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When is cognitive penetration a plausible explanation?

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ABSTRACT

Albert Newen and Petra Vetter argue that neurophysiological considerations and psychophysical studies provide striking evidence for cognitive penetration. This commentary focuses mainly on the neurophysiological considerations, which have thus far remained largely absent in the philosophical debate concerning cognitive penetration, and on the cognitive penetration of perceptual experiences, which is the form of cognitive penetration philosophers have debated about the most. It is argued that Newen and Vetter's evidence for cognitive penetration is unpersuasive because they do not sufficiently scrutinize the details of the empirical studies they make use of—the details of the empirical studies are crucial also when the studies are used in philosophical debates. The previous does not mean that cognitive penetration could not occur. Quite the contrary, details of the feedback connections to the visual perceptual module and one of the candidates presented by Newen and Vetter suggest that cognitive penetration can occur in rare cases.

1. Introduction

Albert Newen and Petra Vetter argue for the cognitive penetration of perceptual experience, a phenomenon in which cognitive states or processes "directly influence our perceptual experience" when certain conditions (e.g., attention, the object or scenario causing the visual input, and perceptual conditions) are kept constant (2017, p. 26). Moreover, they argue that the burden of proof is on those who reject that cognitive penetration occurs, and they consider the relationship between perception and cognition in the light of cognitive penetration.

Several points raised by Newen and Vetter invite extensive discussion, but I will limit my commentary in two ways. First, Newen and Vetter present two types of arguments for cognitive penetration: those based on neurophysiological considerations, and three specific candidates for cognitive penetration based on psychophysical experiments. I will mostly focus on the first group of arguments, although I comment on the latter group as well. This is because the neurophysiological arguments that Newen and Vetter put forward are new within the philosophical debate about cognitive penetration, whereas the latter group of arguments is more "business as usual" and some of the arguments they put forward have been presented (and opposed) before.

Second, Newen and Vetter discuss two different claims: the *strong impenetrability claim*—the claim that "all processes forming our visual experience are cognitively impenetrable" (Newen & Vetter, 2017, p. 27)—and the *weak impenetrability claim*—the claim that early visual processes are cognitively impenetrable. I will focus only on the former. On the one hand, this is because I agree with Newen and Vetter that the weak impenetrability claim is implausible for empirical reasons. On the other hand, almost all philosophers who write about cognitive penetration focus on perceptual experiences, as do Newen and Vetter in their definition of the phenomenon cited above. Yet, it is only the strong impenetrability claim that concerns perceptual *experiences*; the weak claim concerns *early visual processing,* and no empirically plausible theory of conscious experience maintains that a mere activation of early visual processing realizes our experiences. Accordingly, elaborating on the weak impenetrability claim misses the point that most philosophers address.

It should be noted, however, that the strong impenetrability claim is ambiguous in two ways.[1] First, the claim can be interpreted as inclusive of the weak impenetrability claim or independent of it. The first interpretation is based on the fact that when Newen and Vetter introduce it, they refer to Firestone and Scholl (2015) who, in turn, argue against the cognitive penetration of visual processing in all its forms, including unconscious visual processing. In this paper, however, the strong impenetrability claim is interpreted in the

[1] I thank an anonymous reviewer for pressing me on this point as well as for several other constructive suggestions.

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second way. One reason for this is that the claim concerns visual experiences and not all early visual processing play a role in forming visual experiences. This entails that the claim does not apply to all early visual processes. Moreover, this interpretation concurs with the fact that Newen and Vetter think that the strong impenetrability claim could (in principle) incorporate the evidence against the weak impenetrability claim. If the strong claim were to contain the weak claim, then this would not work, as the incorrectness of the weak claim would entail the incorrectness of the strong claim.

A more contentious issue as regards Newen and Vetter's description of the strong impenetrability claim—"all processes forming our visual experiences"—is that the description lends to two interpretations too. On the narrow interpretation, the claim comprises only the realizers of visual experiences. On the broad interpretation, the claim comprises also the processes that precede and have causal influence on the realizers of visual experiences. In addition to cortical processes, these processes would include pre-cortical processes and perhaps even processes one might prefer to think as non-visual. In this commentary, which focuses mainly on Newen and Vetter's neurophysiological considerations, the description is interpreted in the narrow sense because they themselves focus on the direct top-down neural connections to the "visual perceptual module". Thus, the narrow interpretation allows us to assess the issue their neurophysiological considerations concerned, namely the nature of the described direct connections to visual perceptual module and their effects on perceptual experiences. The narrow interpretation also concurs with the fact that Newen and Vetter emphasize the directness of cognitive influence on perceptual experiences (i.e., the quoted definition at the beginning).[2]

The main objective of this commentary is not to argue that cognitive penetration occurs or does not occur. Instead, by focusing on the shortcomings of Newen and Vetter's argumentation, the objective is to illustrate how crucial it is (also for philosophers) to pay attention to the details of empirical studies if they wish to use empirical results and theories in the debate concerning cognitive penetration. Although cognitive penetration might appear plausible when general claims are considered, it can be implausible when one looks at the details or the context behind the generalized claims. Moreover, even if cognitive penetration is the best explanation for a given phenomenon, which in fact is possible for some of the cases discussed below, the details suggest to what extent the phenomenon can be generalized.

2. Neurophysiological considerations

Newen and Vetter's objection against the weak and strong impenetrability claims is based on three different kinds of claims related to neurophysiology:

(i) All brain areas are heavily interconnected with other areas of the brain and much of this is recurrent in kind.[3]
(ii) The processing in "higher-level" cortical areas can begin at least as early as the processing in the primary visual cortex, and the former can thus influence the latter much faster than previously thought.
(iii) Auditory stimuli influence processing in the primary visual cortex in a category-specific manner.

These three claims are well-supported by the empirical evidence, and my disagreement with the authors does not concern the veracity of these claims, but rather their relevance for the strong impenetrability claim. Newen and Vetter, of course, argue that these three claims make the strong impenetrability claim untenable.[4] This, they argue, is because the high interconnectedness between each brain area makes the perceptual module "smart" (illustrating category-specific processing) and wide (e.g., incorporating visual and auditory processing) when it should be an impenetrable and encapsulated perceptual module (2017, p. 29). According to Newen and Vetter (2017, p. 32), this "presupposes an implausible version of a module."

Focusing on the plausibility of the impenetrable and encapsulated perceptual module is a wrongheaded way to approach the topic at hand however. This is because the truth of the strong impenetrability claim does not depend on the possibility of there being a plausible notion of such a module. Instead, its truth depends on whether the source of the possible penetration can be considered cognitive and whether the penetration influences perceptual experience rather than mere parts of the module.

The third claim above, for example, demonstrates the influence of non-visual processes on the processing in the primary visual cortex. But even if such influence does exist, it does not follow that non-visual processes bring about changes in perceptual *experience*. In fact, I will ignore the third claim since it is mostly based on a study that "does not directly show influence on visual perception *per se*". (Newen & Vetter, 2017, p. 31, their emphasis)[5]

What I want to propose is that if one approaches the strong impenetrability claim in terms of neurophysiology, it is better to first focus on the neural correlates of visual experiences and then consider the reasons why those neural correlates are or could be influenced by other (sub)cortical areas. In practice, this means that three interrelated questions must be addressed: *First*, what are the

[2] This does not mean that Newen and Vetter must be committed to the narrow interpretation and in fact, at the end, I present reasons why they should not do so. Nonetheless, in keeping with the spirit of their argumentation, the neurophysiological considerations in the next section will concern only the narrow interpretation—the systematic investigation of indirect influences of cognitive states to perceptual experiences influences is beyond the scope of this paper and must wait until another time.

[3] In recurrent processing, the information is transmitted from "higher-level" (or later) areas back to "lower-level" (or earlier) areas such as the primary visual cortex.

[4] The weak impenetrability claim is directly contradicted by the third claim and it is also untenable in light of the discussion related to the other two claims.

[5] The other two cases that Newen and Vetter very briefly mention here can be explained in two well-established ways. First, the *attention-shift interpretation* holds that attentional factors change perceptual experiences. However, changes caused by attention are not cases of cognitive penetration. Second, the *judgment interpretation* holds that our judgments about our experiences change, but the perceptual experience remains the same. In this case, perceptual experiences do not change and hence this is not a case of cognitive penetration. (For these interpretations, see Stokes, 2013)