Minimal Supervenience and Extended Perception

Abstract

This paper examines whether minimal supervenience can resolve the debate between orthodox and extended accounts of perceptual experience. The orthodox view holds that experience is constituted exclusively by brain properties, while extended views assign a constitutive role to environmental, historical, bodily, or interactive properties. Ned Block argues that because brain properties form a minimal supervenience base for experience, non-brain properties are merely causal. I argue that this conclusion does not follow. Even if brain properties form one minimal base, historical and environmental properties, as well as interactive brain–world properties, may form distinct minimal bases of their own. Perceptual experience may therefore have multiple non-nested minimal supervenience bases. Minimality alone cannot identify a uniquely privileged constitutive base or adjudicate between orthodox and extended theories of perception.

INTRODUCTION

In this paper, I will examine the relationship between supervenience and the nature of perceptual experience. I will pay particular attention to the *extended view* of perceptual experience: the view that *non*-brain properties play a *constitutive* role in perceptual experience. This hypothesis directly challenges the *orthodox view*: the view that *brain properties* are the *only* constitutive features of perceptual experience.

Critics of the extended view often maintain that the view is based on a confusion between *constitutive* features and *causal* features. An example of this accusation is found in Ned Block's article, 'Review of Alva Noë's *Action in Perception*.' Block argues that the issue of what *constitutes* perceptual experience (as opposed to what merely *causes* it) concerns the *minimal supervenience base* for perceptual experience—that is, the *necessary* parts of the supervenience base. According to Block, anything that is a *constitutive* feature of perceptual experience must be part of the *minimal supervenience*

base. Block objects to the extended view on the grounds that *non-brain properties* are *not* part of the minimal supervenience base.

I will respond to Block by arguing that appeals to minimal supervenience are incapable of resolving the constitution-debate. I will grant that brain properties may, in fact, form a minimal supervenience base for perceptual experience. I will argue, however, that this does not rule out the extended view. The reason is that there are *other* minimal supervenience bases for perceptual experience that *do* contain *non-brain properties*.

Before moving into the details of my argument, it will be beneficial to review the framework in which the constitution-debate takes place. First, I will summarize four notions of supervenience. Second, I will look at how these notions apply to both the *orthodox view* and the *extended view*. Third, I will examine how Block uses the notion of *minimal supervenience* to criticize the extended view. Lastly, I will respond to Block by arguing that certain *non-brain properties* do, in fact, form a *minimal supervenience base* for perceptual experience.

I. Four Types of Supervenience

To begin, consider the notion of *supervenience*. Supervenience can be broadly defined as follows: *B* supervenes on a *A* if and only if no two circumstances are identical with respect to *A* and different with respect to *B*. Four notions of supervenience are relevant: local, global, metaphysical, and nomological.[1]

The first two (local/global) indicate whether the supervenience relation in question concerns particular entities or whole worlds. *Local* supervenience is concerned

[1] See Haugeland 1982, Horgan 1982, Kim 1984, Kim 1987, Chalmers 1996.

with the supervenience relations between properties possessed by *particular entities*. We can say that *B locally* supervenes on *A* if no two *particular entities* are identical with respect to *A* and different with respect to *B*. Consider the example of shape and physical properties. Shape locally supervenes on physical properties because any two particular entities that are identical with respect to physical properties will also be identical with respect to shape. This is not true, however, of context-dependent properties, such as value.[2] A counterfeit coin and genuine coin may be identical with respect to their physical properties, but they will not have the same value. This is not to say that value fails to supervene on the *totality* of physical facts. It is only to say that two *particular entities* that are physically identical are not always of the same value.

Global supervenience, on the other hand, is concerned with the supervenience relations between all properties instantiated in *entire possible worlds*. We can say that *B globally* supervenes on *A* if no two *possible worlds* are identical with respect to *A* and different with respect to *B*.

If two sets of properties are related by *local* supervenience, they will also be related by *global* supervenience. That is, if it is true that any two *particular entities* identical with respect to *A* are identical with respect to *B*, then it will also be true that any two *possible worlds* that are identical with respect to A are identical with respect to *B*. It does not work the other way around. Consider, for example, biological and physical properties. Any world that is identical to ours with respect to physical properties will also be identical to ours with respect to biological properties. Thus, biological properties *globally* supervene on the physical properties. However, due to environmental factors,

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[2] Chalmers 1996, p. 34.

two *organisms* identical with respect to their physical properties may still be biologically distinct (perhaps with different evolutionary histories).[3] Therefore, not all biological properties *locally* supervene on the physical properties.

The second two notions of supervenience (metaphysical/nomological) specify what is meant by a *possible* circumstance. *B metaphysically* supervenes on *A* if no two circumstances that are *metaphysically possible* are identical with respect to *A* and different with respect to *B*. *Nomological* supervenience, on the other hand, concerns what is possible *within our laws of nature*. *B nomologically* supervenes on *A* if no two circumstances that could occur *within our laws of nature* are identical with respect to *A* and different with respect to B. Consider the difference between a cubic mile of gold and a cubic mile of uranium-235. Both of these are metaphysically possible. But given the laws of nature, as we understand them, a cubic mile of uranium-235 is not possible in our world.

The distinction between metaphysical and nomological supervenience can be seen to parallel the distinction between local and global supervenience. Just as local supervenience entails global supervenience (but not vice versa), so too does metaphysical supervenience entail nomological supervenience (but not vice versa). Suppose, for example, that *B metaphysically* supervenes on *A*; that is, no two circumstances that are *metaphysically possible* are identical with respect to *A* and different with respect to *B*. Then it will also be true that *B nomologically* supervenes on *A*. The reason is that if something is not metaphysically possible, then it will not be something that could occur within our framework of natural laws. It does not work the other way around. Two sets

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[3] Ibid.

of properties that always coexist within our laws of nature might not coexist in every metaphysically possible world.

Chalmers (1996) uses Saul Kripke's image of God creating the world to further clarify this distinction between metaphysical and nomological supervenience. If *B* *metaphysically* supervenes on *A*, then when God created the *A*-properties nothing more needed to be done to ensure that there would also be *B*-properties. If, on the other hand, *B* *only* nomologically supervenes on *A*, then after God created the *A*-properties there was still more work to do to ensure that the *B*-properties would always coexist with the *A*-properties in our world.[4]

II. Materialism, Constitution, and Supervenience

With these types of supervenience in mind (local, global, metaphysical, and nomological), let us move to consider two views on the nature of perceptual experience: the *orthodox view* and the *extended view*.

2.1 The Orthodox View

The *orthodox view* maintains that nothing outside the brain is constitutive of perceptual experience. Brain properties *alone* constitute perceptual experience. An apt summary of this view is found in Jesse Prinz's article, "Putting the Brakes on Enactive Perception." Prinz writes,

> Most cognitive scientists think that mental states, especially conscious mental states, supervene on brain states. Conscious states may have their content in virtue of being causally related to the world in a certain way, but the qualitative character of a perceptual experience depends exclusively on the brain: if one

[4] Ibid., p. 38.

> changed the environment and kept the brain constant, the character of the experience would remain unchanged.[5]

Thus, according to the orthodox view, all the *perceptual properties* in our world are constituted by the *brain properties*. In terms of the creation analogy, once the brain properties in our world were created all the perceptual properties in our world were created; no further work needed to be done. God simply established the brain properties in our world, and in doing so all the perceptual properties in our world were established. Hence, the orthodox view is committed to the claim that all the perceptual properties in our world *metaphysically* supervene on the brain properties.

A qualification needs to be given, however. Some may think that there are possible worlds that are identical to ours with respect to brain properties but have certain non-physical creatures (e.g., tree spirits), which are not found in our world. If this is the case, then there are possible worlds that are identical to our world with respect to brain properties, but differ from our world with respect to certain perceptual properties (e.g., perceptual properties that pertain to tree spirits). This, however, raises no problem for the orthodox view. Only worlds that have the same *negative* properties (e.g., 'being a *non-tree spirit* world') are pertinent to the commitments of the orthodox view. Precisely, the orthodox view is committed to the claim that all the perceptual properties in our world obtain in every brain-identical world, so long as the world has the same *negative* properties as our world.

Secondly, the orthodox view is a claim about the perceptual properties of *particular entities*. As was mentioned above, two *particular entities* that are *physically* identical may differ with respect to *value*. The reason is that value is a context-dependent

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[5] Prinz 2006, p. 15.

property. This is *not* true, however, of perceptual properties. According to the orthodox view, two *particular entities* that are identical with respect to *brain properties* will also be identical with respect to *perceptual properties*. Hence, perceptual properties *locally* supervene on brain properties.

Therefore, the orthodox view is committed to the claim that perceptual properties *locally metaphysically* supervene on the brain properties; that is to say, it is *not* metaphysically possible for two *particular entities* to be identical with respect to their brain properties and different with respect to their perceptual properties.

2.2 The Extended View

The extended view rejects the claim that perceptual properties *locally metaphysically* supervene *only* on brain properties. It maintains, instead, that perceptual properties *locally metaphysically* supervene on (at least some) *non-brain* properties.

Both the orthodox view and the extended view are committed to claims about *local metaphysical* supervenience. So, I will henceforth use 'supervenience' to refer to local metaphysical supervenience.

Let us now ask the following question. According to the extended view, *which* non-brain properties are the constituents of perceptual experience? A proponent of the extended view might answer this question in one of two ways:

(i) Conjunctive Extension: The brain *and* the environment constitute perceptual experience.

(ii) Interactive Extension: The *interactions* between the brain and the environment constitute perceptual experience.

Given these two formulations, consider the respective supervenience commitments of each claim. *Conjunctive extension* maintains that perceptual properties supervene on

brain properties *plus* environmental properties. *Interactive extension* maintains that perceptual properties supervene on *interactive properties*.

These two formulations are usually not distinguished within the literature. Alva Noë, for instance, seems to argue in favor of both formulations. Regarding *conjunctive extension*, he remarks, "Seeing, like painting, involves the temporally extended process of reaching out and probing the scene…. Seeing, on this approach, would depend on brain, body, and world."[6] Furthermore, he writes, "Experience doesn't supervene on neural states alone…but only on neural states plus environmental conditions."[7] Given these statements, it seems that Noë maintains that brain properties *and* environmental properties constitute perceptual experience (i.e., the conjunctive-extended view).

But Noë also argues in favor of the *interactive* formulation. In *Action in Perception*, Noë writes, "Perception is not something that happens to us, or in us. It is something we do."[8] And he later notes, "Perceiving is constituted by the exercise of a range of sensorimotor skills."[9] In these passages, he seems to argue that perceptual experience is constituted by the *interactions* in which we involve ourselves. This is even more apparent in his later work. In the article, "Magic Realism and the Limits of Intelligibility," Noë writes:

> …experience is not a physical process; it is…an activity of dynamic interaction with the world...Neurophysiological events in the brain belong to consciousness in so far as they are implicated in the transactions between animals or persons and the world around them.[10]

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[6] Noë 2005, p. 223.
[7] Ibid.
[8] Ibid., p. 1.
[9] Ibid., p. 90.
[10] Noë 2007, pp. 28-29.

Here, Noë emphasizes the importance of the *interactive relations* between the brain and the environment. He even seems to elevate the importance of these *interactive relations* above the *relata* themselves.

In short, it is not always clear whether Noë favors *conjunctive extension*, *interactive extension*, or a combination of the two. Nevertheless, I think that the distinction is an important one. Its importance will become clearer as we move to consider a prominent criticism of the enactive view.

III. Minimal Supervenience and the Constitution-Debate

In Ned Block's article, 'Review of Alva Noë's *Action in Perception*,' Block writes,

> The issue of the constitutive supervenience base for experience is the issue of what is—and is not—a metaphysically necessary part of a metaphysically sufficient condition of perceptual experience. That is, it is the issue of what is—and is not—part of the minimal metaphysically sufficient condition for perceptual experience (i.e., the minimal supervenience base). Noë's enactive view says that the skilled active body is part of that minimal condition (minimal supervenience base), whereas the view, which I hold and which I have labeled the orthodox view, is that nothing outside the brain is part of it [11]

Block maintains that anything that is a *constitutive* feature of perceptual experience must be part of the *minimal supervenience base* for perceptual experience. Block criticizes the extended view by arguing that *brain properties* form a *sufficient* supervenience base for perceptual experience. He therefore contends that there is no reason to think that *non-brain* properties are constitutive of perceptual experience. The basic structure of Block's argument can be summarized as follows:

(P1) If something is a *constitutive* feature of perceptual experience, then it is a *necessary*

[11] Block 2005, pp. 366-367.

part of the supervenience base for perceptual experience (i.e., part of the *minimal* supervenience base for perceptual experience).

(P2) If brain properties *alone* create a *sufficient* supervenience base for perceptual experience, then non-brain properties are *not* a *necessary* part of the supervenience base for perceptual experience.

(P3) Brain properties *alone* create a *sufficient* supervenience base for perceptual experience.

(C) Non-brain properties are *not* a *constitutive* feature of perceptual experience.

I think that this line of argumentation is problematic. In particular, it rests on an ambiguity in the phrase "the supervenience base for perceptual experience." Suppose, for instance, that there are *two* minimal supervenience bases for perceptual experience: one consisting of brain properties, and the other consisting of non-brain properties. Given such a scenario, one could run a parallel argument and conclude that *brain properties* are *not* a constitutive feature of perceptual experience.

Thus, if there is a minimal supervenience base that contains certain *non-brain properties*, the constitution-debate cannot be solved by appeals to minimal supervenience. This brings us to the central part of my argument.

IV. Minimal Supervenience Bases with Non-Brain Properties

Consider the following supervenience bases for perceptual experience:

(1) <u>The Orthodox View</u>

$P = \{P_1,\ldots, P_m\}$ $P_n x$: x is in perceptual state$_n$
↑
$B = \{B_1,\ldots, B_m\}$ $B_n x$: x is in brain state$_n$

(2) The Conjunctive-Extended View

$P = \{P_1,\ldots, P_m\}$
↑
$C = \{B_1,\ldots, B_m, H_1,\ldots, H_m, E_1,\ldots, E_m\}$ $H_n x$: x is situated within historical context$_n$
$E_n x$: x is situated within environmental state$_n$

(3) The Interactive-Extended View

$P = \{P_1,\ldots, P_m\}$
↑
$I = \{I_1,\ldots, I_m\}$ $I_n x$: x is interactively involved in brain-world relation$_n$

Consider, first, the relationship between (1) and (2). Let us suppose that the supervenience relation in (1) holds. Thus, any two creatures that are identical with respect to brain properties must also be identical with respect to perceptual properties. Given this, it follows that the supervenience relation in (2) also holds. For, if identical brains (*on their own*) ensure identical perceptual experiences, then identical brains (*plus identical histories and identical environments*) will also ensure identical perceptual experiences.

So, we have two supervenience bases for *P* (i.e., *B* and *C*). Now, how should we decide which properties *constitute P*? We might follow Block's suggestion and look for the *minimal* supervenience base. In particular, we might look for the *necessary* properties of *B* and *C*. To examine this avenue, let's consider a more formal definition of minimal supervenience:

> *P minimally supervenes* on a set of properties *A* iff *P* does *not* supervene on any proper subset of *A*.[12]

With this definition, it becomes apparent that *C* is *not* a minimal supervenience base. The reason is that *P* supervenes on *B*, and *B* is a proper subset of *C* (i.e., $B \neq C$, and all the

[12] Sider 1993.

members of *B* are members of *C*). This may tempt us to conclude that the *B*-properties are the only constitutive features of *P*. Such a conclusion, however, would be unwarranted. To see why, consider the following supervenience relation:

(4) Brain properties supervenes on *both* historical *and* environmental properties

$B = \{B_1,\ldots, B_m\}$
$\uparrow$
$K = \{H_1,\ldots, H_m, E_1,\ldots, E_m\}$

This supervenience relation is committed to the following claim: If two creatures are identical with respect to historical properties *and* environmental properties, then they must be identical with respect to brain properties. I submit that this claim is quite plausible. Suppose, for instance, that there are two creatures with identical historical properties up to time t_1 (this includes *all* historical properties: evolutionary history, physiological history, sociological history, etcetera). Given this, these two creatures will have identical brain properties at time t_n for any $n \leq 1$. Furthermore, at time t_2, the only thing needed to ensure that the two creatures' brains remain identical is to ensure that they are situated in identical environments. The reason is that if two brains are identical and are placed in identical environments, then they will be affected in identical manners.

Now, given that supervenience is transitive, we end up with the following argument: Since *P* supervenes on *B*, and *B* supervenes on *K*, then *P* supervenes on *K*. Thus, the combination of (1) and (4) entails another supervenience relation:

(5) Perceptual properties supervene on *both* historical *and* environmental properties

$P = \{P_1,\ldots, P_m\}$
$\uparrow$
$K = \{H_1,\ldots, H_m, E_1,\ldots, E_m\}$

Now, *K* is a *minimal* supervenience base for *P*—that is, both the *H*-properties and the *E*-properties are a *necessary* part of *K*. The reason is that if two creatures differ with respect to their histories *or* with respect to their environments, then they may also differ with respect to their perceptual experiences.

The fact that *both K and B* are minimal supervenience bases for *P* creates a problem for evaluating the conjunctive-extended view. Consider again the supervenience base from (2): $C = \{B_1,\ldots, B_m, H_1,\ldots, H_m, E_1,\ldots, E_m\}$. As noted above, *C* is *not* a minimal supervenience base. And given the supervenience relation in (5), it is unclear how one could decide "what is--and is not—a metaphysically necessary part" of *C*. The problem is that both *B* and *K* are proper subsets of *P*; and moreover, they are both *minimal* supervenience bases for *P*. Thus, *neither* the *B*-properties by themselves, *nor* the *K*-properties by themselves, are a *necessary* part of *C*. All that is necessary to *C* is a *disjunctive* set of properties; namely, $B \vee (H \,\&\, E)$.

So, does the notion of 'minimal supervenience' prove any more useful with the relationship between (1) and (3)—that is, the relationship between the orthodox view and the interactive-extended view? I submit that it does not. Consider the following details. The supervenience base in (1) is the set of *brain* properties: $B = \{B_1,\ldots, B_m\}$; and the supervenience base in (3) is the set of *interactive* properties: $I = \{I_1,\ldots, I_m\}$. Therefore, all the members of *B* are *B*-properties, whereas all the members of *I* are *I*-properties. From this, it follows that set *B cannot* be a proper subset of *I*. Moreover, since *I* only includes *I*-properties, the only proper subsets of *I* (other than the empty set) are further sets of *I*-properties. Thus, if it is granted that the *interactive formulation* creates a *sufficient*

supervenience base for perceptual experience, then it follows that it also creates a *minimal* supervenience base for perceptual experience.

The notion of 'minimal supervenience,' therefore, has left us with *three* minimal supervenience bases (one consisting of brain-properties, and the other two consisting of non-brain properties); and it has also left us with a *non*-minimal supervenience base that has no independently necessary properties. Thus, the notion of 'minimal supervenience' simultaneously supports opposing views on the nature of perceptual experience. Unless there are further revisions to the notion, 'minimal supervenience' will do little to help resolve the constitution-debate.

V. Conclusion

To summarize, I have argued that that appeals to minimal supervenience are incapable of resolving the constitution-debate. I began by summarizing four notions of supervenience. Next, I looked at how these notions apply to the *orthodox view* and *extended view* of perceptual experience. I then moved to examine how Block uses the notion of *minimal supervenience* to criticize the extended view. Finally, I responded to Block by arguing that sets of *non-brain properties* form a *minimal supervenience base* for perceptual experience. Therefore, further qualifications need to be given if 'minimal supervenience' is to shed any light on this debate.

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