however, rule out this scenario; hence, they are not necessary for physicalism.

Here is why (the following argument is from Leuenberger (2006)): suppose there is a world *w* which is a minimal physical duplicate of our world, in which no alien properties are exemplified and in which physicalism fails.

According to Lewis' definition, this means that there are two worlds s and t in which no w -alien properties are exemplified and that are physical duplicates but not duplicates simpliciter. If some properties were exemplified in these worlds that are alien with respect to the actual world, then these properties were also w -alien, for w cannot contain 'more' properties than the actual world. Hence, no alien properties are exemplified in s and t and physicalism fails in the actual world.

According to Jackson's definition, failure of physicalism at w means that w has two minimal physical duplicates, s and t , which are not duplicates simpliciter. Because they are minimal duplicates of w which is a minimal duplicate of our world, they are also minimal duplicates of the actual world and physicalism fails at the actual world.

So both Lewis and Jackson have to claim that Descartes cannot be right in a world which is a minimal physical duplicate of our world and does not contain alien properties. But Descartes asserted no such thing: he is not committed to the claim that a world where we are Cartesian egos differs in its distribution of *physical* properties, nor to the claim that in such a world properties are exemplified that are not exemplified in the actual world.

"...what is interesting, and disquieting, about this way of solving the problem [of making supervenience hold contingently] is that the concept of supervenience is no longer what is doing the work of formulating the reductionist thesis in a way that isolates its metaphysical component. On this account, the materialist's global supervenience thesis is this: relative to all possible worlds that have the same total set of properties and relations as our world, the mental globally supervenes on the physical. But this thesis is a trivial consequence of the materialist thesis that was stated without the notion of supervenience: that the set of all basic properties and relations of our world is the set of physical properties and relations." (Stalnaker 1996: 98)

"All this points to the conclusion that the idea of dependence, whether causal or supervenient, is metaphysically deeper and richer than what can be captured by property covariance, even when the latter is supplemented with the usual modal notions." (Kim 1990: 147)

Supervenience as existential dependence between truthmakers?

Some authors, most notably Armstrong, have talked of supervenience between objects, suggesting that the supervenient comes as an free ontological lunch. Though they have 'officially' taken supervenience to be entailment (Armstrong 1997: 11), they really meant something rather different, namely existential dependence. The difference between these two concepts parallels the one between necessary covariance and supervenience. As Fine (1994) famously argued, the singleton {Socrates} supervenes or existentially depends upon Socrates, but not the other way round, while the existence of Socrates both is strictly implied and necessarily covaries with that of his singleton.

Whenever some properties A supervene on other properties B , what makes it true that something has a B -property *ipso facto* makes it true that it has a A -property. There is just one truthmaking tie involved, nothing further is required: Jackson often frames supervenience in terms of one account of the world making true another account of the world; the physicalists' commitment, in his view, is "to the physical nature of the world making true the psychological account of the world" (Jackson 1998: 68).

What might be the truthmakers of atomic predications?

"Imagine something, call it *Long qua black*, that is very like Long in most ways, but differs from him in essence. Long is accidentally black, and might have been striped, orange all over, or even green. Long qua black, however, is essentially black. Long has counterparts of many colours, whereas all counterparts of Long qua black are black. Indeed, the counterparts of Long qua black are all and only the black counterparts of Long. Long qua black, if there were such a thing, would be a truthmaker for the truth that Long is black. Every world where Long qua black had a counterpart would be a world where Long is black." (Lewis 2003: 30)

"Thanks to the multiplicity of counterpart relations, we have no need to multiply entities. [...] One identical thing can have different potentialities and different essences if it has them relative to different counterpart relations." (Lewis 2003: 28)

Suppose now that Long's blackness supervenes on his surface having a certain reflectance property ϕ . What makes it true that he has this reflectance property *ipso facto* makes it true that he is black. If this supervenience

holds contingently, Long qua black and Long qua ϕ are different things. They stand, however, in a relation of existential dependence if, and only if, his blackness supervenes on his being ϕ . This supervenience is anchored to real things, not analysed in modal terms and asymmetric. It is a genuine dependence relation, but does not depend on the structure of modal space but rather on how we trace our counterparts to them. We seem finally to have found a relation which is deep, objective, contingent, non-reductionist, non-modal and non-accidental all at the same time.

Supervenience as property constitution?

Determinables and determinates are kinds (and their associated properties) that stand in some type of determination relation. The determinable COLOUR, for example, is determined by the determinate RED, which in turn is determined by the (lower) determinate LIGHT RED, which is just to say that “light red” is a precisification of “red”. The co-exemplification of determinables makes for less resemblance than the co-exemplification of any particular of their determinates, they qualify their exemplifications less determinately: “A determinable is a natural kind with a more relaxed resemblance standard than the determinates falling under it.” (Campbell 1990: 83)

We can distinguish different ‘dimensions’ in which determinables may be determined. Colors vary according to hue, saturation and brightness, and these variations are independent of one another. If hue, saturation, and brightness are determinables, they are not separate, since they depend on each other. There cannot be saturation without hue, for example, even though no determination of saturation requires any particular determination of hue. Johnson says that the determinable color is “single, though complex, in the sense that the several constituent characters upon whose variations its variability depends are inseparable” (Johnson 1921: 183).

If we think of the qualitative characteristics of (actual and possible) things as locations within a property-space of as many dimensions as they are respects of independent variation among properties, the determination relation is topological inclusion with respect to that space. The determinable is literally ‘composed out’ of its determinates. The supervenience of the determinable on its determinates is then accounted for in robust ontological terms.

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