Manipulating Perception

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Abstract

Maurice Merleau-Ponty observed that consciousness exists in the world and experience of things in the world exist in consciousness. We similarly believe that the physiological foundations of perception exist in the world and can be acted upon. As way of argument, we describe the experience of several devices that manipulate the precepts. Such devices act on consciousness but also the set of things that can be experienced. The manipulation of perception allows variations of individual experience. Human experience can be mapped to analogs of animal experience.

Dennett has looked to neuroscience as a source of grounding for accounts of the mind. However, the brain is just one element of experience. When my knee is hit suddenly, my spinal cord acts before I become cognisant of the blow. Physiologists have mapped a somatic nervous system which encompasses the perceptual circuits from the nerve endings, to receptors, toward nerve bundles, onward to the brain, and back toward muscles. The underlying physiological objects (in the somatic system) are the physical corollaries to perception. By building devices which act upon the somatic system, it is possible to act on phenomena such as sense of balance, reflexes, and proprioception.

Galvano-vestibular stimulation systems can manipulate the sense of balance such that a person feels as if they cannot control the direction of their movement. Sirens, bright flashes and other startling phenomena such as vibrations on the skin can unconsciously divert attention. A wearable computing system called Haptic Radar allows those who use it to feel distant objects on the surface of their skin.

Key words: Phenomenology, Perception, Augmented Reality, Transhumanism

Consider the following sentence: "Sitting at home this morning a movement at the periphery of vision accompanied by barely audible sounds draw attention to a cat prowling about in the hopes of some food." Would such a statement be possible without any reference to the senses? It is possible to make simplified propositions about a cat and perhaps its location. However, there is something lacking: "At home this morning a cat prowled about in hopes of some food." This sentence no longer can tell us how we became aware of the cat.

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1 Is perception bodily?

We often talk of a brain in a vat, but what of perception in vat? It is easy, although grisly, to imagine various sense organs floating in formaldehyde but it does not quite capture the entirety of perception. For some perception is a simple pathway from things in the world leading inexorably towards consciousness. The sense organs themselves are components of the perceptual process, but disconnected they are laughably insufficient.

Perhaps an out-body-experience is perception divorced from the body. But all those reporting out-of-body experiences have bodies and make explicit reference to seeing their bodies from an unusual outside perspective. Take for instance, recent experiments by Ehrsson who used video cameras and head mount displays to allow participants a variety of out-of-body experience (Ehrsson, 2007). In Ehrsson's experiments the person's percepts are still located within their body, but are artificially allowed to see their own body from a different viewpoint.

Another way of separating perception from the body would be to argue artificial sensors (such as cameras, microphones, temperature sensors) perceive. Suppose that a person who has never seen is skeptical of the existence of cameras (Rockley, 2005). We can give them a digital camera and ask them to take it to a place they are convinced is private and photograph themselves holding up a number of fingers. Upon returning the camera, we could view the picture and tell them how many fingers they held up.

But did the camera perceive or only capture? A functionalist perspective would argue that if the camera system can perform the same role as the photo receptors, optic nerve, and visual cortex then its function is to visually perceive. So we agree (up to a point) that a camera embodies a variety of perception. However, it feels absurd and repugnant to argue that a camera embodies human perception.

So we narrow our claim: human perception is embodied. In examining accounts of naturally-occurring aberrations and pathologies of the brain and eyes it is clear that the organs themselves are an embodiment of systemic components of perception. For instance, some of those who suffer from migraines report visual experiences (Sacks, 2008):

> I was playing in the garden when a brilliant, shimmering light appeared to my left dazzlingly bright, almost as bright as the sun. It expanded, becoming an enormous shimmering semicircle stretching from the ground to the sky, with sharp zigzagging borders and brilliant blue and orange colors. Then, behind the brightness, came a blindness, an emptiness in my field of vision, and soon I could see almost nothing on my left side.

These perceptions are linked with imbalances of the neurotransmitter serotonin (Ferrari et al., 1989) and thus have a physical corollary inside the brain although not outside of the body.

And so we move to a stronger claim which is that if perception is embodied, then it can be physically manipulated. Below we will discuss several instances of objects in the world that manipulate perception. Afterwards, we will consider whether perception resulting from manipulation is authentic.

2 Manipulation of perception

When wearing a pair of glasses, one manipulates the information entering their senses in a reasonably well understood and commonplace manner. But then, there are more exotic methods to manipulate human vision. Experiments with neuroprosthetics such as artificial retinas suggest that devices which physically connect to the retinal ganglion cells (Sekirnjak et al., 2006) can be interpreted by the brain and enter into consciousness. Other devices such as transcranial magnetic stimulators reportedly inhibit visual sensations by interfering with the electrical activity of the visual cortex (Pascual-Leone et al., 1994).

Outside of vision, balance can be effected using physical systems. Perhaps anyone who has ridden a merry-go-round or sufficiently aggressive amusement park ride will find the need to defend such a claim a bit pedantic. Still, consider some recent work on stimulation of the galvanic vestibular system (Fitzpatrick et al., 1999). Experimenters have found that by applying electrical current to a region behind the ear, the sense of balance and consequently gait is altered in an observable manner.

Still other devices try to mimic the phenomena of synesthesia. Fingersight is a device which maps texture detected by reflected laser light to vibrations felt on the surface of the finger (Stetten et al., 2007).

Perhaps unsurprisingly, we have ourselves have been experimenting with devices that manipulate perception. Cockroaches have antennas which move about space and extend the reach of their bodies. They use these antennas to rapidly touch their surroundings as they scurry about our domiciles (Camhi and Johnson, 1999). We came to ask ourselves: how would we perceive the world if like cockroaches, we could feel distant objects.

Objects as far away as one meter can be felt by wears of the Haptic Radar (Cassinelli et al., 2006). Preliminary experiments suggest that individuals wearing the device instinctively move to avoid approaching objects. It is as if the wearer has antennae or whiskers which extend out from their body.

3 Is manipulated perception inauthentic?

We have argued by example that devices can manipulate perception. A linked question is whether experiences resulting from manipulated perceptions are authentic.

It could well be argued that a person whose eyesight is corrected by glasses has a more authentic perception of things in the world. But here authenticity would be defined to mean what some optically ideal spectator might perceive. This of course is problematic as perfect sight lies outside of our everyday experiences.

One could define authentic experience as those which arise from perception which is unmediated. But a consequence of this definition is that a person wearing eyeglasses would have inauthentic sight. Moreover, if we consider spoken language to be a mediation of perception then any speaker's linguistic utterances would be inauthentic. And of course experience resulting from manipulated perception would be inauthentic. Perhaps we are yearning for an antique, original, prelinguistic perception?

This line of thought risks the danger of poorly reproducing Baudrillard and his commentary on the simulated, virtual and pataphysical. But it is worth asking to what extent manipulation of perception is similar to the virtual or simulated.

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