**Abstract:** Chalmers (2004), Wu (2010), and Block (2010) have independently argued that the effect of attention on the content of perception raises a challenge for representationalism. Covert shifts of attention seem to involve a change in the phenomenal character of perception, without a corresponding change in representational content. In this paper, I show that the challenge fails because the arguments provided do not rule out a change in representational content. I argue that the strongest version of the challenge dissolves once we accept that there can be different ways of veridically representing the same object in perception. I end by drawing a new moral for representationalism. Research on attention shows that we must reconsider the relationship between the mind and the world, and provide an account on which the content of perception is partly a function of attention.

1. Introduction

There is considerable evidence that attention affects perceptual consciousness. Recently, this fact about perception has been used to motivate a counterexample to representationalism. Representationalism is one of the main contenders for solving a central problem in the philosophy of perception: the problem of providing a non-mentalistic account of what it’s like to perceive objects or events in the world. In this talk, I argue that attention doesn’t raise a compelling counterexample to representationalism, though it does push us to rethink the traditional view of the representational content of perception.

The challenge that I’ll be discussing is motivated by covert shifts of attention, or shifts of attention that happen without any reorientation of the relevant sensory organs. In brief, the worry is that although there is a change in perceptual consciousness when attention shifts covertly, it’s not clear that there’s always a change in the content represented. This would seem to be a problem for representationalism. In one form, representationalists hold that the phenomenal character of perception – what it’s like to experience some object, property or event – supervenes on representational content (e.g. Tye 1995; Bryne 2001; Crane 2007). I call this pure representationalism. Pure representationalists are committed to the claim that there can be no change in phenomenal character without a change in representational content. So, the effect of attention on perception seems to force us to either reject representationalism altogether, or adopt an impure variant. Either move is problematic, because in both cases we are left with a residual mystery: if not representational content, what determines the phenomenal character of a perceptual experience? In the first part of my talk, I’ll show that attention doesn’t really raise a problem for pure representationalist accounts of phenomenal character.
My main aim, however, is not to defend representationalism, but to draw a new moral for how to think about the representational content of perception. In order to respond to the challenge raised by attention, the representationalist needs to expand beyond the traditional view that representational content is determined by accuracy conditions specifying states of the world. Instead, perceptual content is a function of not only objects or properties in the world, but also the distribution of attention.

2. Defending Representationalism

I’ll begin my defense of representationalism by first saying a little more about attention, and the variants of representationalism that are challenged by shifts of attention. As famously noted by William James, we all seem to know what attention is. When someone asks us to “pay attention,” we know what they want us to do. And we have probably all had the experience of day-dreaming or being lost in our own thoughts, then shifting attention back to the world around us. The fact that attention affects perceptual experience is widely accepted. But precisely how does attention change perceptual consciousness?

One way that attention affects perceptual experience is through shifts of attention, or the disengagement of attention from one object and engagement in a new object (Posner & Petersen 1990). Attention can shift in different ways. In overt shifts of attention, attention affects perception by redirecting the senses to an object or event. But this is not the whole story about attention’s perceptual effects. The effect of attention on perception is not always mediated by reorienting the senses, since attention can also shift covertly. A covert shift of attention is a shift of attention that occurs while input to sensory systems is held fixed. For example, subjects may be asked to hold their gaze on a central point and shift attention among different objects in a visual scene.

Covert shifts of attention raise a challenge to all versions of representationalism that are committed to the supervenience of phenomenal character on representational content. Representationalism is the view that the content of perception is representational content, where representational content is specified by a representation’s accuracy conditions. Pure representationalists attempt to give an account of the phenomenal character of perception in terms of representational content. There are many variants of pure representationalism. Some pure representationalists hold that having a particular phenomenal character just is having a particular representational content. Others permit a distinction between phenomenal character and representational content, but maintain that representational content exhaustively determines phenomenal character (Chalmers 2004). These distinctions among different pure representationalist views won’t make a difference to my arguments in this paper (so you can think of in either way). Impure representationalism, in contrast, allows that phenomenal character might supervene on more than just representational content, like the mode of representation. I’m going to bracket discussion of impure representationalism until the end of my discussion – for now, when I use the term ‘representationalism’ I mean pure representationalism.

At a minimum, all variants of pure representationalism commit their proponents to the view that phenomenal character supervenes on representational content. Challenges to pure

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1 For the purposes of this paper, when I use the term ‘representationalism’ I mean pure representationalism, unless otherwise specified.

2 While mere supervenience is typically not thought to be strong enough to provide a reductive account of one phenomenon in terms of another (cf. Peacocke 1983), many stronger relations
representationalism often take the form of identifying a counterexample in which phenomenal character changes, while representational content stays the same. Recently, several philosophers have argued that attention motivates a challenge to supervenience. Wayne Wu and Dave Chalmers present what I call the Easy Challenges – Ned Block presents us with a Harder Challenge, and as we’ll see, responding to his challenge requires us to reject the view that the representational content is determined by conditions of accuracy fixed by the world alone. For the sake of time, in this talk I focus on Block’s Challenge.

Block thinks that research on attention shows not only that representationalism is false, but that there is something about the representational content of perception that is incompatible with the phenomenal character of perception. To demonstrate the effect of attention on perceptual phenomenology, Block discusses work by Marisa Carrasco on perception of contrast. Carrasco and colleagues have demonstrated that covert shifts of visual attention change perceptual phenomenology, specifically perceived contrast of Gabor patches (see figure 1). In Carrasco’s study, subjects were asked to fix their gaze on a central point, and were presented with two Gabor patches on either side of the fixation point. Covertly attending to a Gabor patch seemed to result in a 3 to 6% increase in apparent contrast. Carrasco and colleagues interpret this finding as evidence that attention affects what it’s like to perceive a visual scene.³

![Figure 1](image)

Fixing your gaze on the central point, covertly shift attention to the Gabor patch on the left. It should seem to you as though both Gabor patches are of the same contrast.

Initially Carrasco’s study seems to offer a promising avenue for the representationalist. Covertly shifting attention to a Gabor patch may increase the represented contrast. So we seem to have a pretty straightforward option for identifying a change in representational content that accompanies the change in phenomenal character. As I shift attention to the left gabor patch, I represent it as 28% contrast; when I shift attention away, I represent it as 22%.

Suppose the represenationalist were to embrace the first option. In Carrasco’s experiment, subjects are misrepresenting the patch on the left either when they attend to it, or when they attend away. According to Block, the representationalist is going to run into trouble because there is no distribution of attention that engenders veridical perception. It is highly will entail supervenience. Showing supervenience fails thus suffices for showing that phenomenal character cannot be reduced to representational content.

³ Though there is some debate over whether the results in fact show an effect of attention on what it's like to perceive. See for example Anton-erxleben, Abrams & Carrasco 2010; Prinzmetal, Long & Leonhardt 2008; Schneider 2006; Schneider & Komlos 2008.
implausible that attending to a thing induces an illusion; but likewise, it seems implausible that focusing attention on a conversation or the page of a book – like Vemeer’s girl reading -- renders all background experiences illusory. The problem is not merely epistemic – it is not that we can’t know when we’re representing correctly, and when we aren’t. Rather, according to Block, there just is no single distribution of attention that engenders veridical perception.

The second option for the representationalist is to hold that representational content is a range of indeterminacy that includes the actual contrast. Focusing just on the perception of the left Gabor patch, as attention shifts from the dot at the center to the Gabor patch on the left, representational content may change to a different range of indeterminacy. But both ranges are veridical representational contents, because both contain the actual contrast. This looks at first like a solution to the challenge attention raises to Supervenience.

But the representationalist isn’t only interested in satisfying Supervenience. Her primary aim is to provide a non-mentalistic account of phenomenal character in representationalist terms. And for this purpose, Block thinks – and I agree – that this solution is inadequate. The reason is that the representational content “clashes with” the phenomenology. When I experience the Gabor patch, I don’t experience a range of indeterminacy – rather, I experience a particular, determinate contrast. A range is indeterminate in a way that experience is not. Block thinks this shows that representational content can’t be what explains why my perceptual experience has the particular phenomenal character that it does. Stronger, he claims that phenomenal character is actually incompatible with representational content: Phenomenology is determinate, but representational content is indeterminate.

Block presents the strongest challenge to representationalism. The worry he raises is troubling for any representationalist account on which representational content explains phenomenal character. Nevertheless, I think that the proponent of pure representationalism has other options for meeting Block’s challenge. My suggestion in this talk is that the representationalist can respond to Block’s challenge if she adopts a new view of the representational content of perception. If we give up the view that the content of perception is determined by accuracy conditions specifying states of the world, several options open up for the representationalist. The first option is to maintain that the content of perception includes a representation of the way of attending in addition to a representation of objects in the world. On this view, the accuracy conditions specifying states of the world wouldn’t need to change in order to account for the change in phenomenology in representationalist terms. Instead, what changes is a representation of our own mental life, namely the direction of attention – and this is part of the content of perception. One reason we might resist this option is that it seems biologically unmotivated – perception is not for telling us about our own mental states. Rather, it’s for telling us about the world.4

A second option is to maintain that attending changes which properties are represented in the content of perception, but that this does not entail that one of the representations is inaccurate. Accepting this view requires accepting that there can be more than one way to correctly represent an object in perception, and that these ways are distinct. In the next section, I’ll provide some motivation for why we might endorse option 2.5

4 There is more to be said in favor of this option. For the sake of brevity, in this talk I will only focus on the second option: that the content of perception is partly a function of attention.

5 A third option is available to the representationalist: to hold that phenomenal character supervenes on more than just mental content, like a mode of representation. My aim in this talk
But first, I’d like to say more about how a new view of representational content would enable us to respond to Block’s challenge. Consider again Carrasco’s experiment. As I shift attention covertly toward and away from the Gabor Patch on the left, the representational content of my perceptual experience changes from a representation of (say) 28% contrast to a representation of 22% contrast. On Block’s view, in order for both perceptual experiences to be veridical, the representational content on both occasions is a range that includes the “actual” contrast of the patch.

On my view, in contrast, more than one representational content can be veridical. When unattended, I perceive the Gabor patch correctly when I represent it as 22% contrast, because that is precisely what it should be to perceive an unattended gradient of that contrast. Attending to that same Gabor patch, I also perceive correctly when I represent it as 28% contrast, because that is precisely what it should be to perceive an attended gradient of that contrast. It is a mistake to suppose that the accuracy conditions for a representation can be specified without reference to a way of attending. Quite the contrary, attention permeates perceptual content, and there are many ways of correctly representing, since there are ways of attending.

3. A New View of Content

In order to persuade you to accept my view, I need to convince you of two claims: (1) that attention pervades perception, and (2) that the same object can be correctly represented in different ways, depending on the distribution of attention.

The first claim, that attention pervades perception, is an empirical claim. I think that this claim is supported by an emerging Active View of perception. Consider two ways of thinking about perception. On the first view, perception is passive. To perceive is to receive information about the environment through the senses. Attending happens downstream – after a perceptual representation has been realized in the early cognitive system, attention selects certain representations for privileged processing, for example, making attended representations accessible to higher cognitive systems like working memory. Call this the Passive View. One example of a Passive View of perception is Prinz’s AIR theory. On his view, attention’s primary role is to project pre-attentional intermediate level representations to working memory and consciousness (2003). On the second view, attention actively structures perception from the earliest stages of perceptual processing. Call this the Active View. Unlike on the Passive View, there is no pre-attentional perceptual content, because any way of representing an object in perception involves some distribution of attention to that object. All perceptual content is relative to a distribution or way of attending.

There are many reasons to prefer the Active View of perception. One reason is that the Active View is suggested by evidence at the neural level. Neurons in early perceptual processing areas that fire in response to attended stimuli fire more quickly and are more likely to trigger surrounding neurons than neurons responding to unattended stimuli. For example, O’Connor and colleagues (2002) demonstrated that attention to a stimulus modulates baserate neural activity in the earliest neural circuitry that processes visual stimuli. In their study, they placed subjects in two conditions. In one condition, subjects had to attend to a visual stimulus to perform a task; in the second condition, the visual stimulus was irrelevant to task performance. O’Connor and colleagues found that the task-relevant stimulus elicited different neural response early on in

is to show that attention does not force us to reject pure representationalism, or to move to an impure variant. For this reason, I’ll set aside discussion of impure representationalist solutions.
perceptual processing, specifically in the neural circuitry between the retina and the visual cortex. This shows that from the earliest stages of perceptual processing, attention affects neural response to a stimulus. In turn, the findings of O’Conner’s study suggest (though do not entail) that attending to an object affects the content of perception even at the earliest stages of perceptual processing.

The wide range of perceptual effects of attention also speaks in favor of the Active View. I have already discussed work by Marisa Carrasco which demonstrates that attending to an object affects perceived contrast. In another study, Spence and Parise (2009) demonstrated that when two stimuli are presented simultaneously, attending to one of them makes it seem to appear first. Other studies have shown that subjects judge attended objects to be more saturated in color and to have greater spatial frequency than unattended objects. As Block summarizes, “attended items look bigger, faster, earlier, more saturated, stripier” (Block 2010).

The Passive View would predict that attending to a stimulus renders that stimulus available to working memory, conscious awareness, or for use in rational guidance of behavior – it would not, however, predict a perceptual change in attended relative to unattended stimuli. The Active View, in contrast, does predict this finding. The empirical evidence overwhelmingly supports the Active View of perception. So far, Block would agree.

The next claim is that even though attention changes the properties represented in perceptual experience, this isn’t a problem for representationalism, because there are many ways to correctly represent. I think that there are intuitive reasons to prefer a view on which there are many ways to correctly represent an object in perception. We seem to have straightforward examples of cases in which representations with different contents can be correctly applied to the same object.

Here’s one example. Suppose a resident of Toronto, let’s call her Agnes, decides to visit Tampa in March. When she arrives, she’s very happy about how warm it feels. Bill, a resident of Tampa, meets her at the airport and complains about the recent spate of cold weather. While for Agnes the weather feels warm, for Bill the weather feels cold. Agnes and Bill represent the same temperature differently. Is one (or both) of them misrepresenting? A better view, I think, is that there are many ways to correctly represent the same temperature. Accurate representation of the temperature is relative to a subject’s sensitivity to hot or cold. But the fact that Agnes and Bill’s sensitivities are different does not entail that either of them is misrepresenting. Rather, there are many ways of correctly representing the same temperature.

Another example involves the culinary herb cilantro. Cilantro tastes different to different people depending on sensitivity to a type of chemical compound called aldehydes. For people who are sensitive to aldehydes, cilantro tastes soapy. For others who are insensitive to this chemical, cilantro tastes zesty. Agnes is sensitive to aldehydes – she represents cilantro as soapy. Bill, however, is luckily insensitive to aldehydes and represents cilantro as zesty. Yet it seems to

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6 See also Stelmach and Herdman 1991 for more evidence that the effect is perceptual, rather than a temporal judgment.
7 Bence Nanay has recently defended a similar view. He argues that we should think of all perceptual content as “post-attentional.” See Nanay 2011.
8 Properties like hot and cold are examples of what Kathleen Akins has called “narcissistic properties:” roughly, properties that are not about the world alone, but rather about the world relative to my own needs and interests. One way of understanding my proposal is that far more properties represented in perception are narcissistic than is typically acknowledged.
me that neither of them are mistaken. Both of their representational contents match the intended object, the piece of cilantro. There are different ways of correctly representing cilantro, depending on a perceiver’s sensitivity to aldehydes.

With these examples in mind, we can give the following interpretation of Carrasco’s experiment. A covert shift of attention changes a subjects’ sensitivity to the properties of each gradient. Given different states of attentional engagement, the same subject will vary in their sensitivity to each gradient’s properties. But just as having different sensitivity in virtue of the nature of one’s perceptual system doesn’t always engender illusion, nor does changing one’s sensitivity through a shift of attention. Taken together with the evidence for the effect of attention on perception, I think this shows that this shows we need to step away from the view that accuracy conditions for a representation can be specified without reference to a subjects’ ongoing mental life, especially the direction of her attention.

4. Conclusion

I’ll end by noting that my response to Block’s challenge involves a concession on the part of the representationalist. If her aim is to provide a non-mentalistic account of the mental in representationalist terms, the issues I have discussed today seem to show that this is not going to work. Attempting to provide an account of mentality in terms that make no reference to a subject’s ongoing cognitive life leaves us with an inadequate account of how the mind represents the world in perceptual experience. This much I take Block’s challenge to have shown.

But as I have argued, shifts of attention don’t show that representationalism – even pure representationalism – must be abandoned as an account of phenomenal character of perceptual experience. Rather, any adequate theory of perceptual content must make room for the irreducible role of the direction of a subject’s attention. And given certain assumptions about what perception is for – namely, enabling subjects to act in adaptive ways in the world – this is exactly what we should expect. Rather than see the effect of attention on perception as a challenge to representationalism, I hope to have shown that this research instead points to a new view of perceptual content, and the pivotal role that attention must play in developing an adequate account of how the mind represents the world.

References:

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