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Bence Nanay

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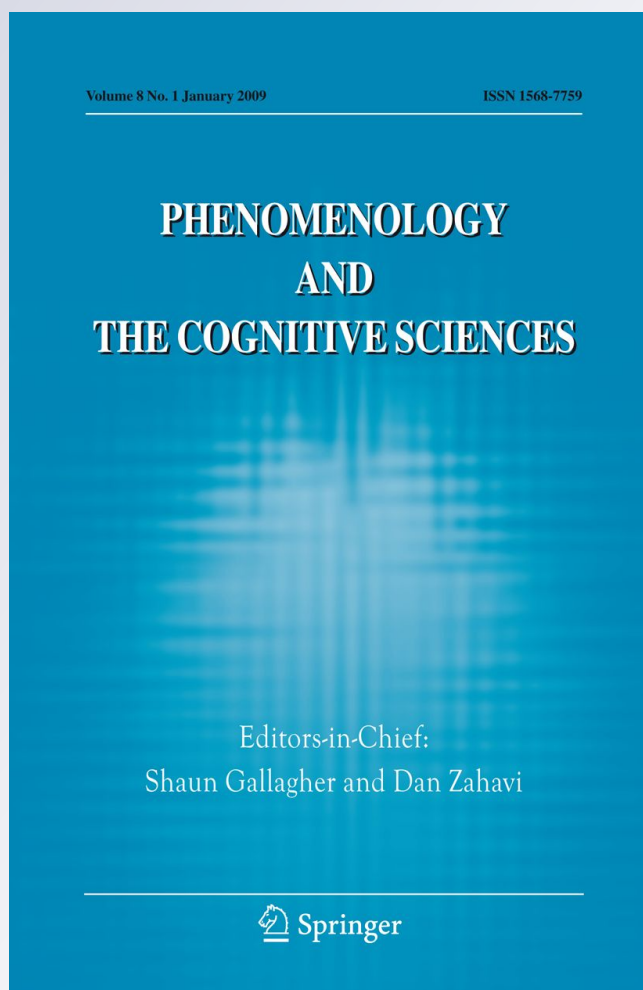
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Ambiguous figures, attention, and perceptual content: reply to Jagnow

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Abstract I argued in Nanay 2010 that we cannot characterize perceptual content without reference to attention. Here, I defend this account from three objections raised by Jagnow 2011. This mainly takes the form of clarifying some details not sufficiently elaborated in the original article and dispelling some potential misunderstandings.

Keywords Attention · Exogenous attention · Endogenous attention · Covert shift of attention · Overt shift of attention

Introduction

Intentionalists believe that the phenomenal character of an experience supervenes on the content of this experience. Some of the most influential arguments against intentionalism are from ambiguous figures where depending on how we allocate our attention, our phenomenology changes, but, the argument goes, our content remains the same. Same content; different phenomenology—intentionalism fails.

In Nanay 2010, I defended a way of describing these potential counterexamples involving ambiguous figures in such a way that they do not constitute a counterexample to intentionalism. The general idea was that depending on what parts of these ambiguous figures we are attending to, our perceptual states represent the properties of the perceived scene at different degrees of determinacy. Properties can be more or less determinate: being red is less determinate than being crimson (Funkhouser 2006). Perceptual states attribute properties to objects and these

B. Nanay (✉)
Centre for Philosophical Psychology, University of Antwerp, D 413, Grote Kauwenberg 18,
2000 Antwerp, Belgium
e-mail: bn206@cam.ac.uk

B. Nanay
Peterhouse, University of Cambridge, Cambridge CB2 1RD, UK

attributed properties can, again, be more or less determinate. The general suggestion I made is that attention makes, or tries to make, the attended property more determinate. Thus, in the case of the alleged counterexamples of the ambiguous figures, the two experiences do have different content: the same properties are represented as more determinate in one case and as less determinate in the other.

Take a 3×3 grid of squares against a white background (Nickel 2007, p. 284). This is an ambiguous figure: we can have two very different experiences when looking at it: sometimes the corner and the center squares appear prominent (call this experience E1), and some other times, the remaining four squares appear prominent (call this E2). These two experiences are phenomenally different, but, according to the opponent of intentionalism, they have the same content. My way of describing this example is that the content of these two experiences are different: when the corner and the center squares of the 3×3 grid of squares appear prominent, these squares are represented as having more determinate properties than the remaining four squares and vice versa. Thus, the experience where the corner and the center squares appear prominent and the experience where the remaining four squares appear prominent have very different content. No conflict with intentionalism.

Rene Jagnow criticized my account in general and my handling of the 3×3 grid example in particular at length in Jagnow 2011. He raises three independent objections:

- (1) Suppose that I focus my attention to the middle square in this figure. If I do so, I could still have experience E2, but I am not attending to any of the four squares that are supposed to appear prominent in E2—as I am focusing my attention to the middle square (Jagnow 2011, p. 329).
- (2) Suppose that I focus my attention to the square in the upper left corner of the image and I have experience E1: the corners and the middle of the grid appear prominent. The squares directly next to the upper left square are much closer to the square I am attending to than the opposite, lower right, corner. Thus, Jagnow continues, they should also get more visual attention. Still, the lower right corner appears prominent, whereas the squares directly adjacent to the square I am focusing my attention are not (Jagnow 2011, pp. 329–330).
- (3) If my proposal were correct, then “one would be able to focus on any combination of squares with the result that only those squares would be prominent” (Jagnow 2011, p. 329). For example, one would be able to focus one's attention in such a way that only the upper left and the lower right corners appear prominent. But this consequence of my proposal is false: if we attend to the upper left and the lower right corners, we get E1: all the corners (as well as the middle square) will appear prominent, not only the upper left and the lower right ones.

Predictably, I will defend my account from these objections. This will, hopefully, also clarify some details not sufficiently elaborated in the original article and dispel some potential misunderstandings.

Both arguments (a) and (b) are based on the assumption that we can attend only to those parts of the visual scene that we are fixating our eyes on. But this assumption is false. Change in attention is possible without moving our eyes at all. So much so that this very phenomenon has been investigated for decades under the name of ‘covert shift of attention’ (Posner 1980; 1984; Posner et al. 1984; see also Findlay

and Gilchrist 2003, pp. 35–54 for a summary). A shift of attention is overt if it is accompanied by an eye movement. It is covert if it is not.

It has even been argued that eye movement would not even be possible without this covert shift of attention. The argument is that all of our eye movements must be preceded by a covert shift of attention, because, to put it very simply, otherwise our visual system would not know whether and how it should move the eyes (see for example, Hoffman and Subramaniam 1995; Kowler et al. 1995). In short, it is possible to shift one's attention while not moving one's eye: I can fixate my eye on the spacebar of my computer and nonetheless attend to the webcam above the computer screen.

But then in the case of (a), I can fixate my eyes on the middle square and attend to any of the other squares. Hence, nothing should prevent us from having E2 when we are fixating on the middle square. And in (b), fixating my eyes on the upper left corner would not make it more likely that I attend to the two adjacent squares than to any other squares. As long as we make the familiar distinction between visual attention and eye movement, neither (a) nor (b) should count against my account.

A further word of caution about (b): we have seen that the phenomenon of covert shifts of attention demonstrates that one can attend to parts of the visual field that one is not fixating on. But eye movement and attention comes apart in the opposite direction too. If I am fixating my eyes on an object and attending to one of its properties, say, its color, I may not attend to some of its other properties. Thus, it is possible not to attend to some properties of the visual scene that we are fixating on. Argument (b) at least partly depends on the consideration that as I am fixating on the upper left corner of the figure, if the figure is small enough, the adjacent squares will project onto my fovea—and this leads Jagnow to conclude that they must be represented in a more determinate manner. But this does not follow. There are many properties of the objects that project onto our fovea that we are not attending to at all. Again, no contradiction.

Argument (c) is based on another misunderstanding of my account. When he presents my account, Jagnow characterizes my view, correctly, in the following way: “whether an experience attributes a determinable or a determinate property depends on the perceiver's attention in such a way that ‘attention makes the attended property more determinate’” (Jagnow 2011, p. 327, the quote is from Nanay 2010, p. 268). But when outlining argument (c), he seems to attribute a much stronger claim to me and it is only this stronger claim that (c) jeopardizes. He seems to assume that my view is that *only* attention can make the attended property more determinate: that whether an experience attributes a determinable or a determinate property depends *only* on the perceiver's attention. As he says, “on Nanay's view, these squares are experienced as prominent *only* because one pays attention to them” (Jagnow 2011, p. 330, my emphasis).

But this is not my view. Lots of things can make a property more or less determinate besides our visual attention. I mention one in Nanay 2010: position in the visual field. Our visual system cannot attribute very determinate properties to objects that we see in our peripheral vision. For example, it cannot attribute any even remotely determinate color properties in the periphery. If we attend to an object and then move our head in such a way that this object is no longer in our fovea but is seen in the periphery, the determinacy of its properties will drastically decrease, but I am attending to it nonetheless.

Thus, we have no reason to suppose, if we accept my account, that if I attend to the upper left and the lower right corners, only these two squares will appear

prominent. Attention to these two squares presumably activates some Gestalt features of the figure (something Jagnow's positive account rightly emphasizes) and this makes the other two corners, as well as the middle square, appear to be prominent as well. No contradiction here.

Jagnow prefaces all these three objections with the supposition that “attention is entirely voluntary” (Jagnow 2011, p. 329). I am not sure why this is necessary—objections (a) and (b) do not seem to rely on this assumption and there may be ways of formulating (c) that would not rely on it either. Furthermore, this is an extremely implausible assumption. In fact, to turn to vision science again, there is a classic distinction between endogenous and exogenous attention (Theeuwes 1991), where only the former is voluntary (note that this distinction is orthogonal to the overt versus covert distinction). Assuming that “attention is entirely voluntary” would imply denying the existence of exogenous attention. Therefore, we should reject this assumption: attention can be endogenous or exogenous. In fact, there is some empirical support for my claim that attention increases the degree of determinacy if attention is interpreted as exogenous attention (Yeshurun and Carrasco 1998, see also Stazicker ms. (2010) on the relevance of these findings to my account).

Jagnow does consider the possibility of involuntary attention briefly. His argument is the following: If attention is not voluntary, it is captured by some feature of some external stimulus. But, Jagnow continues, according to my account, “this feature would have to be the prominence of the respective squares. Yet, on Nanay's view, these squares are experienced as prominent *only* because one pays attention to them” (Jagnow 2011, p. 330). We have seen above that I do not hold that “these squares are experienced as prominent *only* because one pays attention to them”. But it is not true that the only feature that can capture our attention is “the prominence of the respective squares”. The literature on exogenous attention has identified a number of important features that can capture our visual attention, from movement and illumination to naked bodies of the opposite sex. In other words, it is by no means true that prominence is the only property that can catch our attention exogenously.

My main aim in Nanay 2010 was not to defend intentionalism from counterexamples, and more specifically, from counterexamples involving ambiguous figures. My main aim was to clarify how we should think about perceptual content and my main claim there was to argue that because attention makes the attended property more determinate, a change in one's attention always changes one's perceptual content. I hope that by responding to Jagnow's criticism, I managed to clarify some of the details of this account and to guard against some tempting misinterpretations.

More precisely, I argued that if we take some important distinctions from vision science on board and differentiate between covert and overt shifts of attention and also between exogenous and endogenous attention, and if we also acknowledge that many factors can change the determinacy of a perceived property besides attention, then Jagnow's objections fail to apply. These clarifications are important not just as means of defending my treatment of the 3×3 grid example against Jagnow's objections and not even as a way of strengthening the positions of intentionalism. What I take to be the strongest consequence of my view is that perceptual content cannot be characterized without talking about perceptual attention. But then, we should be careful about how we should think and how we should not think about perceptual attention.

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