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Is Perception Inferential?

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One of the obstacles to understanding perception is finding a middle way between equally unattractive poles of psychology and epistemology. In psychology, the extremes are (a) the holist who claims that the brain processes all perceptual input in light of background beliefs and (b) the naïve empiricist who thinks that we always perceive the world without any "infection" from background beliefs. In epistemology, the extremes are (a) the holist (either confirmation holist or coherentist) who claims that justification is a feature of the entire system of beliefs and is only derivatively a feature of individual beliefs and (b) the naïve empiricist who thinks that because we form perceptual beliefs independently of background beliefs, all perceptual beliefs must be non-inferential.

I am assuming that epistemology should be naturalized and that knowledge is a natural product of the human neurological system, is something that humans do not have to aspire to one day possess but already have in spades. From the perspective of naturalized epistemology, the psychological and epistemological debates about holism are at bottom the same. First, if the psychological holist is correct that the brain processes perceptual input in light of background beliefs, then it would follow that background beliefs play some role in justifying perceptual knowledge and that epistemological holism is true. Similarly, if the epistemological holist is correct in thinking of justification as belonging primarily to the entire system of beliefs, then for the web of beliefs to maintain its coherence while admitting new members at the fringes, new perceptual beliefs probably have to be formed in light of background beliefs. Hence, psychological holism entails and is entailed by epistemological holism. Secondly, if the naïve realist in psychology is correct in holding that the process of forming perceptual beliefs is encapsulated from background beliefs, then the justification of the perceptual beliefs is non-inferential. Similarly, if all justified perceptual beliefs have non-inferential justification, then it is likely that all perceptual beliefs are formed independently of background beliefs. Hence, psychological naïve empiricism entails and is entailed by epistemological naïve empiricism.

Why are holism and naïve empiricism unattractive in psychology and epistemology? The problem with naïve empiricism is widely understood: the mind is not a *tabula rasa* passively accepting new impressions from the world; sensory stimulation underdetermines perceptual judgments, and a person's beliefs sometimes help fill in the gap. For instance, if a person is in a wax museum, then no matter how convincing a waxen apple in a display may appear to be, the person is likely to see it not as a real apple but as a waxen apple—the contextual knowledge that she is in a wax museum will affect her perceptual beliefs (Cornwell 2002).

Some holists argue that because sensory stimulations underdetermine perceptual judgments, background beliefs always make up the difference. I doubt that anybody thinks that all background beliefs bear upon any given experience; the brain doesn't have enough resources. Rather, the holist's claim is that a subset of background beliefs is brought to bear during an experience. One argument sometimes offered in favor of holism is that the concepts a person holds constrain the types of perceptual judgments

that a person can form and that concepts are individuated in terms of their inferential or theoretical roles, so theory necessarily "contaminates" all observational judgments. The argument is tendentious, because it is far from clear that inferential role semantics is the best account of concepts. Indeed, I prefer teleosemantics (Cornwell 2002). As for the "paucity of stimulus" argument, background beliefs are not the only candidates to fill the gap between meager sensation and complex perceptual judgments. Furthermore, holism would make all perceptual beliefs theory-laden, but as Jerry Fodor has vigorously and rightly objected, one purpose of observation is to provide a theory-independent basis for constructing or choosing between theories: wishful thinking, screwy theories, and other epistemic maladies would be even more dangerous if our perceptual judgments always had to conform to those beliefs.

We are left trying to reconcile the claims that background beliefs can influence our perceptual beliefs and that many, perhaps most, of our background beliefs do not and should not influence our perceptual beliefs. There is no contradiction between these claims, so we could accommodate both simply by saying that sometimes background beliefs influence perceptual beliefs and sometimes not, but to stop here would be to avoid the obvious and difficult question that this synthesis of holism and naïve realism raises: what determines when background beliefs can intrude in the process of forming perceptual beliefs? Providing an answer to that question is one purpose of this paper, although I have enough space only to sketch but not to defend the answer.

I am presupposing a version of Jerry Fodor's faculty psychology. Fodor offers a hierarchical, tripartite cognitive model. At the lowest level of cognition are transducers, which lawfully transform stimulus energy into representations of the same (Fodor 1983, 45). The transducers are informationally encapsulated (i.e., have limited or no access to the person's beliefs) and pass on their subdoxastic representations to input systems, which also are encapsulated. The function of the input systems is to produce consciously accessible representations about the causes of the stimuli represented by the transducers' output. The input system's assumptions are internal to the input system. When performing its computations, the input system might have access to some beliefs, but not to all of them. That encapsulation from the full system of beliefs is what makes the input systems modular. The input systems' judgments are "hypotheses" (Fodor 1983, 136 n. 31) open to correction by central processors (Fodor 1990, 262). Not all modules are observational (for instance, there also are linguistic modules), so I will call those hypotheses that are the product of observational modules "observational hypotheses." According to Fodor, hypotheses are not beliefs but have all of the attributes of a belief – propositional content, the ability to participate in inferences with other beliefs or hypotheses, etc. – except that the central processor does not have to take a hypothesis as being true, whereas to have a belief is to take it as true. For instance, in the Müller-Lyer Illusion, the visual modules produce the observational hypothesis that the lines are of unequal length, but if someone already has been apprised that it is an illusion, that person's central processor should take that hypothesis as false. This person should not

believe that the lines were unequal. Sitting atop the modules is the central processor, which is non-modular and domain-unrestricted. It can compare the input systems' outputs against each other and against the beliefs that the person has already in order to fix perceptual beliefs.

Now that we understand Fodor's architectonic, we can examine Fodor's theory of perception, which he divides into two parts: observation, which produces observational hypotheses, and perceptual belief-fixation, which produces perceptual beliefs (1990b, 248-9). Observation is the work of the input systems and is encapsulated. By contrast:

...the fixation of belief, perceptual or otherwise, is a central process (since what one believes is sensitive to what one takes to be the state of the evidence *überhaupt*, including the beliefs previously arrived at). I am supposing that input systems offer central processes hypotheses about the world, such hypotheses being responsive to the current, local distribution of proximal stimulations. The evaluation of these hypotheses in light of the rest of what one knows is... the fixation of perceptual belief. (Fodor 1983, 136 note 31)

In short, Fodor is a holist.

Building off of Kent Bach's "take-for-granted principle" (1985), I propose that the default setting for perception is non-inferential, but if the person is aware of reasons to examine the observational hypotheses, then the central processor should intervene. For instance, I might observe that the leaves of a particular tree are auburn as I walk outside on a sunny July day without making any inferences about the lighting conditions, but if I were to observe the same tree from the scarlet nighttime illumination of fireworks, the central processor should compensate for the modules' visual hypotheses. When things are Normal (i.e., conditions in which the modules were "designed" or "trained" to work) and we have no reason to suspect otherwise, we do not first have to satisfy ourselves that conditions are Normal before accepting our modules' observational hypotheses. The perceptual systems have a default setting when operating in Normal conditions for the output of the modules to be accepted as true, and this default setting works well because in Normal conditions the perceptual systems are reliable and because Normal conditions are what we usually encounter. If one is usually in conditions in which the perceptual modules are highly reliable, then it is a good cognitive design to take the observational hypotheses as true as long as one also is good at detecting when there is a substantial probability that conditions are not Normal. (Similarly, you do not have to be cautious in checking the temperature of everything you touch in order to avoid burning yourself on the stove. A default setting of thinking that things are not too hot to touch works pretty well, as long as one is in an environment in which most things do not burn you and as long as one is pretty good at recognizing which things might burn you.)

Suppose that we think of the human mind as having among its major components the modules, the central processor, the belief box, and the decision engine, which is similar to "the will." I propose that for mature thinkers we think of there being a forked pathway leading from a terminal module (i.e., a module whose output does not go to another module). The fork occurs at a switch that determines the destination of the observational hypothesis. If the switch is in the "off" position, the hypothesis goes to the central processor, leading ultimately to an inferential belief or to revisions of background beliefs. If the switch is

"on," the hypothesis goes straight to the belief box, where the belief is available for use by either the decision engine or the central processor.

The central processor and the decision engine control modules' on/off switches. The decision engine, the seat of volition, can choose to make the central processor scrutinize the output of a terminal module by turning the module's switch off. From an epistemic standpoint, this is not a bad thing, unless it distracts the central processor from more important tasks, but the decision engine could be motivated by non-epistemic concerns, so I will ignore its influence and instead examine why the central processor would turn a module's switch off. Sometimes the central processor can anticipate a situation in which the observational modules are unlikely to generate true output, so, as in the wax museum example, the central processor consciously and systematically compensates for the modules' errant output. In other cases, the modules themselves raise the alarm for the central processor to intervene. The modules can have built-in biases or expectations, as, for example, that objects are spatiotemporally continuous. Hence, if something in the field of vision were simply to disappear and not merely recede out of sight or move behind something else, the module that had been tracking the object would "notify" the central processor that there had been an anomaly, and the central processor would intervene to examine the module's output. Secondly, modules can acquire sensory frames that are similar to Hume's association of ideas. For instance, a module might through repeated exposure be "trained" to expect a certain spatial layout, and if an item were moved or missing, the module would alert the central processor to investigate further. Similarly, a module may through repeated exposure expect a grouping of properties in a given individual or substance. For instance, if I sat on my sofa and contrary to the module's expectation the sofa felt hard, my central processor would be recruited to determine whether the sofa really was hard or the module's output was mistaken. The encapsulation of the module ensures that even if the central processor determined that the sofa was not hard, the module would continue to report otherwise. In such cases, the central processor does not permit the errant observational hypotheses to enter the belief box, but the persistence of those hypotheses explains why I would say that the sofa continues to *seem* hard.

My theory avoids the empiricist Catch-22 of insisting that all knowledge comes from the senses and that the senses should not be trusted unless one first has good reasons to think that they are trustworthy. Because the perceptual modules were designed for common environments in which the modules are highly reliable, the cognitive systems are well within their epistemic rights and are adhering to their historical adaptive response patterns to treat the observational hypotheses as true unless the central processor intervenes because there are serious reasons to doubt the hypotheses. Because as a matter of good design the default position for a module's switch is set to on, there is no particular knowledge that is necessary for many non-inferential perceptual beliefs to be justified. There can be justified empirical beliefs that arise from observational modules but that do not require any prior knowledge, including knowledge about the perceptual process. One does not always have to know how the senses work, how reliable they are, under what conditions they work best, whether conditions are presently Normal, and so on in order to have perceptual knowledge. Similarly, even though certain possible states of affairs could prevent a belief from being justified, one does not

necessarily have to know that there are no defeating conditions in order for the belief to be justified. If I knowingly ingested LSD, then I ought to distrust my senses, but that does not mean that I should trust my senses only if I believe that I am not on LSD or that there are no aliens in my closet who are using gamma rays to manipulate my mind. Although some perceptual knowledge is and ought to be inferential, we often assume, and rightly so, that the world is as it appears to be.¹

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