Does What We Want Influence What We See?

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Abstract

I aim to show that the content of our perceptual states depends counterfactually on the action we want to perform. Most philosophical and psychological theories of perception claim or at least assume the opposite: they conceive of perception as all-purpose: what we want to do does not influence what we see. I will argue that the content of one's perceptual state does vary as the action one is inclined to perform varies. To put it very simply, what we see does indeed depend on what we want to do. After clarifying what counterfactual dependence means in my claim, I will give a two step argument. (a) one's visual attention (sometimes) depends counterfactually on one's intention to perform an action (everything else being equal) and (b) one's perceptual content (always) depends counterfactually on one's visual attention (everything else being equal). If we put these claims together, what we get is that one's perceptual content depends counterfactually on one's intention to perform an action (everything else being equal).

Keywords: Perception; Action; Intention; Counterfactual dependence; Modularism; Interactionism.

Is Perception All-Purpose?

I aim to show that the content of our perceptual states depends counterfactually on the action we want to perform. In other words, the content of some of one's perceptual state varies as the action one is inclined to perform varies. Most philosophical and psychological theories of perception claims or at least assumes the opposite.

Theories of perception come in two varieties. Modularist theories of perception claim that perception is an encapsulated process that is impenetrable for higher order cognitive processes (see, for example, Fodor, 1983; Marr, 1984; Pylyshyn, 1999,). If this is so, then one's inclination to act cannot have any influence on one's perception. If no higher order cognitive process can influence perception, then the inclination to perform a certain action cannot either.

Interactionist theories of perception, on the other hand, insist that perception is not impenetrable; higher order cognitive processes do influence our perception. These theories, however, emphasize the influence of our beliefs and conceptual apparatus on our perception and not that of our momentary inclinations (Gregory, 1966; Rock, 1983).[1] An interesting and unusual variety of the interactionist theories of perception is J. J. Gibson's theory of direct perception. But Gibson also claims explicitly that what we see does not depend on our inclination to perform an action. According to him, I perceive a post box as affording posting a letter each time I perceive it, regardless of whether I have a letter to post in my pocket (Gibson, 1966, p. 228, p. 246; Gibson, 1979, pp. 138-139).

In general, the received view is that perception is all-purpose: what we are inclined to do does not influence what we see. I will call this mainstream view the 'all-purpose perception view'. I will to argue that the 'all-purpose perception view' is wrong. In other words, I will argue that the content of one's perceptual state does sometimes vary as the action one is inclined to perform varies. To put it very simply, what we see does sometimes depend on what we want to do. Perception is not all-purpose.

The Structure of my Proposal

Before we begin, I need to clarify what I mean by the claim that the content of one's perceptual experience depends counterfactually on the action one is inclined to perform.

First of all, what does 'inclination' mean? John Searle's distinction between prior intention and intention in action may help here (Searle, 1983, pp. 83-98, see esp. p. 93). Sometimes we perform an action as a result of planning to do so. Sometimes, however, we just do things without having planned to do it - we stand up from the computer to walk about the room, for example, without having planned to do so. In the former case, we have both prior intention and intention in action, whereas in the latter case we have only intention in action. Searle claims that every action must involve intention in action, but not every action involves prior intention.

Suppose that I am sitting in the library and I am really hungry. The person at the next desk leaves the room and her apple is lying around at her desk. After some hesitation, I decide to do the right thing and refrain from eating the apple. I certainly see the apple as edible for me in spite of the fact that I do not have an intention in action to eat it. I do represent it as an object that I can (could) eat if I try to. But I do not try to for some reason. In other words, I do not have an intention in action to eat it. If I had an intention in action, then I would eat the apple. I can still have a prior intention or some other pro-attitude towards eating the apple.

I will use the term 'inclination to Q' to refer to what John Searle calls intention in action to Q, what he calls prior intention to Q, as well as any other pro-attitude towards performing Q. In other words, I will say that I am inclined to Q an object if I have an intention in action to Q it or I have a prior intention to Q it or I have some other pro-attitude to Q it.

Some simple organisms supposedly cannot have prior intentions that are different from intentions in action. These

[1] See Hommel et al., 2001 for a detailed discussion of this.

organisms will Q every object they perceive to be Q-able. We, humans, like to think that we are more sophisticated than this. We can see an object as affording a certain action, Q, but refrain from performing Q, because, say, it is immoral or bad for one's diet.

Second, and more importantly, what does the 'counterfactual dependence' of one's perceptual content on one's inclination to perform an action mean? The advocates of the 'all-purpose view' would, of course, agree that the inclination to perform an action at t_1 does influence my perceptual experience at t_2, if I do indeed perform this action and if t_2 follows t_1. For example, my inclination to turn my head at t_1 (if executed) obviously does influence my perceptual experience in the next moment. There are some other fairly obvious examples of action-perception dependence that the 'all-purpose view' would accept. When, for example, one is perceiving one's own action, the content of one's perceptual experience depends on the action one performs, thus presumably it also depends on one's inclination to perform this action.

To be more precise, according to the 'all-purpose view', the content of one's perceptual experience does not depend on what action one is inclined to perform, *everything else being equal*, that is, importantly, *even if one's sensory stimulation is still the same*. A word about what I mean by 'sensory stimulation': I take sensory stimulation to be a physiological state: a retinal image, for example.

In all the examples I gave in the last paragraphs, the action the agent is inclined to perform influences her sensory stimulation, thus, her perceptual experience. For example, when I am looking at my hand while reaching out to take a sip from a glass and when I am looking at my hand while ringing the doorbell, my sensory stimulation will be different in the two cases, therefore, it is not surprising that the content of my perceptual experience will also be different. The inclination to perform a certain action influences the sensory stimulation and the sensory stimulation determines the content of the perceptual experience. The 'all-purpose view' would not deny this.

What the 'all-purpose view' would deny is that it is possible that the content of one's perceptual experience varies with the action one is inclined to perform even if the sensory stimulation is the same. Their claim is that when I am looking at a glass of wine while being inclined to drink it, I will have the same perceptual content as I would if I were looking at the same glass of wine while being inclined to pour it out under the table (supposing that my sensory stimulation is the same in the two situations).

I aim to argue against this view. I will argue that the content of one's perceptual experience depends counterfactually on the action one is inclined to perform even if the sensory stimulation is the same. In other words, if the action I am inclined to perform were different, the content of my perceptual experience would be different, even if my sensory stimulation were the same.

This is not such a radical claim.[2] The content of our perceptual experiences depends counterfactually on lots of things. For example, some philosophers hold that when I look at the duck-rabbit drawing and I see it as a duck-picture and when I look at the same drawing and I see it as a rabbit-picture, then the content of my perceptual experience is different in the two situations, in spite of the fact that everything else, including my sensory stimulation, is the same. Whether or not this is true, my claim is structurally similar to it: the content of one's perceptual experience depends counterfactually on the action one is inclined to perform, even if everything else, including my sensory stimulation, is the same.

The First Step: Attention and Inclination

I have two arguments for this claim. The first argument is based on experiments conducted by C. R. Gallistel (Gallistel, 1980). Gallistel examined patients whose eye muscles are paralysed. His most interesting finding from our point of view is the following:

> When a man with paralyzed eye muscles tries to glance to the right the world appears to jump to the right even though the pattern of light falling on the paralyzed eye has not moved. […] The image of the world on the retina does not move, but one "sees" the world move. Gallistel, 1980, p. 175.[3]

When a patient tries to move her eyes, an action she attempts to perform intentionally and voluntarily, her sensory stimulation does not change, but her perceptual experience does - it appears to jump to the right. In other words, her perceptual experience varies as her inclination varies, even if the sensory stimulation stays the same. This is exactly what we wanted to show.

Some might object though that these findings may show that in the case of those patients whose eye muscles are paralyzed our thesis is true, but it surely does not show anything about those of us whose eye muscles are not paralyzed. I find it improbable that the condition of eye muscles would influence the general scheme of interaction between perceptual content and inclinations in such a way that this interaction is very different if the eye muscles are healthy. However, since there are also some possible worries

[2] Some philosophers held similar views. William James famously said that "attention […] out of all the sensations yielded, picks out certain ones as worthy of notice and suppresses all the rest. We notice only those sensations which are signs to us of *things* which happen practically […] to interest us". (James, 1982/1961, p. 39). Susan Hurley writes explicitly that "the content, or structure, of perceptual experience *may* vary directly with motor intentions or actions, even when the sensory inputs are held constant. Perceptual experience is […] not independent of motor intentions" (Hurley, 1998, p. 200, original emphasis).

[3] See also Howard, 1982, p. 311 and Hurley, 1998, pp. 372-373 on the paralyzed eye experiments.

about the actual conduct of these experiments (especially about whether the eye muscles of the patient were totally or only partially paralyzed), I give another, independent argument for our thesis.

What I need to show is that one's perceptual content depends counterfactually on one's inclination to perform an action (everything else being equal). I will show this in two steps: (i) one's visual attention (always) depends counterfactually on one's inclination to perform an action (everything else being equal) and (ii) one's perceptual content (sometimes) depends counterfactually on one's visual attention (everything else being equal).

I take the first of these two steps as relatively uncontroversial: what we attend to obviously depends on what action we are inclined to perform. I will attend to different features of my phone when I am inclined to call a cab with it and when I am inclined to throw it out of the window. There is one possible worry about this first step though: that what we attend to depends on what action we are inclined to perform *even if the sensory stimulation is the same*. One could argue that I attend to different features of my phone when I am inclined to call a cab with it and when I am inclined to throw it out of the window *because* my sensory stimulation is different. After all, our eye movements are going to be very different in the two situations. And one may argue that if the eye movements are different, then the sensory stimulation is also different. I will examine this assumption in a moment, but for the sake of the argument, I will assume that the identity of sensory stimulation implies the exact identity of eye movement.

The objector can say that it seems reasonable to assume that difference in attention implies difference in eye movement: attention supervenes on eye movement. If this is so, then since attention supervenes on eye movement, it cannot possibly vary with inclination while the eye movement (thus, the sensory stimulation) is the same. Thus, (1) is false.

The assumption that attention supervenes on eye movement, however, is incorrect. Change in attention is possible without any change in eye movement. So much so that this very phenomenon has been repeatedly investigated under the name of 'covert shift of attention' (Posner, 1980; 1984, Posner et al., 1984; see also Findlay & Gilchrist, 2003).

It has even been argued that eye movement would not even be possible without this covert shift of attention. When the eyes move, they 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 & Subramaniam 1995, Kowler et al 1995).

The existence of the phenomenon of covert shift of attention is universally agreed on (see Findlay & Gilchrist, 2003, pp. 35-54 for a good summary). It is possible to shift one's attention while not moving one's eye (that is, while having the same sensory stimulus). Thus, attention does not supervene on eye movement. It is possible that our attention varies while our eye movement is the same. Thus, it is also possible that it varies as our inclination changes (while our eye movement is the same). So much about the first step of my argument.

The Second Step: Perception and Attention

The second step of my argument is, however, more problematic. Again, what I need to show is that one's perceptual content depends counterfactually on one's visual attention (everything else being equal). This suggestion is not new. William James, for example, says: "In a world of objects thus individualized by our mind's selective industry, what is called our 'experience,' is almost entirely determined by our habits of attention." (James, 1892/1961, p 39).

But why would attention influence perceptual content? In order to tackle this question, I turn to a famous psychological phenomenon that is usually referred to as 'inattentional blindness'. This phenomenon has been known for a long time. Rezső Bálint, a Hungarian physician after whom the Balint-syndrome was named, wrote in 1907:

> It is a well-known phenomenon that we do not notice anything happening in our surroundings while being absorbed in the inspection of something; focusing our attention on a certain object may happen to such an extent that we cannot perceive other objects placed in the peripheral parts of our visual field, although the light rays they emit arrive completely at the visual sphere of the cerebral cortex. (translated and quoted in Husain & Stein, 1988, p. 91.)

This phenomenon demonstrates that if attention varies, perceptual content - what the agent sees - also varies, even if the sensory stimulation is the same. Let us proceed more slowly though.

Probably the most famous inattentional blindness experiment is the following (Simmons - Chabris, 1999). We are shown a short video-clip of two teams of three, dressed in white and black, passing a ball around. We are asked to count how many times the white team passes the ball around. On first viewing, most of the observers come up with an answer to this not very interesting question. On second viewing, however, where there is no counting task to be completed, they notice that a man dressed in gorilla costume walks right in the middle of the passing game, makes funny gestures and then leaves.[4] The gorilla spends nine seconds in the frame and most viewers do not notice it when attending to the passing around of the ball. A very striking phenomenon, especially if someone does not know what the experiment is about before the first viewing.[5]

The argument is then the following. (1) The sensory stimulation is the same in the two instances of viewing. (2) Our attention is different (in one case we attend to the passes,

[4] The clip can be found at http://viscog.beckman.uiuc.edu/grafs/demos/15.html

[5] For more inattentional blindness experiments see Mack - Rock 1998.

in the other we do not). Finally, (3) our perceptual content is strikingly different (in one case we see a gorilla, in the other we do not). Thus, if the attention varies, the perceptual content also varies, even if the sensory stimulation is the same. This is exactly what we wanted.[6]

We are not done yet though. Two possible objections should be addressed. One may question premise (1) and one may also question premise (3).

One may argue that the sensory stimulation is not the same in the two instances. After all, our eye movements are going to be very different when we are tracking the itinerary of the ball and when we are spotting the gorilla. In the first case, it will zigzag following the ball, whereas in the second one, supposedly, it will come to rest on the gorilla. Thus, though it is true that our perceptual content varies with our attention, this is due to the difference in our eye movements, that is, in our sensory stimulation. If we are attending to the ball, then our eye movement (thus, sensory stimulation) will differ, and as a result, our perceptual content will differ too. Thus, nothing about the gorilla experiment shows that our perceptual content depends counterfactually on what we are attending to if we keep the sensory stimulation fixed, because the sensory stimulation is not kept fixed.

In response to this objection, it can be pointed out that the gorilla appears exactly at the same region of the screen as the one that we are attending to when counting the passes. Thus, the spatial region we are fixing our gaze on is very similar in the two instances.

The objector could reply, however, that this does not count as having the same sensory stimulation, since the actual saccades are still different and it is the identity of the actual saccades that is necessary for the identity of sensory stimulation. These identity conditions for sensory stimulation are, however, quite problematic. No two occasions of looking at the same thing from the same perspective and distance in the same lighting condition would count as having the same sensory stimulation, because our eye movement will be different each time. If we accept identical eye movement as the necessary condition for the identity of sensory stimulation, then we end up with a very problematic notion of sensory stimulation.

Even if we accept this very strong criterion for the identity of sensory stimulation, the objection does not stand. There are less appealing cases of inattentional blindness that nevertheless are more suitable for answering this objection than the gorilla experiment (Mack - Rock, 1998, chapter one, see also Driver, 2001).[7] In these experiments, both the stimulus the agent was asked to attend to (the equivalent of the ball passing) and the stimulus that the agent was blind to (the equivalent of the gorilla) were presented for less than 200 milliseconds, which guaranteed that the agent did not have enough time to move her eyes. In this experiment, the eye movement is the same, but the perceptual experience is difference due to different patterns of attention (see also Koivisto et al. 2004 on more evidence on the exact eye movement in inattentional blindness experiments).

We have seen in response to an objection to the first step of my argument that attention does not supervene on eye movement. It is possible that our attention varies while our eye movement is the same. What the inattentional blindness literature showed is that in some of these cases the perceptual content will also vary.

Another possible objection would be to question the third premise of the argument and argue that the perceptual content is not different in the two instances of viewing the gorilla-clip. From the fact that after the first viewing we do not remember the gorilla we should not infer that we have not seen it either. Probably we saw it, but then forgot it immediately and that is the reason why after having seen the clip, we answer the question whether we noticed anything unusual in the negative. In other words, one may argue that the difference between the two instances is not that of the perceptual content, but that of our memory. We should not talk about inattentional blindness, but rather of inattentional amnesia (Wolfe, 1999).

This interpretation of the phenomenon contradicts some important empirical findings (Rees et al. 1999). Functional imaging can be used for measuring brain activity for reading a meaningful word. When functional imaging is used for measuring brain activity for unattended words, it turns out that when the person is attending to something else, while a word appears in her visual field, her brain activity is the same regardless of whether this word is meaningful or not: her brain does not differentiate between meaningful words and random letters. Because word recognition is assumed to occur very early on in the visual process, this indicates that at no point do we have a perceptual experience of the unattended word.

Some other experiments (Rensink, forthcoming) show similar results. These experiments demonstrate that even if the observer is expecting to see an object, A, if she is attending to another object, she fails to report seeing A.

These results demonstrate that when we cannot recall seeing something, it is not the case of seeing it and forgetting it immediately afterwards, but of not having seen it at all. We are subject to inattentional blindness and not to inattentional amnesia.[8]

Some Final Worries about Transitivity

Thus, the content of one's perceptual state (sometimes) depends counterfactually on one's visual attention (even if the sensory stimulation is the same). Further, one's visual attention (always) depends counterfactually on the action one is inclined to perform (even if the sensory stimulation is the same). If we put these two claims together, what we get is that the content of one's perceptual states (sometimes)

[6] Christopher Hill argued for a similar claim. See Hill (1991), pp. 123-126. See also Block (1995), p. 231.

[7] It needs to be acknowledged that the experiments in Mack -Rock 1998 and the gorilla-experiment are very different in several respects (see Simmons - Chabris, 1999 for an overview of these differences). The most important difference from the point of view of my argument, as we shall see, is that in the Mack and Rock experiments the eye movement is controlled.

[8] See also Lamme (2003) on this question.

depends counterfactually on the action one is inclined to perform (even if the sensory stimulation is the same).

A possible worry is raised by the transitivity of counterfactual dependence. The structure of my argument is that A depends counterfactually on B and B depends counterfactually on C, therefore, A depends counterfactually on C. David Lewis, however, famously argued that counterfactual dependence is not always transitive (Lewis, 1973, pp. 32-35). If P depends counterfactually on Q and Q depends counterfactually on R, then it is possible that P does not depend counterfactually on R if what we hold fixed in the first counterfactual is different from what we hold fixed in the second. For example, I would not have ducked if the boulder had not come careering down the mountain slope. I would not have survived if I had not ducked. But it is not the case that I would not have survived if the boulder had not come careering down the mountain slope.

Thus, there are cases where we are not entitled to make the inference that if P depends counterfactually on Q and Q depends counterfactually on R then P depends counterfactually on R. I need to show that in my argument I am indeed entitled to make such inference. The reason why the counterfactuals in the boulder example are not transitive is that what we hold fixed in the first counterfactual is not the same as what we hold fixed in the second. The second counterfactual can be rephrased in the following way: I would not have survived if I had not ducked, other things (most importantly, the careering boulder) being equal. Part of what we hold fixed in this counterfactual is that boulder comes careering down towards me. This is obviously not something we hold fixed in the first counterfactual, since this very fact is what my ducking depends on counterfactually.

In my argument, there are no such complications. What I hold fixed in the two counterfactuals, most importantly, that the sensory stimulation does not change, is the same.

Conclusion

Thus, the 'all-purpose view' turned out to be wrong: what we see does sometimes depend on what we are inclined to do.

Further, this claim gives us an alternative view on the modularism of the mind. As we have seen, according to the modularist theories, perception is an encapsulated process that is impenetrable for higher order cognitive processes. Interactionist theories of perception, on the other hand, insist that perception is not impenetrable; it is sensitive to higher order cognitive processes, such as our beliefs and conceptual apparatus.

If it is true that the content of action-oriented perceptual states depends counterfactually on our inclinations, then we get a third possible view. Like the interactionists, this view denies that perception is an encapsulated process. Unlike the interactionists, however, this view entails that our perception is influenced not by our higher order beliefs and conceptual apparatus, but by our momentary inclinations to perform actions.

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