I. Horgan’s Supdupervenience

In “From Supervenience to Superdupervenience: Meeting the Demands of a Material World” (1993), Terry Horgan proposes a “genuinely materialistic” version of supervenience which he dubs ‘superdupervenience’ (p. 563). Superdupervenience is “supervenience that is robustly explainable in a materialistically acceptable way” (p. 577). A robust explanation is one that explains supervenience “qua ontological, rather than explaining it merely as a feature of “logic” of the higher-order terms and concepts” (p. 577).

In the first part of the paper, Horgan canvasses the historical origin of the notion of supervenience, for example in British emergentism, Moore’s meta-ethical non-naturalism and Hare’s meta-ethical non-cognitivism. The investigation leads him to the following conclusions. First, any thoroughly materialist account of the world must assert “(i) that physics is causally complete” and “(ii) that any metaphysically basic facts or laws—any unexplained explainers, so to speak—are facts or laws within physics itself” (p. 560). Second, any materialist account of the world that appeals to supervenience must render acceptable supervenience as a genuinely ontological – as opposed to merely logical – relation. That is, supervenience must be construed as a “relation between lower-order properties and facts and genuine, objective, higher-order properties and facts” (p. 563). This constraint on supervenience, as Lynch and Glasgow note, that the resulting materialism will be “ontologically serious about the higher-level facts” (p. 204).

The final result of his research is that any instantiation of the supervenience relation between real properties must be “robustly” explainable as “an objective necessitation relation between lower-order and higher-order properties and facts” (p. 563). This restriction is known in much of the literature as “Horgan’s challenge” or “constraint” (Lynch and Glasgow, p. 203;
In short, it is Horgan’s belief that a truly physicalist\(^1\) account of the world must incorporate a supervenience thesis only if the supervenience itself is ontological and robustly explainable.

In section 8 of his paper, Horgan develops the account of superdupervenience more fully. He argues that three, interrelated questions must be asked in order to make robust explanation possible:

The Target Question: What facts specifically need explaining in order to explain a given inter-level supervenience relation and why would a materialistic explanation of these facts constitute an explanation of that supervenience relation?

The Standpoint Question: What sorts of facts, over and above physical facts and physical laws, could combine with physical facts and laws to yield materialistically kosher explanation of inter-level supervenience relations, and why would it be kosher to cite such facts in these explanations?

The Resource Question: Do there exist adequate explanatory resources to provide such explanations? (p. 578 rearranged for clarity of exposition).

The standpoint question follows from the view that “we need some facts other than those of basic physics” (p. 578). The target question helps establish the facts that need to be explained in order to explain “why the higher-order properties supervene on the physical the way they do, and we need to know why these facts are crucial ones” (p. 578). The resource question is really a practical one, it concerns whether there exist “explanatory resources to yield materialistically kosher explanations of specific inter-level supervenience relations involving these properties” (p. 578).

Horgan offers liquidity as an example of a potentially successful robust explanation. First he gives us the target facts about liquidity: “if a quantity of stuff is liquid, then it will neither spontaneously dissipate into the atmosphere nor retain a rigid shape when unconstrained”

\(^1\) At this point I will adopt the term physicalism instead of materialism in the interest of accuracy (and currency)
Horgan further tells us that explaining the supervenience relation between liquidity and a certain set of microphysical properties is “essentially a matter of explaining why any quantity of stuff with these microphysical properties will exhibit these macro-features” (p. 579). Horgan adds that this explanation answers the target question in that it “suffices to explain the supervenience of liquidity because those macro-features are definitive of liquidity” (p. 579). It can address the standpoint problem because “it seems explanatorily kosher to assume a connecting principle” linking the macro-features of liquidity, precisely because those features are definitive; the connecting principle expresses a fact about what liquidity is” (p. 579).

Robust explanation, as Horgan elucidates it, is a very difficult challenge to meet. Horgan notes this and says it may never be possible, in some cases, to “give an account of putative higher-order properties under which their ontological supervenience on the physical would be successfully explained” (p. 580). Mental properties, he argues, are one such set of higher-order properties that may never be explained (p. 580). While the standpoint and target question might be successfully addressed, Horgan thinks mental properties fail the resource test for explanation (p. 580). The strength of the challenge and some of the results, such as the questionable fate of mental properties, has led some critics, such as Jessica Wilson, to propose alternatives. Indeed, she points to this as one of her motivations for formulating an alternate physicalistically acceptable supervenience account (1999, p. 39).

II. Superdupervenience and Causal Conditions: Is Horgan Too Permissive?

For Wilson, Horgan’s account of a physicalistically acceptable metaphysics is a failure because she believes that robust explanation, one of the central features of Horgan’s superdupervenience account, is neither necessary, nor sufficient, to distinguish physicalistically...
acceptable properties from emergent ones (p. 42). Instead, she argues, that the metaphysical causal structure of the properties needs to be identified. She proposes the following condition to ensure that physicalistically acceptable properties have been picked out:

**Condition on Causal Powers (CCP).** Each individual causal power associated with a supervenient property is numerically identical with a causal power associated with its base property (p. 42).

Finally, she argues that Horgan’s robust explanation fails to entail CCP and, therefore, fails to ensure a physicalistically acceptable supervenience (p. 42). Wilson’s alternative account of causation, however, is not clearly different from Horgan’s own. If Wilson’s account turns out not to be significantly different from Horgan’s then Wilson faces a dilemma: either Horgan has provided an acceptable account of the Standpoint properties or else Wilson has not. On the other hand, if Wilson’s account of causation is different from Horgan’s then it turns out she is likely offering a reductivist, rather than a nonreductivist, view which would be unacceptable for Wilson or Horgan.

CCP, Wilson tells us, is all that is necessary to ensure that higher-order properties are physicalistically acceptable. Adopting CCP, in particular, would distinguish nonreductive physicalism from emergentism. Emergentism includes the thesis that mental properties emerge in some manner from “complex arrangements of matter” (Crane, p. 208) and that mental properties have distinct causal powers from their subvenient physical properties. Importantly, emergentists hold that mental properties emerge “in a way that is inexplicable from the perspective of the sciences of matter” (Crane, p. 208). This inexplicable relationship must be accepted with, in Samuel Alexander’s phrase borrowed from Wordsworth, “natural piety” (Wilson, p. 40). Wilson argues that it is this feature of emergentism, unexplainability, that Horgan’s account “can be seen as an attempt” (p. 40) to avoid.
Wilson instead chooses to narrow her focus contending that the fundamental difference between emergentism and a physicalistically acceptable account is in the conception of causation. By outlining a specific causal relationship between supervening properties and the subvening base properties, CCP ensures that an account would be physicalistically acceptable. She emphasizes that a nonreductive physicalist cannot “allow that mental properties have the same, but still numerically distinct, causal powers as their base properties” (p. 41). For Wilson, then, CCP is both necessary and sufficient for making supervenience physicalistically acceptable. An investigation of Horgan’s view of causation will determine whether or not his concept of causation is too weak to do the work of CCP.

Horgan’s notion of causation is not as weak, or emergentist, as Wilson’s discussion implies. First, and most importantly, Horgan endorses the causal closure of physics. He argues that any physically acceptable position should assert that “physics is causally complete” (p. 560). It seems very possible that this, straight off, satisfies the requirements of CCP. To say that physics is causally complete is to say that the physical realm contains within itself sufficient causal powers to explain all the goings-on of the physical. To get from this idea to CCP requires argument, but perhaps not much.

Still, it may be that the doctrine of the causal closure of the physical is not stringent enough to render the explicit addition of CCP superfluous. In order to find out, it is helpful to consider some ways of defining the causal closure of physics. The first comes from Horgan himself: “all fundamental causal forces are physical forces, and the laws of physics are never violated” (p. 560). This seems a fairly strong formulation not one that admits of emergent types of causal powers, and perhaps not even emergent tokens of old types of causal powers. Crane tells us that the causal completeness of physics is “the idea that any physical effect (that
is, any effect describable in the language of physics) is completely fixed, deterministically or
indeterministically, by purely physical causes” (p. 219). Finally, Kim describes the causal
completeness of physics as the stricture “any physical event that has a cause at time t has a
physical cause at t” (1993, p. 280).

The upshot is that to invoke the causal closure of the physical is, under almost any
conception, a very strong requirement and one that that may simply imply CCP. If it does, then
by Wilson’s own lights the invocation of causal closure is enough on its own to distinguish
nonreductive physicalism from emergentism. Given that Horgan endorses it, it seems he has
nothing to fear from the causal element of his account. Simply stated, Wilson’s critique does not
expose Horgan as a crypto-emergentist.

At this point, Wilson might rejoin that one can adopt the causal completeness of physics
and still allow physicalistically unacceptable properties. Indeed, she seems to mean this when
she says, even after adopting causal closure, “there is a live possibility that two properties,
instantiated in the same individual, may give rise to the same effects” (p. 41). Wilson might
consider Horgan’s account, despite the endorsement of causal closure, one that allows for
physicalistically unacceptable causal relationships. Wilson does not provide a clear argument for
her implicit belief that the causal closure of physics is too weak, yet it seems to be her argument
here. The next question to be answered is whether or not Horgan is seduced by what Wilson
sees as an apparent weakness of causal closure.

Horgan’s view of causation, it could be argued, is a somewhat more liberal interpretation
of what the causal closure of physics might allow. Horgan stresses, though, that his primary

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2 It should be noted that Wilson could be thinking that one can adopt closure but still get the result that two
properties may have distinct tokens of the same type of causal power. Thanks to Dr. Doug Keaton for clarification.
point is a cautionary one (p. 574). He suggests that physicalists “who back away from type-type psychophysical identity claims, but who also seek to vindicate the causal/explanatory efficacy of mental properties, are already committed to some form of compatibilism” (p. 574).

Given Horgan’s commitment to the causal closure of physics, and compatibilism in terms of mental causation, it appears that Wilson must have a still stronger notion of causation in mind. We are forced; it seems, to give CCP the strongest possible reading. Seen in this light, CCP could be considered to be a type of psychophysical reduction. This conclusion is particularly compelling when one considers Wilson’s implicit rejection of the sorts of compatibilism suggested by Horgan. Indeed, she does not even address his arguments in that vein (as a possible defense of his account of causation) and her further suggestions that the causal closure of the physical might not be enough to handle causal overdetermination also suggest a strong reading.

When all these features are considered together, Wilson’s account appears less nonreductivist. Indeed, some authors like Kim think the causal closure of physics is already too strong for the nonreductivist to stay a nonreductivist (1993, p. 283-284). Lynch and Glasgow apply this sort of view to Wilson’s work arguing that CCP is “not sufficiently nonreductive to count as an answer to the metaphysical condition on Horgan’s challenge” (fn., 12, p. 218). The results of the inquiry thus far are as follows: weak CCP is entailed by Horgan’s account, given his acceptance of the causal closure of physics and strong CCP is simply too reductive to provide the sort of compatibilist account of causation the nonreductivist seeks. Wilson’s account then can be read in two distinct ways. The weak interpretation of CCP is just the causal closure of the physical. The strong reading of CCP interprets it as psychophysical reductionism.
It appears that Wilson’s CCP, in a weak or strong form, is not damaging to Horgan’s account. In the weak form it is an unneeded addition to the idea of causal closure; it does no more than does the invocation closure to avoid emergence. In the strong form, CCP is an infelicitous addition to closure that leads to reductionism.

It is worth noting that in a later paper (2002), Wilson ultimately abandons CCP as formulated here for different reasons. She argues that it is either “trivially satisfied or trivially falsified” (p. 55). It is trivially satisfied in cases of “same subject necessitation” when causal power bestowal is “understood in terms of Causal Powers Bestowal (nomological sufficiency)” (p. 63) and trivially falsified in cases of same subject necessitation “when causal power bestowal is understood in terms of Causal Power Bestowal (nomological necessity)” (p. 64-65). These considerations lead Wilson to propose a new form of physicalism (where F is the set of fundamental forces at or below the atomic level):

Physicalism (same subject necessitation): For every property P and Q: If Q same-subject necessitates P, every causal power bestowed by P is identical with a causal power bestowed by Q that is grounded only in the fundamental forces in F (p. 74).

This formulation shows that Wilson still argues that physically acceptable supervenience needs to be distinguished from emergentism via a causal limitation beyond the causal closure of the physical. In short, the argument of this inquiry has still not been directly addressed.

In her 1999 article, Wilson also argues that robust explanation is superfluous. In the 2002 article, Wilson still holds that the connection between a supervenient property and a base property grounded in fundamental forces does not require that an “explanatory relation of intelligibility hold between characteristic features of the properties” (p. 75). I think her

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3 The nonreductivism of Wilson’s account appears to rest on her view that the realized property has only a proper subset of the causal powers of the base property. Because of this the realized property does not have the same causal powers as the base property and they therefore cannot be identical.
argument against Horgan’s account would be improved by focusing on whether or not robust explanation is a necessary feature of a physicalistically acceptable supervenience account, rather than a potentially reductionist causal requirement. In section III, I will examine whether or not employing that strategy would undermine Horgan’s account.

III. Robust Explanation and Emergentism

Wilson proposed CCP to insure that physicalistically acceptable properties are picked out—a task that she believes robust explanation is not sufficient to accomplish. She also thinks, though, that it is not necessary. Wilson provides several reasons for questioning the necessity of Horgan’s robust explanation requirement in establishing a non-emergentist yet nonreductivist physicalist metaphysics. In general, her objection is based on a principle from Kim: “if \( P \) explains \( M \), this is plausibly because some metaphysical relation holds between \( P \) and \( M \)” (p. 43). However, she adds, one does not need to believe the entailment goes in the other direction: “even if an objective metaphysical relation holds between \( P \) and \( M \), \( P \) might not explain \( M \)” (p. 43). Due to this, she wonders why explanation should be regarded as necessary for “metaphysical deliberation” (p. 43). Before continuing, I will note that the observations of this section are based on the assumption that causal closure of the physical is not enough to insure a physicalistically acceptable supervenience account (an assumption both Wilson and Horgan make).

Horgan, I think, would reply that Wilson is mistaken in thinking that he requires explanation as a precursor to metaphysical deliberation. As Lynch and Glasgow note, Horgan’s superdupervenience has a metaphysical condition in addition to the explanation condition which they call the “adequacy condition” (p. 205-206). The metaphysical condition requires that the facts about supervenience relations must be “physically or materialistically respectable relations
and facts” (p. 206). Given this, Horgan might reply to Wilson that his challenge is not a purely epistemic one. Indeed, he repeatedly insists that superdupervenience is ontological. To claim that certain supervenient properties, like mental properties, exist, is a metaphysical claim. Using metaphysical markers to signal that a relationship like supervenience exists would not be opposed to what Horgan is doing. He is not arguing that explanation is a necessary requirement for metaphysical deliberation; rather, that in order for a metaphysical account to be physicalistically acceptable, it must include explanation. Without the condition, Horgan thinks any supervenience account is in danger of becoming obscurantist in the way that Schiffer described (p 565).

The broader claim, that we should not expect that $P$ can always explain $M$, seems to have more direct application. Even though Horgan does not believe that explanation is a necessary precursor to metaphysical deliberation, he does seem to think that it must be the case that $P$ can explain $M$ in a physicalist system. That is, he believes it must be assumed that everything is explainable if the causal closure of the physical is adopted. Horgan’s obvious reply here would be that, even if there is a reason why we should think that $M$ might not be explained by $P$, a physicalistically acceptable metaphysics must assume that it can in order to avoid an emergentist account. If we accept as brute, as Wilson seems to be suggesting, that some particular ontological relationship might be unexplainable, then we are adopting the emergentists’ natural piety stance. Wilson could counter that this could be prevented by adopting CCP—no property picked out by CCP is emergent in nature. As I have argued in section II, though, weak CCP is simply causal closure of the physical and strong CCP could be considered reductivist. Therefore, CCP alone is not enough to insure a physicalistically acceptable supervenience in a nonreductivist framework.
Crane employs another tactic to undermine robust explanation that might be a more useful method. He argues that Horgan’s robust explanation does not distinguish superdupervenience, or nonreductivism in general, from emergentism. Crane thinks that emergentists do not “believe on apriori grounds that no explanation of the connection between the different levels of nature can be given” (p. 220). Instead, he tells us, that emergentists’ think unexplainability of certain properties is “the best conclusion to draw from their empirical investigations” (p. 220). Horgan is aware of this aspect of the emergentists program. He says that emergentists argue that “supervenience connections—could be metaphysically fundamental, hence unexplainable” (p. 559). This suggests that emergentists would allow, upon further empirical review, that some relationships are not metaphysically basic (such as some of the ones they claimed were in the chemical sciences). It is unacceptable, in Horgan’s view, though, for a physicalist to allow that there could be unexplainable relationships within their metaphysics. Even in a world where all obscure supervenience relationships have been explained, Horgan might argue, emergentists would still allow for the possibility that some relationships are metaphysically basic.

This quandary leads to Crane’s conclusion that the only real difference between nonreductivists and emergentists is epistemic in nature. He argues that both parties agree that “we do not currently understand how nonmental properties of the brain”, for example, “are related to its mental properties” (p. 221). Nonreductivists, he claims, “react by claiming that there must nonetheless be an account of why ‘we experience qualitative character of the sort we do’” (p. 221). The emergentist, by contrast, would “deny that this must be so” (p. 221). I think Crane is right to emphasize this difference, as my suggested reply for Horgan above indicates. It is obvious that Horgan thinks, like Crane’s emgerentist, that some higher-order properties may
fail to satisfy the requirements of robust explanation (p. 580). This later leads him to suggest that physicalists should “be exploring irrealist ways of accommodating higher-order discourse” (p. 581). He finally suggests that a form of irrealism that treats truth as a “normative notion” and allows for “higher-order discourse to be genuinely true even in the absence of any corresponding properties or facts” (p. 581) is a possibility.

This suggestion sounds quite close to acknowledging that some supervenience connections, namely the connection between higher-order mental properties and lower-order physical ones, are unexplainable. If this is accurate, then Horgan’s robust explanation requirement does little to distinguish it, epistemically, from an emergentist account. The only way to construe it as a true differentiation would be to consider robust explanation as an explanatory I.O.U. It promises that an explanation will at some point become possible. It leaves us in an epistemic situation not unlike one in which an emergentist framework would place us.

In conclusion, I think this investigation shows that nonreductivists are in a very difficult philosophical situation. Carving out a physicalist position that is nonreductivist is a serious challenge that Wilson and Horgan do not fully meet. Adopting CCP, as I have argued, is not the best strategy for achieving this goal. If something beyond the causal closure of the physical is required, then Horgan’s account appears to be one of the better options. Crane’s arguments suggest, however, that robust explanation is problematic as a means of making the crucial distinction between emergentism and nonreductive physicalism. This might mean that superdupervenience, and nonreductive physicalism, in general, are actually just emergentism that refuse to accept what it implies—the unexplainability of certain properties. However, it might also mean that Horgan’s requirement is simply too strong. Outlining a legitimate, nonreductivist
alternative, though, is a task for another inquiry.⁴

Works Cited

Crane, Tim. “The Significance of Emergence”.


⁴ Special thanks to Doug Keaton who kindly offered to read and review this paper. His extensive knowledge of mind and metaphysics were an invaluable resource in molding the argument.