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A Problem of Perception: Direct Realism & Representationalism

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Abstract

Despite its conceptual palpability, intuitiveness, and common presumption, the Direct Realist theory of perception is not fully consistent with the scientific literature. If external stimuli are sufficient to produce percepts, but unnecessary for their generation (as with dreams), then the veridicality of perception ought to be scrutinized as a valid scientific postulate. In this paper I shall defend a Representationalist account of perception consistent with scientific literature, highlighting its empirical basis and its philosophical feasibility.

Keywords: Perception, Representationalism, Direct Realism

Philosophers and their problems seldom concern scientists, and the problems of perception are no exception. These problems are dismissed as armchair and non-scientific; nonetheless, it remains unclear whether we are entitled to claim the content of our perception has objective validity (i.e., perception is veridical). For instance, our prior knowledge and the context wherein an object of sense is provided both impact what we end up perceiving, as evident in optical illusions like Joseph's Hat, the rabbit–duck illusion, the checker shadow illusion, and the McGurk Effect. These instances exemplify a theory of mind called 'top-down processing,' in which "perception is guided by expectations based on previous experiences."[1] If it is true that we perceive things in conformity with our mental schema, i.e. 'seeing as' rather than 'seeing that,' then what justification do we have in assuming that our perceptions have objective import? Moreover, if we are capable of adequately perceiving objects without their external presence as though they were 'really' there, as is the case in dream states, how could we possibly avoid skepticism?

In this paper, I shall first examine the empirical evidence concerning the mediated nature of perception, concluding the Direct Realist account is less consistent with modern scientific literature than a Representationalist alternative. Then, I shall introduce the Fitness Beats Truth Theorem and the Interface Theory of Perception, to The Problem with Punishment satisfy the need for a compelling and empirically consistent account of perception within the Representationalist context. Finally, I will explore the philosophical implications of such an account of perception, arguing that despite the drawbacks of the two interpretations of Representationalism to be discussed, a pragmatic route remains available which fairs better to empirical scrutiny than its Realist counterparts.

1 J.N. De Boer, et al. "Auditory hallucinations, top-down processing and language perception: a general population study." *Psychological Medicine*, 49(16), (January 2019): 2772–2780.

Perception is Mediated

The predominant theories of perception in the past assumed that the brain works as a stimulus-capturing device. It receives sensory input from the external world, processes it, and outputs a percept veridical with its external source. This framework for understanding perception essentially assumes the visual-auditory modules of the brain function like a camera and audio recorder, undermining the extent external stimuli undergo processing. For instance, in cases where the blind undergo a sight-restoration procedure, they consistently fail to match what they see with what they feel.[2] Although they have been equipped with sight, they cannot understand what they see, and in other cases, cannot discriminate between individual visual percepts.[3] In Alva Noë's seminal text "Action in Perception,"[4] the author uses the following example from Gregory and Wallace (1963: 366):

> "S.B.'s first visual experience, when the bandages were removed, was of the surgeon's face. He described the experience as follows: He heard a voice coming from in front of him and to one side: he turned to the source of the sound and saw a "blur." He realized that this must be a face. Upon careful questioning, he seemed to think that he would not have known that this was a face if he had not previously heard the voice and known that voices came from faces" (Noë, 2006, p.5).

A further oddity for believers in a 'snapshot' view of perception involves people who are not blind despite lacking the ability to see. In Christof

2 Richard Held, et al, "The Newly Sighted Fail to Match Seen with Felt," *Nature Neuroscience*, 14(5), (2011): 551–553.

3 Rhitu Chatterjee, "Giving Blind People Sight Illuminates the Brain's Secrets," *Science.org*, https://www.science.org/content/article/feature-giving-blind-people-sight-illuminates-brain-s-secrets. (Accessed 2023).

4 Alva Noë, *Action in Perception*, 1st ed, (Cambridge: MIT Press, 2006).

Koch's "The Quest for Consciousness,"[5] he describes the phenomenon of "spatial hemi-neglect." Those afflicted with this condition are unable to notice objects to their left, nor can they "explore the left side of space" (Koch, 2004, p.181). They are unable to see despite lacking any deficit in their primary visual cortex or motor system. In one case, a "68-year-old man with right inferior parietal damage and profound left-side extinction," was shown, " pictures of faces and houses while lying in a magnetic scanner." Although the man exhibited visual recognition when the images were presented individually, he was unable to see the left image when the two pictures were presented simultaneously despite the fMRI detecting visual activity in the primary visual cortex (Koch, 2004, p.183). I shall next refer to auditory and visual illusions as evidence in favour of the mediated nature of perception.

Returning to Alva Noë's text, the author provides an example similar to an optical illusion. The perception of a given stimulus depends upon the context of the perceiver. For instance, were you to hear the word "Nein", your understanding of its meaning depends (if the context is right) on whether you are a German speaker or an English speaker without any background knowledge of German (Noë, 2006, p.32). An even better example, one that specifically demonstrates the McGurk Effect,[6] involves a video of a two second looping audio clip alongside nine different sentences shown on the screen to the viewer. Depending on which specific sentence you attend to, the audio will appear to change and conform to it since each sentence equally corresponds to the audio.[7] Although there may exist some explanatory framework that could make sense of this while being consistent with some form of unmediated perception, such a route is less parsimonious.

Visual illusions only further exacerbate the difficulties of a Direct Realist

5 Christof Koch, *The Quest for Consciousness: A Neurobiological Approach*, (USA: Roberts and Company, 2004).

6 Kaisa Tiippana, "What Is the McGurk Effect?," *Frontiers in Psychology* 5 (July 10, 2014).

7 Viral TikTok, "Audio Illusion Leaves People Split Over What Crowd Are Actually Saying," *YouTube*, June 9, 2021, https://www.youtube.com/watch?v=8FXQ38-ZQK0. (Accessed 2023).

account of perception. Consider Joseph's Hat illusion, an example used by Donald Hoffman in "The Case Against Reality",[8] the very famous rabbit–duck illusion,[9] and the checker shadow illusion.[10] If colour and object recognition do not suffice to strengthen the mediated account of perception, one should also consider the fact that visual illusions can cause us to inaccurately perceive an object's size, shape, and depth, as apparent in The Ponzo illusion,[11] The Müller-Lyer illusion,[12] and The Ames room illusion.[13] The existence of illusions is difficult to reconcile with theories that affirm a minimal role in the brain's processing of sense data because the generated percepts are not derived from the original object of sense. Since priming has such a substantial role in the perceptual process and given the power of expectation in the production of percepts,[14] it is undoubtedly trivial to deny that perception is mediated. Additionally, the proponent of Direct Realism must reconcile with our innate ability to produce perceptions of things in the absence of external stimuli. As Christof Koch put it:

> "You, too, hallucinate every night in the privacy of your head. During sleep, you have vivid, sometimes emotionally wrenching, phenomenal experiences, even if you don't recall most of them. Your eyes are closed, yet the dreaming brain constructs its own reality. Except

8 Donald Hoffman, *The Case Against Reality: Why Evolution Hid the Truth from Our Eyes*, (W. W. Norton & Company, 2019), 130.

9 Wikipedia contributors, "Rabbit–Duck Illusion," *Wikipedia*, November 16, 2022, https://en.wikipedia.org/wiki/Rabbit%E2%80%93duck_illusion. (Accessed 2023).

10 Wikipedia contributors, "Checker Shadow Illusion," *Wikipedia*, June 14, 2022, https://en.wikipedia.org/wiki/Checker_shadow_illusion. (Accessed 2023).

11 Wikipedia contributors, "Ponzo Illusion," *Wikipedia*, May 25, 2022, https://en.wikipedia.org/wiki/Ponzo_illusion. (Accessed 2023).

12 Wikipedia contributors, "Müller-Lyer Illusion," *Wikipedia*, February 28, 2023, https://en.wikipedia.org/wiki/M%C3%BCller-Lyer_illusion. (Accessed 2023).

13 Wikipedia contributors, "Ames Room, *Wikipedia*, June 14, 2022, https://en.wikipedia.org/wiki/Ames_room. (Accessed 2023).

14 Yaïr Pinto, et al., "Expectations Accelerate Entry of Visual Stimuli into Awareness," *Journal of Vision* 15, no. 8 (June 26, 2015): 13.

> for rare "lucid" dreams, you can't tell the difference between dreaming and waking consciousness. Dreams are real while they last. Can you say more of life?" (Koch, 2012, p.44). [15]

This is problematic for the following reason: external stimuli are sufficient to produce perceptions of things, but unnecessary. Although it could be argued in the case of dreams, visual hallucinations are possible only under the condition of prior visual experience, thereby making external stimuli necessary, the flaw in such reasoning is the temporal disjunct and qualitative difference between the two; if I can close my eyes and behold a sight seen long ago without the external presence of the original percept, then this disjunct must be explicable. Regardless of which account we choose, it must align with the consensus of contemporary research over memory recall, as the above experience is a subjective reconstruction of a past event, being no mere copy of the experience to which it refers. In fact, there is reason to believe that in every instance of recollection there is a significant deviation from the original experience.[16,17] Thus, under the Direct Realist account, in which perception is direct and objective, sober subjective representation must nonetheless be possible.

The Representationalist account best coheres with our modern understanding of memory, for regular perception and recollection need not differ. If every act of recollection is interpretative (being inherently reconstructive instead of passive), then recollection as an active process is representational. Additionally, if regular perception is understood similarly for all the reasons given throughout this section, then no explanatory

15 Christof Koch, *Consciousness: Confessions of a Romantic Reductionist*. (Cambridge: MIT Press, 2012), 44.

16 Peggy L. St Jacques and Daniel L. Schacter, "Modifying Memory," *Psychological Science* 24, no. 4 (February 13, 2013): 537–43.

17 Lawrence Patihis et al., "False Memories in Highly Superior Autobiographical Memory Individuals," *Proceedings of the National Academy of Sciences of the United States of America* 110, no. 52 (November 18, 2013): 20947–52.

gap between the two modes of perception remains. Having clarified this objection, it is demonstrably clear that external stimuli are unnecessary to produce percepts, thereby calling Direct Realism into question, as it contradicts the empirical research in its claim that perception is passive.

If Direct Realism is empirically unsubstantiated, then the Realist belief in the objectivity of reality based on perceptions being seemingly externally produced would be utterly groundless. As it stands, Direct Realists are begging the question in their assumption of the existence of such an objective reality that is passively received through the sensory faculties. If the proposition "No seeing without seeing as" holds true (Block, 2014, p.562),[18] given the previous points regarding perceptual illusions, dreams, and memory, then what entitles us to suppose that perception is objective? This is a legitimate problem within the philosophy of science if the nature of our perception is emphasized. In light of the inconsistencies of the Direct Realist account of perception, what other theories are available to us?

Fitness Beats Truth

Having shown the inconsistency of realist views , given the mediated nature of perception, an alternative account is required. One such account popularized by Bernardo Kastrup and Donald Hoffman, posits that perception is representational, being fitness-based rather than truth-based. The theory is "that evolution emphasizes perceptual qualities conducive to fitness, not to truth" (Kastrup, 2019, p.59).[19] Published in the paper "Fitness Beats Truth in the Evolution of Perception",[20] the FBT theorem

18 Ned Block, "Seeing-As in the Light of Vision Science," *Philosophy and Phenomenological Research* 89, no. 3 (August 25, 2014): 560–72.

19 Bernardo Kastrup, *The Idea of the World: A Multi-Disciplinary Argument for the Mental Nature of Reality*. (John Hunt Publishing, 2019a), 59.

20 Chetan Prakash et al., "Fitness Beats Truth in the Evolution of Perception," Acta Biotheoretica 69, no. 3 (November 24, 2020): 319–41.

was subsequently confirmed by various simulations,[21] concluding that:

> "...attempting to estimate the "true" state of the objective world corresponding to a given sensory input confers no evolutionary benefit whatsoever. Specifically: If one assumes that perception involves inference to states of the objective world, then the FBT Theorem shows that a strategy that simply seeks to maximize expected-fitness payoff, with no attempt to estimate the "true" world state, does consistently better" (Prakash et al., 2020c, p.337).

In his discussion of the FBT Theorem, Hoffman provides an incredibly clear example to demonstrate the quantitative relevance of the FBT Theorem:

> "Consider an eye with ten photoreceptors, each having two states. The FBT Theorem says the chance that this eye sees reality is at most two in a thousand. For twenty photoreceptors, the chance is two in a million; for forty photoreceptors, one in ten billion; for eighty, one in a hundred sextillion. The human eye has one hundred and thirty million photoreceptors. The chance is effectively zero" (Hoffman, 2019, p.54).

Although it is possible that objective or veridical perception takes place, the likelihood is low enough to warrant dismissal on an empirical basis. Despite the significant pushback one might have towards this conclusion on the grounds of it's un-intuitiveness, Bernardo Kastrup's "The Idea of

21 The references supporting this assertion can be found in the 19th footnote of Chapter 4 in "The Case Against Reality" by Donald Hoffman (Hoffman 2019, 54).

the World," adds further quantitative evidence by referring to the work of Friston, Senguputa, and Auletta (2014).[22,23] The takeaway from the work cited by Kastrup is that "a hypothetical organism with perfect perception… would not have an upper bound on its own internal entropy, which would then increase indefinitely," and consequently, "such an organism would dissolve into an entropic soup." (Kastrup, 2019, p.60) Such consequences lead Kastrup and Hoffman to endorse an 'Interface Theory of Perception' (ITP), in which:

> "organisms…use their internal states to actively represent relevant states of the outside world in a compressed, coded form, so to know as much as possible about their environment while remaining within entropic constraints compatible with maintaining their structural and dynamical integrity" (Kastrup, 2019, p.60).

Hoffman uses the analogy of the graphical interface on a desktop computer to illustrate his point. When one interacts with an icon, like Microsoft Edge, and drags it into the icon that represents the Recycle Bin, the user input is a simplification of the process of file deletion. The code that achieves this task is only indirectly accessed by the user by means of the user interface. Put differently, the interface is an optimized simplification of complex computation, consisting only of what is necessary to accomplish user tasks as smoothly as possible. In like manner, the "screen of perception is much more akin to a dashboard than a window into the environment. It conveys relevant information about the environment in an

22 B. Kastrup, *The Idea of the World: A Multi-Disciplinary Argument for the Mental Nature of Reality*, 59.

23 Karl J. Friston, Biswa Sengupta, and Gennaro Auletta, "Cognitive Dynamics: From Attractors to Active Inference," *Proceedings of the IEEE* 102, no. 4 (April 1, 2014): 427–45.

indirect, encoded manner that helps us survive" (Kastrup, 2019b).[24] For Kastrup and Hoffman, we ought not to mistake the "dashboard of dials" for the objective reality outside of us. In the same manner one ought not to mistake the actions performed on a graphical interface for the actual underlying processes that make such actions possible. But exactly what kind of metaphysical scheme follows from this?

Philosophical Consequences of Representationalism

The Interface Theory of Perception is a Representationalist theory since it distinguishes between things as they are independent of mind and things as they are perceived. In its basic formulation, the theory can be interpreted in one of two ways. The first falls under Indirect Realism, where the percept is a partial representation of the perceived object. The Indirect Realist interpretation can be further interpreted through Phenomenalism, in which the existence of the world is dependent upon its perception (for otherwise it could not be given to us); as well as Bundle Theory, in which objects are nothing but bundles of sensory qualities and attributes. The second interpretation is classified under the metaphysical theory of Objective Idealism, albeit a Representationalist variety wherein everything is the experience of a single dissociated mind. Under this view, the icons of our perception are representations of the contents of Cosmic Consciousness.

The former philosophical interpretation can preserve Physicalist intuitions, meaning no radical revision of the mainstream scientific ontology is required. However, the drawback is skepticism concerning the objectivity of the 'external world,' which would be nothing but bundles of sensations, or permanent possibilities of experience, whose objective reality could never be known to us. Beyond the collection of sensible properties

24 Bernardo Kastrup, "The Universe as Cosmic Dashboard.," Scientific American Blog Network, May 24, 2019b, https://blogs.scientificamerican.com/observations/the-universe-as-cosmic-dashboard/. (Accessed 2023).

and ideas, nothing further can be known about an object, especially since perception consists of fitness-based representations. Thus, the existence of an object is contingent upon its perception, or as George Berkeley put it, "to be is to be perceived." Apart from the problem of external world skepticism, the parsimony of Indirect Realism is threatened by the resultant mereology: if percepts are inferential, Mereological Realism concerning objects is untenable. The Anti-Realist or Mereological Nihilist view follows from the rejection of Natural Kinds, being mind-independent categorical distinctions wherein conceptual identities are understood to be immutable and impermeable. On the surface, this seems consistent with Indirect Realism given the unattainability of mind-independent knowledge. No categorical distinctions besides that between the subject and object are immediately known through and derived from experience, thereby leading to the denial of all other categorical distinctions besides the substance within which all apparent distinctions must be contained. However, one could appeal to the distinction between primary and secondary qualities to evade falling into this view. Although it is impossible to discern whether my experience of secondary qualities, like colour, can truly mirror that of another person, appealing to primary qualities may suffice to preserve objectivity (relative to other perceivers). Beyond my immediate experience of an external object, the thing to which the percept corresponds appears to maintain its existence and extensional properties. But since both primary and secondary qualities are grounded in sense experience, the distinction collapses and Berkeleyan Idealism becomes inescapable within the framework of Indirect Realism. Thus, the problem of external world skepticism remains given the inability of subjectively derived percepts to be objective (or isomorphic with the external objects our percepts are hypothetically derived). If true to the consequences following from the Indirect Realist interpretation of Hoffman's theory, then given the impossibility of obtaining knowledge over things as they are in themselves or how something exists unperceived, the things that our percepts correspond to would forever elude us, entailing an impenetrable epistemic

boundary. After all, one cannot perceive an unperceived object in the same way one cannot know something unknown, per Church and Fitch's paradox of knowability; if an unknown cannot be known, for it would no longer be unknown, then an unperceived object cannot be perceived, for it would no longer be unperceived.[25]

The alternative Idealistic view by Kastrup, a defender of Objective Idealism, is the metaphysical view where no mind-independent or extra-mental reality is postulated.[26] Since the task of proving the existence of a mind-independent world is impossible, being the concept of something outside the bounds of possible experience whose basis is an inductive inference made within the perceived world, Idealists like Kastrup bite the bullet and equate our perceived reality with 'reality as it is in itself.' Put simply, for the Idealist there is nothing beyond mental experience, meaning perceptions cannot be unreal in the Indirect Realist sense. Although objectivity is preserved within this framework, it comes at the expense of common philosophical intuitions, namely Physicalist ontology. Despite the seeming implausibility of Idealism, it is more parsimonious than the Indirect Realist view because it does not posit an inherently unverifiable mind-independent world; what exists is the perceptual world and nothing beyond that. Moreover, the Idealist worldview does not come into conflict with scientific progress. The subatomic features of our reality are 'pixels' in the interface of perception, analogous to how a person in a video call is not a mere set of pixels, for that is just the way they are represented to us. Likewise, when watching a TV show, we know not to mistake the characters depicted within the screen for properties of the screen itself, being the means by which the characters are given to us (and whose representation

25 Stephen Kearns, "The Bishop's Church: Berkeley's Master Argument and the Paradox of Knowability," *Canadian Journal of Philosophy* 51, no. 3 (April 1, 2021): 175–90.

26 Kastrup's specific Ontology is that there exists a universal subject, lacking self-awareness, with Dissociative Identity Disorder (of which we are its alters). Each alter's percepts are icons of the mental contents of this subject, thereby making the theory a Representationalist form of Idealism.

far exceeds dynamic pixelated colour arrays).[27] Though this view appears plausible due to its explanatory power, it is empirically unfalsifiable. If novel predictions cannot be generated by this theoretical framework, or if its predictions are no different than those of its counterparts, then there is no true advantage in holding to this interpretation of Hoffman's ITP besides internal consistency. However, there is nothing internally inconsistent about Physicalism, as its Reductionist defenders within academia deny the hard-problem of consciousness, effectively guaranteeing coherence. Moreover, Idealism only conflicts with Physicalism insofar as it recontextualizes scientific discoveries into its own language without significant divergence. Since Representationalism is the theoretical virtue of Idealism, and its theoretical vice lies in its unverifiable speculation, perhaps a different route ought to be taken.

Representationalism Without Speculation

Having explored the strengths and weaknesses of Indirect Realist and Idealist interpretations of the consequences of Hoffman's Representationalism, it seems that the best route is to accept the merits of Representationalism over Realism without further theorizing into the nature of reality. Although the philosophical consequences of Representationalism are not exhaustive, those outlined here capture the spirit of intellectual thought on the topic. Since neither Idealism nor Indirect Realism are fully satisfactory, this makes alternatives to Representationalism more compelling. For this reason, I shall argue in favour of a more pragmatic route, such that the merits of Representationalism over Realism can be accepted without philosophical complication.

27 Should this analogy provoke confusion as to how Idealism differs from Indirect Realism, Kastrup's Idealism conceives all external objects as being the extrinsic appearance of the mental or the workings of the mind of cosmic consciousness as seen from a third-person perspective (though this third-person perspective exists as the dissociative alter of the same cosmic consciousness, existing within it).

The Representationalist model of reality is more consistent than its Realist counterpart due to its seamless integration of the empirical evidence over the literature of perception. For instance, in the checker shadow illusion, a colour percept is generated that does not correspond to the actual colour of the image and the conscious recognition of the illusion does not cease its occurrence. For the Representationalist, the resulting percept need not reflect the state of external objects. Thus, the occurrence of a perceptual illusion is wholly unproblematic and even expected. Furthermore, in dreams, the Representationalist has no need to explain away multimodal sensory experience in the absence of external stimuli, something that also takes place in hallucinations (like those resulting from decreased brain activity, leading to enhanced perception whose percepts without reference to an external stimulus).[28] However, these observations are problematic for the Realist, for whom perception is veridical. For this reason, the Representationalist model of perception is far more parsimonious than the two Realist theories discussed here. As stated earlier, the supposition that the perceptual process is veridical stems from an inductive inference regarding the correlation between percepts and their corresponding external source. However, percepts are not necessarily reflective of their source of origin, nor do they necessarily derive from some external stimulus. The pragmatic variety of Representationalism operates under fewer non-empirical assumptions, compared to Idealism and Indirect Realism, while also allowing for a higher degree of open-mindedness among its adherents, a virtue of great importance within the scientific context.

28 Specific examples used by Bernardo Kastrup in "Why Materialism Is Baloney" include the NDE-like experience that occurs to pilots undergoing "G-force induced Loss Of Consciousness," Psychedelics and their role in the production of enhanced/transpersonal states of consciousness resulting from a decrease in brain activity and cerebral blood-flow, noting an inverse relationship between the latter two and the intensity of the psychedelic experience, and finally the fact that "Transcranial Magnetic Stimulation," which can inhibit "areas of the brain" from functioning, can induce "Out of Body Experiences" (Kastrup 2014, 47-48).[26]

Conclusion

Empirical research strongly supports the mediated account of perception, and this conflicts with Direct Realism insofar as it purports that the brain is no mere passive stimulus-capturing device. To support this claim, I have drawn on studies concerning the perception of the newly-sighted, as well as those that are capable of sight despite lacking the ability to perceive. I also made use of auditory and visual illusions to further reinforce Representationalism, demonstrating how these phenomena complicate the tenability of Direct Realism. The scientific evidence demands a new theory of perception given the failure of the Realist account since the presence of an external object is unnecessary to produce a percept, as with dreams and hallucinations. I introduced the Interface Theory of Perception (ITP) as a scientifically valid Representationalist theory capable of resolving the problem resulting from the conceptual inconsistency of Realism over perception. I also detailed the two philosophical interpretations of the ITP, as well as the general consequences that arise from such interpretations, both positive and negative. Finally, I argued that one need not speculate over the metaphysical consequences of ITP to accept Representationalism, which is undoubtedly better than the alternative in terms of scientific credibility and conceptual consistency.

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