

The Rationality of Perception

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To appear in *Res Philosophica*

Overview

The main thesis of *The Rationality of Perception* is that both perceptual experiences and the processes that give rise to them can be rational or irrational. If the Rationality of Perception thesis is true, then experiences themselves can manifest an epistemic status. I call that status “epistemic charge”.

On the traditional view, perceptual experiences are not the kinds of things that can have an epistemic status or redound well or badly on the subject. The nature of perceptual experiences, on this view, precludes them from manifesting any epistemic status, and in this respect they are fundamentally different from beliefs. If the traditional view is wrong, then it will be most visibly wrong in cases where experiences are epistemically compromised, as experiences that are rational or a-rational would play of the same epistemic roles in supporting beliefs. For this reason, in making my case against the traditional view, I focus primarily on cases where things go epistemically wrong.

I motivate the Rationality of Perception thesis with a range of cases designed to illustrate epistemically flawed routes to experience. Jill fears that Jack is angry with her, and her fearful suspicion influences the way Jack looks to her when she sees him. She ends up with a visual experience that presents Jack as angry. Vivek is an overconfident performer, and the faces in the audience look pleased to him even when in fact most people’s expression are neutral.

The cases I discuss belong to a two-pronged strategy in defending the idea that experiences are epistemically appraisable. The first step is to argue that experiences are made epistemically less powerful by certain forms of influence. I call this loss of power “epistemic downgrade.” This step occurs in Chapter 4, where I argue that forms of influence on perceptual experiences illustrated by the cases of Jill, Vivek, and others that lead to epistemic downgrade. The second step in the strategy is to argue that the epistemic downgrade can be explained by rational relationships between prior outlooks and experiences, and here I focus on the epistemic dependence relationships found in inference (chapters 5-7).

I call the phenomena highlighted in my two-step strategy “perceptual hijacking”, and the first three chapters introduce these phenomena by providing tools for analyzing their significance. Perceptual experiences are hijacked when they arise from processes that give prior outlooks too much weight in determining what you experience, and fail to give proper weight to perceptual inputs, if there are any. Some opponents grant that hijacked experiences are epistemically downgraded, but explain the downgrade in a different way from the Rationality of Perception thesis. Other opponents deny that hijacked experiences are epistemically downgraded, but find a different kind of epistemic shortcoming in the vicinity. In this way, the

epistemic shortcomings that I highlight provide traction in the inquiry into the possible epistemic impact of prior outlooks on experience.

Cases of epistemic shortcomings play an important role in my discussions, but the Rationality of Perception thesis is just as significant for cases of epistemic success as it is for cases of epistemic failure. Since many modes of influence on perceptual experience by prior outlooks do not result in epistemic downgrade, a principle is needed to distinguish rational from irrational uses of information in the route to perceptual experiences.

I draw this distinction by appealing to inference. This inferentialist version of the Rationality of Perception thesis distinguishes rational from irrational uses of information by invoking the difference between inferences that produce well-founded conclusions and inferences that produce ill-founded conclusions, where ill-foundedness and well-foundedness are dimensions of justification, rather than measures of accuracy. In my analysis of hijacked experiences, those experiences are ill-founded conclusions of inferences.

The Rationality of Perception thesis provides a framework for analyzing both routes to experience that generate knowledge and rational belief, and routes to experience that generate false and unjustified belief. Its central moral is that experiences are susceptible to rational evaluation.

What does the epistemology of perception look like if the Rationality of Perception thesis is correct? Is it even possible to give a coherent epistemological account, in the face of the rightfully powerful inertial resistance to this idea in the history of analytic philosophy? Given my aim to locate perceptual experiences squarely in the house of reason, what’s needed to answer these questions is a detailed account of how experience can have, gain, or lose power, as a result of their relationships to prior outlooks. A proof of concept is needed, and to provide it, I focus on inferentialist routes to experience.

The main conceit of the Rationality of Perception allows other forms of intelligence besides inference to shape perceptual experience. For example, two chess players could focus on the same arrangement of pieces, where a novice player sees the arrangement by luck while the expert player sees it because her perceptual system has become attuned to clusters of pieces that afford winning moves (Chase and Simon (1973)). Here, intelligence is manifested in the route by which perceptual attention comes to be distributed as it is. If the resulting experience generates rational belief or knowledge about which moves are afforded, the positive epistemic charge of the experience is due in part to the background knowledge of the expert.

Overall, the Rationality of Perception lets us analyze the ways that perception can be integrated with intelligence, and the epistemic failures and successes that result.

Perception as Guessing vs. Perception as Knowing: Replies to Clark and Peacocke*

I thank Andy Clark and Christopher Peacocke for writing such insightful commentaries and for bringing many fundamental issues about perception into focus. Clark and Peacocke both think there is such a thing as perceptual hijacking, and each offers a framework for analyzing it that differs from mine. Clark analyzes perceptual hijacking using a broadly Bayesian model. He accepts an inferentialist Rationality of Perception thesis, but holds that the scope of perceptual hijacking is much smaller than I suggest. By contrast, Peacocke rejects the Rationality of Perception thesis (and therefore the inferentialist version of it), and argues that perceptual hijacking is better analyzed in terms of the Factive Theory.

The frameworks offered by Clark and Peacocke illuminate fundamentally different approaches to perception. As Clark construes it, perception is the result of guessing done by a cognitive system that draws heavily on predictions - "priors and prejudice" - where prejudice is not always a bad thing ((2016), pp 14, 27). In contrast, as Peacocke construes it, perceptual experience is fundamentally a route to knowledge. Since you can't guess that p if you know that p, these models crystallize the difference between approaches to perception that emphasize "top-down" processing from prediction (Clark) as opposed to emphasizing the ultimately "bottom-up" control by the facts perceived (Peacocke).

Each of these models has some explaining to do. Regarding the models that emphasize top-down processing: if predictions play a major role in generating perceptual experience, then what, if anything, is the difference between merely accurately guessing that there is a banana behind a curtain and perceiving the banana itself? Regarding the model that finds the basic structure of perception in acquaintance with a banana and its properties, or in an heir to Russell's notion of acquaintance, how does it integrate with theories of perceptual processing?

In my replies, I argue that my inferentialist version of the Rationality of Perception is better equipped than Clark and Peacocke's models each are to account for both perceptual hijacking and perceptual knowledge. Clark and Peacocke offer nuanced answers to the central questions facing each of their models, and in my replies I criticize some of these answers. I argue that Clark's model, when joined with his epistemological assumptions, cannot analyze the local as opposed to systemic epistemic compromises imposed by perceptual hijacking, and that Peacocke's Factive Theory does not offer an adequate account of the epistemic shortcomings distinctive of perceptual hijacking.

I begin by replying to Clark.

* For helpful discussion, thanks to Ned Block, Alex Byrne, David Chalmers, Andy Clark, Zoe Jenkin, Eric Mandelbaum, Christopher Peacocke, Michael Rescorla, Nico Silins, Scott Sturgeon, and especially Jonna Vance.

Reply to Clark

Clark endorses the Rationality of Perception thesis and this is our first major point of agreement. A second major point of agreement is that perceptual experiences can be shaped by prior predictions about the way the world is. In fearing that Jack is angry, Jill is expecting him to be angry, and this expectation can shape her perceptual experience. In experiencing a grey banana as yellowish, one is predicting what color bananas will be. We both regard these examples as psychologically realistic.

Our disagreements concern the factors that determine the epistemic status of perceptual experiences. Clark thinks the epistemic status of perceptual experiences depends on long-term processes that manifest the extent to which a subject is closed off from new information or open to it. These processes include actions - both "world-altering action" and gatherings of information (in his terms, "harvesting evidence"). Such processes are therefore not just computations over information. Clark classifies them as inferences, but since standard inferences do not involve either kind of action, I'll call Clark's processes action-involving inferences. My inferentialist version of the Rationality of Perception thesis is based on standard inference, whereas Clark's version is based on action-involving inference.

Clark's rejection of the standard-inference inferentialist version of the Rationality of Perception thesis underlies his account of the grounds of perceptual hijacking, which he thinks is highly limited in scope. Here Clark makes three related critical points.

First, Clark's approach makes ongoing psychosis the paradigm of perceptual hijacking. On the predictive Bayesian analysis of psychosis that Clark favors, psychotic thoughts and perceptions result from temporally extended action-involving inferences that close off the subject's information channels. Since nothing in my example of Jill involves any such systemic cutting off of incoming information, Clark thinks it can't be a case of perceptual hijacking.

Second, Clark argues that since Jill's intake of information isn't systematically blocked by the influence of her prior beliefs on her experience, that influence must be epistemically on a par with the influence of prior beliefs in the speed or Dino illusions. He reasons that if I classify Jill's experience as perceptually hijacked, I'd have to classify the speed and Dino illusions as perceptually hijacked as well, and at that point the scope of perceptual hijacking would extend too far.

Third, Clark holds that in any of these cases that supposedly stand or fall together, if a prior belief that p produces an experience that q via Bayesian processing of the sort he favors, it is epistemically okay for the subject to update that prior belief in

(by strengthening it) on the basis of that experience. I think various instances of this schema introduce problematic circularity.

These three points are the basis of Clark's charge that my version of the Rationality of Perception thesis fails to distinguish rational from irrational uses of information.

In response to Clark's first point, I will give reasons to think that if we can epistemically appraise perceptual experiences at all, we can appraise them along a dimension that's independent of how easily the experience can be over-ridden by other information. By analogy, when beliefs are conclusions of standard inferences, we appraise them as epistemically better or worse along a separate parameter from the appraisal of the subject's disposition to adjust those beliefs in response to new information, and their disposition to seek out confirming or disconfirming information (section 1).

In response to Clark's other points, I will identify various disanalogies that set Jill's epistemic situation apart from the speed and Dino illusions (section 2), and explain what could make it epistemically problematic to update a prior belief on the basis of an experience it helps produce (section 3). This problematic circularity is independent of whether the experience is perceptually hijacked.

Taken together, my responses highlight the ways that my inferentialist Rationality of Perception thesis distinguishes rational from irrational uses of information. I also argue that Clark's predictive framework can easily find broader scope for perceptual hijacking and problematic circularity. His framework does not force him into limiting its scope in the ways he does, and in the ways that underlie his criticisms of my inferentialist Rationality of Perception thesis. His criticisms come instead from an optional epistemological commitment that is independent of his theoretical framework. I begin by examining this epistemological commitment.

1. Cognitive engines and action-involving inference

In characterizing the perceptual experiences that Clark thinks best illustrate perceptual hijacking, he writes: "I can't see any way to judge the individuals [as rational or irrational] apart from as culturally situated cognitive engines exhibiting (or failing to exhibit) certain checks and balances in the use of sensory evidence and priors". The perceptual experiences had in psychosis are hijacked and redound poorly on the subject, Clark says, because those experiences are generated by cognitive engines that fail to exhibit proper checks and balances. This failure is made manifest only over temporally extended processes.

An epistemically good long-term process is illustrated by the first case of Dino, in which the prior favoring Dino produces an illusion of Dino (caused by the sabre-toothed cat), but the illusion will get corrected once you hear the cat roar or meow. "What matters here, as in science itself," Clark writes, "is the longer-term openness of the system (via action) to harvesting and recognizing disconfirming evidence."

Clark thus ties the rational appraisability of hijacked experiences directly to the status of the cognitive engines that produce them. Superficially, this position is similar in its structure to a central strand of reasoning in *The Rationality of Perception*, according to which a state that is the conclusion of a standard inference inherits the epistemic status of the inference's inputs. But in my inferential version of the Rationality of Perception thesis, inferences are local and it is short-term transitions that determine epistemic status of the output – not the status of the cognitive engines overall. By contrast, on Clark's picture, it's the ongoing processes of cognitive engines that conduct their epistemic status. So he ends up assimilating the epistemic status of the states produced by the engines to the epistemic status of the engines that produce them.

Clark's defense of this account of the epistemic status of perceptual experience rests on a general claim about what it takes for a state's rational status to redound on the individual. He "can't see any way to judge the individuals [as rational or irrational] apart from as ... cognitive engines exhibiting (or failing to exhibit) certain checks and balances in the use of sensory evidence and priors", which implies that any type of state or local process that redounds on the subject's rational standing will inherit its epistemic status from the status of the cognitive engine that produces it.¹ For example, beliefs manifest a degreed status as rational or irrational, and this status contributes to how rational or irrational the believer is. A parallel point applies to standard inferences. And the Rationality of Perception thesis is that the same point applies to perceptual experiences as well. On Clark's picture, when a belief, standard inference, or perceptual experience has an epistemic status, this status derives from how much or little the system as a whole exhibits the proper checks and balances in the use of priors and sensory evidence.

This picture is too coarsely grained to provide the analytic resources we need for a theory of epistemic evaluation. Consider the case of belief. If I conclude that everyone left the party at midnight because they were afraid of getting sunburn from the party snacks, my inference could be bad, even if I give up on this theory after further discussing the relationship between sunshine and crackers. The fact that I'll give up my poorly based belief in the face of corrective counter-evidence helps vindicate my practices of belief adjustment, and it is also a point in favor of the belief itself, as it shows that the belief is properly non-resilient. But these good-making features of me and my belief don't stop the belief from being epistemically bad as it stands, along a different dimension. In general, adjusting beliefs in response to new information is a different parameter of evaluation from being evidentially well supported in the first place.² Similarly, if perceptual experiences can be rational or irrational at all, they can be appraised by how they are locally formed and maintained, and how well they are formed and maintained can come

¹ Chirumuuta (2018) reacts in a similar way to some of the examples in *The Rationality of Perception*.

² For more on the distinction between resilience and evidential support in a Bayesian framework, see Joyce (2005)

apart from how well the system does as a whole at blocking or allowing new information to get to the subject. A perceptual system like Jill's could be properly sensitive to new information in general, but still produce a perceptual experience via a faulty standard inference. Since standard inferences redound on a subject, they are a way to "judge individuals as rational or irrational" apart from how well their cognitive engines do as a system.

Clark does not discuss explicitly whether he thinks standard inferences are units of epistemic appraisal. If he thinks they are, then some principled reason is needed to think that perceptual experiences cannot be the conclusions of standard inferences. Several chapters of *The Rationality of Perception* are devoted to arguing that there are no such principled reasons, so that is where the issue would need to be joined. And if Clark thinks standard inferences are never units of epistemic appraisal, either as routes to experiences or to beliefs, then he would be rejecting much more than the standard-inferentialist Rationality of Perception thesis. He would be rejecting any epistemic position that allows beliefs to be formed well or badly by standard inference.

2. How Jill's experience could be hijacked even if other illusions aren't

Jill is a character in a thought-experiment who appears early on in the book (as Clark notes), before any discussion of the kinds of psychological processing that could underlie her situation. My initial rendition of her situation abstracts from these details, which could be filled in various different ways. Of course it's the details of psychological processing that will determine how much weight is given to prior outlooks and sensory input, and therefore whether the experience is perceptually hijacked, and going with that, how rational or irrational the experience is. Given my strategy for defending Rationality of Perception thesis, what's most illuminating for my defense are versions of the case in which the experience is produced via an irrational process. If there are some epistemically innocuous routes by which Jill could arrive from her fear to experience, that is neither here nor there. What matters is whether there can be irrational routes to this experience.

Clark's rendition of the case belongs to a theory that purports to specify the computational principles that operate in the mind. His ground for classifying Jill's experience as rational come from his epistemological commitment (criticized in the previous section) that when the cognitive engines work well, and the prior assumptions are reasonable, the local transitions from inferential inputs to perceptual experiences are rational as well. By contrast, I think we need and have a more fine-grained analysis that can identify potential flaws in Jill's case that are missing from the other cases. If we look more closely at the moving parts of Clark's predictive theory or any other Bayesian theory of perception, we can see how even by the lights of those theories, Jill's experience could be hijacked even if the other illusions Clark discusses are epistemically fine.

2.1 Noisiness and likelihoods

An important difference between Jill's case and the speed and Dino illusions is that the speed and Dino illusions take place in the fog, where local measurements of speed and spatial features are less exact. Under such noisy conditions, which Clark calls "un-ecological", it may be epistemically proper for priors to carry more weight in determining the content of experience than they would if conditions were less noisy. (I'll grant this for the sake of argument, though one could ask why it wouldn't be more rational to suspend judgment in some cases).

By contrast, in Jill's case, there need be nothing noisy or un-ecological about the circumstance under which she takes in sensory signals. There is no noise factor analogous to the one introduced by fog that justifies weighting the prior more heavily in the speed-illusion.

In Clark's framework, taking account of noise in the sensory signal amounts to lowering the precision weighting of the signal. Lowering the precision is a way of favoring the prior. At an extreme, Jill could completely dismiss the sensory signal as noise, giving it a minimal precision weighting. That would approach what Clark calls "reverberation", following Jardí and Deneve (2013), in which a prior is mistaken for sensory evidence. Reverberation would be a limit case of Jill's example, because in reverberation there is no experience, and therefore no influence on it by anything else. Clark follows Jardí and Deneve in thinking that reverberation occurs in psychosis, but he does not explain why thinks it couldn't also happen locally. Going with that, no explanation is offered of why Jill couldn't stop just short of reverberation by dismissing the sensory signal as pure noise.

Reverberation would be no more justified than just strengthening the prior arbitrarily, in response to nothing. And when precision-weightings are inputs to rational inference, an inferentialist Rationality of Perception thesis will imply that precision-weightings are epistemically appraisable. Even if it is reasonable for the subjects of the speed and Dino illusions to lower the precision on the signal when it's foggy, there is no analogous reason for Jill to lower the precision on the sensory signal from Jack. If she does so anyway, then she's doing so without justification.

Even in a framework without precision weightings, there would still be other epistemically appraisable inferential inputs besides Jill's suspicion that Jack is angry, including the likelihood (a conditional probability) of receiving a specified sensory input, if Jack is angry. Here is another way for Jill to favor the prior that Jack is angry: raise the value of the likelihood. Like a precision weighting, a likelihood will be epistemically appraisable, and on the face of it, someone could assign a higher value to the likelihood than they have grounds for assigning.

High likelihoods and low precision-weightings are two ways for Jill to give the sensory input insufficient weight, even if her suspicion that Jack is angry is perfectly rational. On either scenario, the inference would be epistemically flawed, even by the lights of a Bayesian theory of perception.

2.2 Bad reasoning from good premises vs. Good reasoning from bad premises

If we consider precision weightings and likelihoods to be just as much part of Jill's prior outlook as her suspicion that Jack is angry, then the epistemic flaws just described would be inferences from an epistemically poor prior outlook, rather than inferences from an epistemically reasonable one. Clark's speed and Dino cases are meant to be involve reasonable priors, and if priors include likelihoods and precision weightings, then Jill could differ from the other cases by having unreasonable likelihoods or precision weightings.

But we can also consider a version of Jill's case where her priors, precision weightings, and likelihoods are all reasonable, yet even so, the transition she makes from those inputs to her experience is bad. Clark doesn't make explicit whether his predictive framework allows this kind of error. But arguably, it should. Even if all of the components of the Bayesian inference have the values they should have, that still does not ensure that inference proceeds properly. This kind of mistake is possible in principle. On the face of it, it would also seem to be psychologically possible.

Cases in which people reason poorly about uncertainties are the thin edge of the wedge when it comes to psychological mechanisms that could underlie perceptual hijacking. If Clark's framework cannot analyze these cases, then they form a chunk of mental phenomena that falls outside the scope of his theory. The same possibility should be allowed in non-predictive Bayesian framework. What would be needed to defend Clark's highly limited scope for perceptual hijacking are principled reasons to think that the routes to perceptual experience are special in precluding mistakes in inference of the sort we find elsewhere in the mind.

Perhaps Clark's focus on theorizing about normal operations of the mind sets aside the theory of cognitive errors as a topic for a different project. But what's at issue here is whether it's possible for these mistakes to be made. The epistemological thesis criticized in section 1 entails that local, ungrounded precision-lowerings and local reverberation embedded in unbroken cognitive engines are either not mistakes, or else that such local flaws can't occur in our minds. I've suggested that they are epistemic mistakes, and that it would be remarkable if we were immune from making them.

3. Clarkian circularity and double-updating

Clark focuses on my question "if your prior beliefs could influence your experience, how could your experience go on to strengthen those very beliefs?". His answer to this question is "Normally, you can", and he helpfully highlights the aspects of his predictive theory that are supposed to show why doing so is epistemically okay.

My point in asking the question in the second paragraph of the book is to help readers wonder and care about what epistemic impact prior outlooks might have on perception. The discussion of much more specific epistemic flaws comes later. Clark uses this question to focus on both perceptual hijacking and circularity, and he

treats these topics together when he first describes Jill and the preformationists' processing as "looking suspiciously like double-counting", and then says "this is the problem of perceptual hijacking." It may seem natural to treat circularity and hijacking together because the case of Jill, in its initial, purposefully underspecified form, can be used to illustrate both of them. Clark's commentary helps bring out the distinction between the problem of hijacked experience, which concerns a route to experience, and the question of what combinations of routes and responses to experience would result in epistemically problematic circularity.

Let's say a processing route exhibits *Clarkian circularity* if a prior belief that p produces an experience that q via Bayesian processing of the sort Clark favors, and the subject updates that prior belief (by strengthening it) on the basis of that experience. This schematic description of the situation helps us describe a difference that Clark doesn't mention between Jill's case and other cases. In Jill's case, $p = q$, whereas in other cases, p is a generalization (such as 'Low speeds are more common') whereas q is about a particular situation (for example 'I am going slowly').

Putting aside cases when it is generated by a cognitive engine that tends to shut down channels of information from the world, Clark thinks that Clarkian circularity is epistemically fine. He considers it "a standard and crucial route to belief revision":

"When the animal starts to roar or meow I re-parse the foggy scene, seeing the sabre-toothed cat. The route to this rationally revised percept still strongly implicates my priors – that pesky cat was, after all, the next-probable cause. But I am surely right to take the success of the cat hypothesis at accommodating these new waves of sensory evidence as itself increasing the subjective probability that the object is my cat. To think otherwise would deprive me of a standard and crucial route to belief revision".

Here the potential difference between the p and q in the schema becomes useful. In the Dino and the speed illusions, we can distinguish a generalization (slow speeds are more common, bananas are yellow, the cat tends to frequent my yard, or <timelessly>: the cat is in my yard) from the content of a percept that the prior helps produce ("this thing before me is a yellow banana", "the cat is in my yard now", "I am moving slowly"). What's standard and arguably crucial is to take these experiences at face value - and undeniably so, when the experiences provide knowledge.³ Taking your experience at face value is believing your eyes. But believing your eyes does not amount to updating the prior, when $p \neq q$ in the schema. When $p \neq q$, even if it is epistemically okay to believe your eyes, there is still a further question: is it also epistemically okay to update the generalization that informed the

³ As he emphasizes in his commentary, Peacocke thinks it violates a central norm of belief to take an experience at face value if it is an illusion, even if you're unaware of that fact and there is no perceptual hijacking.

experience? To answer this question properly, the structure of the underlying processing needs to be specified.

In any kind of Bayesian model of the mind, whether Clark's global predictive version or a theory aimed only at specific local processes (such as speed perception), a key distinction is between merely calculating new probabilistic values for hypotheses in response to new evidence, and encoding and storing those values to use in subsequent calculations. Simplifying greatly, according to the Bayesian theory of content-determination, an experience is produced by selecting a hypothesis from among all the posterior probabilities that are calculated in response to sensory evidence. In the speed example, the hypothesis that's selected is that you're going slowly.⁴

There are potentially two kinds of calculations that can be made in response to new evidence. In discussing them, I'll assume for simplicity (using the schema for Clarkian circularity) that $p=q$, so that in the simplified version of the speed case, I assign probabilities to the prior hypothesis expressed by "I am going slow", and this same hypothesis is the content of my experience.⁵ I'll abbreviate this content "Slow".

To illustrate, suppose the evidence is initial sensory input. First, using Bayes, upon starting to move, I can calculate a new value of the conditional probability $P_{\text{new from sensory input}}(\text{slow}|\text{sensory input})$, where the evidence is not yet the experience, but rather the initial sensory input. And then, from that conditional probability, I can calculate the unconditional prior $P_{\text{new from sensory input}}(\text{slow})$ using some kind of conditionalization.

So far, I've described a traditional Bayesian way of calculating new values for probabilities.⁶ If we were simply doing a math problem, calculating these two posterior probabilities using Bayes and conditionalization would be sufficient to prepare us for subsequent calculations in light of the perceptual experience that these calculations help produce.

But when the formal system is used to model psychological processing, it gains a new dimension of complexity. Once I calculate the posterior values for $P_{\text{new from sensory input}}(\text{slow}|\text{sensory input})$ and $P_{\text{new from sensory input}}(\text{slow})$, it's a further question whether I store and use the latter value in subsequent applications of Bayes.

⁴ This point has been emphasized by Jonna Vance and David Bennett in conversation.

⁵ This assumption is probably an idealization but it won't get in the way of clarifying the factors that determine when Clarkian circularity is epistemically problematic.

⁶ I am setting aside the major issue of what kind of approximation of Bayesian inference takes place in Clark's framework. So long as there are analogous of priors and posterior probabilities, the points to follow will apply.

In order to determine the content of an experience, all that's needed is calculating a new value, given a pre-experiential sensory input. There are two things I don't necessarily have to do. First, I don't necessarily have to swap in $P_{\text{new from sensory input}}(\text{slow})$ for $P_{\text{old}}(\text{slow})$. At an extreme, I never have to change $P_{\text{old}}(\text{slow})$ at all. (That would be one way for the prior to be immalleable in response to both the sensory input to an experience, and the experience itself). Second, I don't necessarily have to conditionalize to calculate the value of $P(\text{slow})$, in order to select the hypothesis to be the content of experience. (Or my cognitive engine doesn't have to - which for Clark comes to same thing). The selection rule could just pick whatever hypothesis figures in the highest conditional probability generated by Bayes - for example, $P(\text{slow})$ as opposed to $P(\text{fast})$.

These options are important because my perceptual experience gives me another round of evidence that bears on my speed. So I can use Bayes once again to calculate another posterior conditional $P_{\text{new from experience}}(\text{slow}|\text{experience})$, and have the option of conditionalizing to get a new unconditional prior $P_{\text{new from experience}}(\text{slow})$.

To determine whether there's any double-counting, the crucial question is this: When I make the calculation that takes my experience as input, which $P(\text{slow})$ do I use: $P_{\text{old}}(\text{slow})$, or $P_{\text{new from sensory input}}(\text{slow})$? $P_{\text{old}}(\text{slow})$ is the value that was my prior when I got the sensory input. $P_{\text{new from sensory input}}(\text{slow})$ is the posterior value I got by conditionalizing on the result of my Bayesian calculation that used $P_{\text{old}}(\text{slow})$.

I need not use $P_{\text{new from sensory input}}(\text{slow})$, even though I had to calculate it. If the prior I use in drawing on my experience to update my opinion about how often I move slowly is $P_{\text{old}}(\text{slow})$, then there is not even an appearance of double-counting. I use my prior from before I have the experience, and then replace it with a posterior value in response to my experience.

But things look different if I use $P_{\text{new from sensory input}}(\text{slow})$. If I've already replaced $P_{\text{old}}(\text{slow})$ with $P_{\text{new from sensory input}}(\text{slow})$, then if I go on to update $P_{\text{new from sensory input}}(\text{slow})$ in response to my experience, I am counting my sensory inputs twice. First I interpret the sensory input from my situation in the Bayesian calculation of the posterior probability. That's already updating my speed statistics. If I then update my prior again in response to my experience, I am updating the statistics using information from the same instance all over again. So I have counted the same sensory input twice, once on its own, and again in the guise of the perceptual experience.

Vance (2015) describes this kind of situation as "double-counting", and explains why Bayesian forms of perceptual processing are not doomed to double-count in this way. His term is apt for describing the processes we both consider epistemically problematic. Clark uses the label "double-counting" more broadly when he equates double-counting with perceptual hijacking. Double-counting in Vance's sense involves taking experience as an input, whereas perceptual hijacking is feature of routes that produce experience as an output.

Clark's predictive framework is not fated to double-count in Vance's sense. As I've emphasized, it is possible to use $P_{\text{old}}(\text{slow})$ to calculate $P_{\text{new from experience}}(\text{slow}|\text{experience})$, which in turn can generate $P_{\text{new from experience}}(\text{slow})$. And there are at least two other ways processing could unfold, to avoid double-counting.

First, it is possible that only the likelihoods are updated in response to the experience, while the prior conditional probability of the hypothesis given the input is not updated at all. (Vance (2015) cites evidence for this option in the case in some sensory-motor tasks). And perhaps in some cases, neither prior nor likelihood are updated, because they are both immalleable or highly resilient default assumptions of the system. Here we find a potential difference between the slow-speed prior and Clark's Dino case. When he says that after we have our (illusory) Dino-experience in case 2, "systemic faith in Dino increases", Clark suggests that our cognitive engine updates its statistics on where Dino tends to be. Those statistics are presumably updated in response to sensory inputs or experiences, but hopefully not both. By contrast, the slow-speed prior may be much less malleable, and perhaps it does not get updated at all.⁷ So here is a potential difference between the speed and Dino illusions.

Second, a prior assumption $P(\text{slow}|\text{sensory input})$ could in principle be encoded in two ways in the mind: once in the visual system, for example, and then again at the level of the belief that interacts more widely with the rest of the cognitive system.⁸ If the visually encoded prior is updated in response to sensory input but not experience, whereas the belief is updated in response to the experience but not the sensory input, then double-counting is avoided. Since Clark elsewhere characterizes the boundary between belief and perception as "fuzzified" by his predictive framework, he could not invoke this way of avoiding double-counting, unless he has some other way to distinguish between the two ways that the generalization is encoded in the mind.

So nothing in the framework forces double-counting to occur, and nothing in Jill's case, abstractly described, forces that either. For all that, though, double-counting is possible in Clark's framework, it is epistemically problematic, and could happen whenever some kind of updating has to occur, as in cases like Dino. To add to the epistemic difficulties, I might not be in a position to recognize or prevent double-counting when it occurs. But it is an epistemic flaw all the same.

What makes Jill's case useful for fixing ideas is that it calls attention to these possibilities of epistemic compromise, and then by considering the underlying structure of inferences to and from perceptual experience, we can pin down which of those structures would be problematic and why.

⁷ Though Sotiropoulos et al (2011) suggest that it is malleable.

⁸ This option is also discussed by Vance (2015).

I've focused on the bare outlines of Bayesian frameworks including Clark's to illustrate what double-counting would be and why it is bad. Outside Clark's framework, the bare structure of Clarkian circularity could easily be epistemically problematic. For instance, if Jill's inference to her experience is not a Bayesian inference, but is simply an inference from the suspicion to the experience, it is hard to see how the experience could be epistemically poised to strengthen the suspicion. Jill's transition could take exactly this form. Since this set of transitions would not be Bayesian at all, let alone Bayesian business as usual, perhaps Clark would agree that this form of circularity is problematic. By describing the case in general terms at the start of the book, I leave room for an initial reaction that something may be fishy in this case, the rest of the book is designed to give us tools for analyzing what the bad-making features could be. Those same tools also show us how the case could be epistemically okay, depending on its psychological underpinnings.

Conclusion

Our broad agreement on the Rationality of Perception thesis cuts across different theoretical projects. My theory aims to uncover the epistemic properties of inferences that produce epistemically evaluable experiences. Part of the theory is a theory of inference, and that part is descriptive. But both the normative and the descriptive parts of my theory are cast at a higher level of generality and abstraction Clark's theory, which purports to specify which computational principles operate in the mind.

By contrast, Clark's analysis of how perceptual experiences are epistemically appraisable belongs to a theory of the brain as fundamentally a 'prediction machine'.⁹ For Clark, predictions shape all of perception, as well as cognition and action and everything else the brain does. So while we agree that predictions can shape perceptual experiences, Clark's version of this claim is much more general than my version, it works with a different notion of inference, and it is much more committal about the kinds of computations involved in the inference.

Despite the difference in levels of abstraction and generality, both of our theories make commitments about the scope for epistemic shortcomings among the psychologically possible routes to perceptual experience. And that's where we have our main disagreements. I've argued that there are routes to and from perceptual experiences that are epistemically flawed, but that Clark either classifies the routes as epistemically okay, or rules them out as psychologically impossible.

⁹ Clark (2016), Chapter 1. E.g., "...brains are not fundamentally in the business of 'processing inputs' at all. Rather, they are fundamentally in the business of predicting their inputs". (p. 52)

Reply to Peacocke

Peacocke and I agree that there is such a thing as perceptual hijacking, that it saps experiences of epistemic power, thereby leaving them epistemically downgraded, and that there is something unreasonable about taking a hijacked experience at face value, even if the subject is unaware of the downgrade. We disagree about how best to explain why perceptual hijacking has this epistemic impact on experiences. My explanation is the Rationality of Perception thesis, and I focus on an inferentialist version the thesis according to which experiences can be rational or irrational depending on the quality of inferences that produce them. Peacocke thinks the epistemic effects of perceptual hijacking are better explained by the Factive Theory norm.

In addition to defending the Factive Theory norm as an alternative to my analysis, Peacocke criticizes two central claims on which my defense of the inferentialist version of the Rationality of Perception thesis rests: that nothing in the nature of experience rules it out as a conclusion of inference, and that nothing in the nature of inference precludes it from having experiences as a conclusion. In arguing against these claims, Peacocke's main conceit is that perception is initiated by the world, whereas inference is initiated by the mind (p. 6), and this pair of features counts against both of my central claims. His Factive Theory develops the idea that perception is initiated by the world, and it helps support his version of the traditional fundamental divide that positions perception outside the house of reason. Perception falls outside the house of reason because it is passive, whereas belief and inference belong inside because they are or are defined in terms of actions - specifically, mental actions.

I reply in section 4 to Peacocke's criticisms of my case for the rational appraisability of experience, and in section 5 to his criticisms of my case for inference without reckoning. In section 6, I give reason to doubt that the Factive Theory can account for perceptual hijacking, and in section 7 I argue that its account of how perception can generate knowledge and rational belief leaves out an important class of cases that the Rationality of Perception thesis can successfully explain.

4. Is there fundamental rational divide between perception and belief?

When I argue in Chapter 3 that nothing in the nature of perceptual experiences precludes them from being reached by rational inference, I consider and reject a range of attempts to mark a fundamental divide between perceptual experience and belief, with respect to whether they can be rational or irrational.

For example, all beliefs are epistemically appraisable, even though many of them cannot be adjusted by deliberation. The fact that experiences cannot be so adjusted therefore fails to show that they're not rationally appraisable. So adjustability by deliberation does not mark any divide between perception and belief that would falsify the Rationality of Perception thesis. I consider and reject several other potential grounds for this division.

In response, Peacocke articulates a ground for the division that he thinks is not undermined by any of my considerations. According to him, there's such a thing as a central case of belief, and it is beliefs with content P formed by judging that P, where judging is a mental action. Such judgments constitute a primitive exercise of rational capacities. Since perceptual experiences cannot be formed by judging (on Peacocke's construal of it), a divide between perception and belief is marked by the exercise of rationality characteristic of judging. Its absence defines the kind of passivity that is present in belief but missing in experience.

The simplest version of this picture would say that every belief is formed by judgment. Peacocke's version respects the fact that not all beliefs are so formed. What, then, makes them rational exercises of the kind he proposes is distinctive of belief and impossible for perception?

Peacocke offers two considerations. The first is that beliefs formed by the mental act of judging are the central case of belief. They are central cases in that "outliers" have "the same functional and explanatory role" of such beliefs (p. 5).

In reply, beliefs share many functional and explanatory roles with perception as well, so a different account is needed of what makes beliefs formed by judgment explanatorily prior to other beliefs.

Peacocke's second point is that for any belief, its epistemic status depends on the epistemic status of a corresponding judgment, even if she does not form the judgment (and as he suggests in (1998, p. 90), even if she is not disposed to form it). He writes, "the rationality of a belief in given circumstances depends on the status as rational or not of the corresponding judgment of its content in those same circumstances."

But even if we hold constant the conditions under which a belief is held, the corresponding judgment need not have the same epistemic status, because it need not have the same basis. For example, I might believe on the basis of non-justification-conferring testimony that sulfur burns yellow, but form a corresponding judgment on the basis of remembering seeing sulfur burn yellow. Here, I would manifest an ill-founded belief in judgment, while making the judgment on a different basis which makes the judgment well-founded. The judgment and belief would then differ in epistemic status.

This disconnect would be blocked if the conditions that we hold constant when we compare the belief and the corresponding judgment include the basis on which the belief is formed and maintained. But if the basis is part of what we hold constant, we build in directly the factors that determine epistemic status. It is then the sameness of basis that explains why the belief and a hypothetical "corresponding judgment of its content" have the same epistemic status. Nothing in this comparison suggests that because they have the same epistemic status, judgment has a special status in explaining what makes the corresponding belief epistemically appraisable. Compare: if two subjects A and B each judge that p on exactly the same basis, then

that sameness tells us nothing about the explanatory priority of one subject's judgment over another.

These considerations cast doubt on Peacocke's claim that judgments enjoy explanatory priority in making a mental state a belief, and in making it epistemically appraisable. If Peacocke's claim about explanatory priority is false, then it is does not ground a divide between perception and belief in respect of having a rational status.

We can sum up Peacocke's strategy and my reply as follows. According to him, there is a fundamental division between perception and belief with respect to rationality because beliefs but not experiences are under the subject's rational control. The connection is between belief and control is said to be secured indirectly by the relationship in epistemic status between beliefs that a subject actually has, and corresponding mental actions of judgment that they may never form and (as Peacocke allows in (1998)) may not even be disposed to form. I've argued that this indirect security relationship does not hold. Depending on how the comparison between belief and judgment is developed, either there is no correspondence between belief and judgment of the sort Peacocke describes, or else that correspondence has no leverage in grounding the distinction between perception and belief.

5. Is inferring always a mental action?

A second strand in Peacocke's criticism targets my claim that nothing in the nature of inference precludes experiences from being conclusions of inference.

In chapter 5 I argue that experiences can be reached by rational inferences. This could not happen if inferring X from Y entailed that you represent that X supports Y, and then draw the conclusion because you take X to support Y ("reckoning" in inference). In my Kindness example, you judge that a clerk you observe at the Post Office is kind, and you judge this in response to a range of cues (the way she handles the packages, her tone of voice, etc).¹⁰ But you are not aware that you have responded to these cues, and so the reckoning condition isn't met. To you, it feels as if you're just struck with the thought that the clerk is kind.

Peacocke criticizes my use Kindness example on the grounds that the subject is struck with a thought and this kind of state isn't mental action and so can't be part of an inference. He writes, "It is intuitive that inference is something we do for a certain kind of reason". The kind of mental action Peacocke identifies with inference is a kind where "the subject performs the mental action of inferring the conclusion because she holds that the premise supports the conclusion" (p. 4).

¹⁰ I specify in footnote 16 that kindness is not among the properties presented in the experience in this example. When the subject in the example judges that the clerk is kind in response to her experience, she is not merely taking her experience at face value.

Here we can distinguish the thesis that judging is a mental action (a thesis I accept) from the thesis that the inferring is a mental action done because one reckons that the premise supports the conclusion (a thesis I argue against). If Peacocke is rejecting the Kindness example as a case of inference on the grounds that the subject is not performing a mental action of the sort just described, no leverage is gained on whether there can be inference without reckoning.

If instead Peacocke is rejecting the example as a case of inference on the grounds that the subject's being struck with a thought is not an action, and the immediate upshot of inferential transitions are always actions (such as judging, or accepting within the scope of supposition), then two replies are relevant.

First, in the Kindness example, being struck with a thought is a judgment. It is therefore an action, but it is an action that feels passive, as all sorts of actions do. In the throes of thinking it can be hard to stop, just as it can be much harder to stop running, once one starts, than it is to continue. So felt passivity does not seem to rule out being struck with a thought as a way of making a judgment, on the assumption that judging is mental action. Being struck with a thought that p can be a case of knowing that p, as when you suddenly realize that your keys must still be in the shopping bag, or that you have walked too far north. Peacocke may be interpreting the example as if being struck with a thought is merely a form of entertaining a proposition. While that is one way to be struck with a thought, it is not the only way.

Second, on the claim that the immediate output of inferential transitions is always an action: one might hold that when inference yields a judgment that P, there's a single mental action that is inferring P from some premises, and judging that P. Peacocke treats the claim that inferences are mental actions as part of an intuitive concept of inference.

I think we can begin from a concept of inference that prescind from whether inferences are actions, and instead takes the core commitment of the intuitive concept to be that inferences redound well or badly on the subject's rational standing. The claim that they would have to be actions to redound well or badly seems substantive rather than intuitive.

Peacocke takes issue with another of my putative examples of inference without reckoning, on the grounds that it is merely a case of taking an experience at face value. In my example, you bite down on something crunchy and try to figure out whether there's a rock in your mouth and after some exploration form the belief that there isn't. Peacocke thinks this is a case of taking a haptic-tactile experience at face value, and that only an overly hospitable notion of inference would count this kind of transition as an inference.

In reply, while experiences of absence can be taken at face value to yield a judgment or belief of the form "there is no X in region R", in this example one reaches a

conclusion that there is no rock anywhere in one's mouth from a series of experiences, from each of which one concludes that whatever is in one's mouth is not a rock. The most natural description of this kind of case is an inference of absence of a rock in a larger region from experiences of smaller regions, where these latter experiences may present the absence of a rock in the smaller regions or not. What's important is that none of them have the content 'there is no rock anywhere in my mouth', because you cannot tactilely experience the entirety of the relevant space all at once.

In sum, part of Peacocke's basic conceit is that inference is mental action and therefore is initiated by the mind, whereas perception is initiated by the world, and this fundamental difference counts against the idea that perceptual experience could be reached by inference. My examples of inference without reckoning suggest that inference is not always a mental action, and they illustrate this without relying on the idea that inferences include taking experiences at face value.

6. Does the Factive Theory explain why perceptual hijacking downgrades experiences?

Peacocke's alternative analysis of the epistemic impact of perceptual hijacking draws on the Factive Theory norm.

Factive Theory norm: Judge that p on the basis of an experience as of it's being the case that p only if: the experience is a genuine perception of the fact that p.

Since genuine perceptions are factive, in addition to saying that Jill shouldn't take her experience of Jack's face as angry at face value, this norm also says not to believe your eyes in any illusion or hallucination. On this picture, violating the Factive Theory norm downgrades experience. Only experiences in cases of genuine perception have epistemic power. All illusions are therefore epistemically downgraded, whether the illusion comes from hijacking or from factors like the ones in Peacocke's hologram example.

Left on its own, the Factive Theory norm would suggest that the beliefs people form when they take unwitting illusions at face value are unjustified, because these beliefs are based on epistemically downgraded experiences. That consequence is implausible when applied to illusions that don't involve any hijacking, and indeed Peacocke wants to avoid it. He avoids condemning all illuders as unjustified in believing their eyes by supplementing the Factive Theory norm with a clause linking justification to a "good-faith effort" (p. 2). If you take an illusory experience at face value by forming a belief, he says, you can still be justified in holding this belief, even though you are violating the Factive Theory norm. In describing this situation, he writes "I may have some justification, provided that I am trying to conform to the norm".

So in the end, having an epistemically downgraded experience is said to be compatible with having justification to take that experience at face value. You are justified in believing your eyes, but there remains a norm that you are violating, and that violation epistemically downgrades your experience. The justification must therefore come from a source besides experience or any evidence experiences could provide, and its source is the fact that you are trying to conform to the norm.

Are hijacked subjects justified in holding beliefs that are based on hijacked experiences? Peacocke leaves it open whether they are or not. His paradigm of the excused subject is the hologram-seer. But by virtue of what does the hologram-seer count as trying to follow the Factive Theory norm?

The most flat-footed answer would make the justification-conferring good-faith effort implausibly demanding, if it involved checking to see whether the book you seem to see is in fact a book or a hologram, before believing your eyes, or more generally trying to figure out whether one's experience is or isn't an illusion. Since few people are ever trying in this sense, on this account the average unwitting hologram-seer would end up with an unjustified belief that things are as they appear. This result seems implausible, as in many cases of illusions, subjects who believe their eyes absent defeaters and hijacking are justified in doing so, even though they are not trying to find out whether they are genuinely perceiving or suffering an illusion. It also runs counter to Peacocke's classification of the case. All this suggests that the relevant account of trying to conform to the Factive Theory norm must be both less demanding and less straightforward.

On a less demanding account of what it is to try to conform to the Factive Theory norm, subjects would count as trying follow the norm by default, and so long they unwittingly stumble into failing to comply with the Factive Theory norm. This account of trying would reinstate the phenomenal conservative idea that absent defeaters, you are justified in taking your experiences at face value, with the twist that the justification comes from the fact that you are trying to do something, rather than coming from your experience.¹¹ On this account, the features that are supposed to justify the hologram-seer in taking her experience face-value would apply to hijacked subjects as well. So both kinds of illuders would be justified in taking their experiences at face value.

But this account of what it is to try to follow the Factive Theory norm does not fit well with what hijacked subjects are trying to do. On the face of it, the hijacked subjects are not trying to let genuine perceptions guide the formation of perceptual belief. In some of the core cases of hijacking, fear (Jill) or desire (Vivek) are pulling the strings on the construction of the experience. So this rendition of what it is to try to follow the Factive Theory norm won't respect the difference between the unwitting hologram seer and the hijacked subjects. By contrast, the Rationality of Perception thesis can explain better why the hijacked experiences

¹¹ On phenomenal conservatism, see Pryor (2000) and Huemer (2007).

differ epistemically from other illuders. It does so by locating epistemically significant relationships between prior outlooks and experiences that are congruent with them.

No doubt there are other less demanding accounts of what it is to try to follow the Factive Theory norm, besides the one that reinstates a variant of phenomenal conservatism. But any less demanding account faces a general challenge: how is it possible to exclude experiences from contributing to the features that are supposed to justify the perceiver in taking her experience at face value?

It is not possible to take an experience at face value while remaining blind or indifferent to its specific character. The hologram-seer believes that there are books rather than bicycles in front of her because of the character of her experience. To take an experience at face value is to be sensitive to its specific character – otherwise the subject's judgments would end up having a different content. So the features that make the 'good faith effort' confer justification will be tied inextricably to the specific character of the experience.

The undemanding versions of the good-faith effort thus seem to face an internal instability. They have to include illusory experiences in the account of what the good-faith effort is, but at the same time they have to exclude those same experiences, because illusory experiences are all epistemically downgraded.

This instability detracts from the power of the Factive Theory norm to explain why perceptual hijacking leads to epistemic downgrade. The Factive Theory norm is in the position of either condemning too many epistemically innocuous illusions as leading to unjustified beliefs, or else of vindicating those beliefs in a way that is at odds with the idea that the experiences lack power to provide justification. At that point, the Factive Theory picture has no explanation of why perceptual hijacking downgrade experiences, because its supplemental account of the justification-conferring good-faith effort is at odds with the existence of epistemic downgrade in the relevant cases.

7. Which routes to experience can generate knowledge?

According to Peacocke, perception is initiated and "produced au fond" by the world, and not by action. The part of the world that plays this role is specified further in the notion of genuine perception that operates in the Factive Theory norm:

An experience of a's being F is a genuine perception iff it is causally explained in the way distinctive of perception by the object a's having the property F.

As Peacocke sees it, by using this notion of a genuine perception, the Factive Theory explains how perception can generate knowledge and rational belief. Genuine perception enables you to know that an object a is F because of the direct causal role played by a's having F in producing the perceptual experience. This account is

meant integrate with “empirical theories of perception that include top-down processing and predictive coding”, when a genuine perception as of a’s being F is “caused by a’s being F via good processes operating in the circumstances in which they were evolved to operate”.

Notice the emphasis on the causal role of a’s F-ness in establishing the status of an experience as a genuine perception. Prior generalizations about a, or about F-ness, or about relationships between F and other properties could have causal roles too in producing the experience, on this picture, but none of them could give an experience as of a’s being F the status of a genuine perception without a causal role for a’s being F.

Let’s say that if a’s being F could have no causal role in producing a genuine perception of a’s being F, where instead the genuine perception is produced by a mixture of other initial sensory inputs and generalizations of the sort just mentioned, then the causal theory of perception is “inferential”. The sense of “inferential: here does not build in that the inference is rational. It need not redound well or badly on the subject. It just marks the kinds of calculations that could establish a perceptual relation between a subject and a’s being F. Peacocke’s picture is anti-inferential in this sense, because it insists on a causal role for a’s being F in its causal theory of perception.

There are several grounds for doubting the adequacy of the anti-inferential account of genuine perception.

First, it is at odds with one kind of role for predictions or prior assumptions in producing experience. Suppose my stored knowledge that bananas are yellow joins forces with the sensory input from a yellow banana, before I’ve processed its color, and here the sensory input is not sensitive to color. This banana’s yellowness (an instance of a’s being F) might play no causal role at all in the production of my experience. And yet it can be rational to take the experience of yellowness at face value. One could also know that the banana is yellow, if the processing is properly sensitive to color and mistakes could not easily be made.

In a predictive processing framework, a role for predictions that eclipses any direct causal role for instances of a’s being F is the norm. These theories would therefore seem at odds with the idea that perception is caused “au fond” by a’s being F. As Clark (2016) puts it, “the bulk of our normal, successful, daily perceptual contact with the world - if the prediction machine models are on the mark - is determined as much by our expectations concerning the sensed scene as by the driving signals themselves.”

The anti-inferential account of genuine perception likewise seems to disallow object-perception that is initiated by scene-perception, in which you perceive a’s being F by perceiving a scene’s being G and calculating that a is F because the scene is G. For instance, when scene-perception is primary, you perceive that there’s a

rectangular toaster-shaped thing at a certain location by perceiving a larger scene and calculating that since the scene is a kitchen, object a is toaster-shaped. In that type of scenario, a genuine perception of a’s being F is initiated equally by another perception and a calculation of the relationship between a’s being F and the scene’s being G.¹²

The structure of processing here differs from the model Peacocke describes in the case of perceiving concavity. On his analysis, the background assumption that light comes from above enables a genuine perception of concavity, by helping to produce an experience as of “gradual dark shading in upwards direction”. It might seem as if it’s the property of having that pattern of shading plus the stored assumption that light comes from above that does all the causal explaining of why we experience surface as concave, with no role at all for the fact that the surface is concave. But Peacocke suggests that the surface’s concavity does play a fundamental causal role, by helping to explain why we experience the pattern of shading.

This analysis brings a causal role for concavity into focus, but it wouldn’t apply to scene-first perception of objects, because a’s being a toaster does not explain why we experience the scene as a kitchen, and need not explain why we register the exact inputs that we register from the toaster-occupied region of the kitchen. We experience the scene as a kitchen because our visual system has kept statistics on what kitchens in general look like.

Second, a range of other cases of perception have a structure in which a perception of a’s being F generates rational belief and arguably knowledge that a is F, without the direct causal role of a’s being F in generating the experience. These examples do not rely on predictive processing.

Consider the Kanizsa triangle [figure]. You experience a triangular expanse, but your triangle-experience is caused by the pac-men mouths that define the points. There is a triangular expanse on the page with edges that are not visible. Due to this expanse, the content ‘it’s a triangle’ is true, and so the experience is veridical and it meets the factive condition. Alongside the triangle-content, the experience also has contents that are false, including brightness contrasts and depth illusions.

Here, the fact that there is a triangular expanse on the surface does not seem to explain why you experience the pac-men, in the way that concavity explains the upward pattern of dark shading. Instead the priority seems to go around the other way: you experience a triangular expanse because you experience the pac-men. Stated in the terms of Peacocke’s causal condition: the expanse’s having the boundaries of a triangle does not cause the experience as of the expanse having the boundaries of a triangle. It is therefore ruled out from being a genuine perception, by Peacocke’s criterion. Yet you could come to know that area a is a triangle expanse by seeing three pac-men on a wall that form a Kanizsa triangle. The Factive Theory

¹² Oliva and Torralbo (2009), Oliva (2013)

norm, by using Peacocke's criterion for genuine perception, would predict that you're violating the factive theory norm if you believe your eyes.

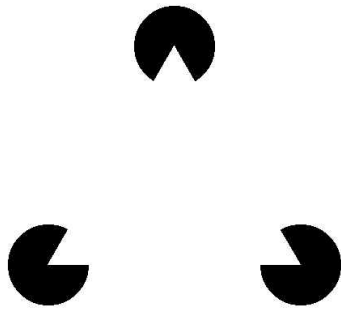


Figure: Kanizsa triangle

Another example involves the experience of feeling a beat in music or poetry. A beat is a local metric structure within which you hear patterns of sounds. Those sounds cause you to feel the beat – not the structure itself.¹³ By itself, the beat doesn't sound like anything, and the same sounds could be heard as occupying a different beat.¹⁴ Since the metric structure does not cause and therefore does not initiate your experience of the beat, it is not a perception at all according to the anti-inferential construal. Yet you could know that the song has the beat you feel in it by taking your feeling at face value. The move Peacocke suggests in the concavity example does not apply here. In that example, you experience dark shading because the surface is concave, whereas here, it's not the case that you hear the sounds because of the metric structure. The same sounds could be heard in different beats (a point made by Kerr (ms)).

I've focused on a range of routes to experience that can generate knowledge and reasonable belief, and argued that the anti-inferential construal of genuine perception used by the Factive Theory norm would misclassify these experiences as epistemically inert. Perhaps this misclassification is encouraged by the rhetoric of 'guessing' that proponents of predictive processing sometimes use to characterize their view. For instance, Clark writes:

¹³ Kerr (ms), in a recent and illuminating discussion of feeling a beat, makes the case that the same sounds can be felt in different metric structures.

¹⁴ A beat is a structure, not a property. But perhaps an instance of "a's being F" is: "the music has *this* beat".

"Our brains try to guess what's out there, and to the extent that that guess accommodates (or as it is sometimes said 'explains away') the evolving sensory data, we perceive the world." (2016, p. 14)

"If the predictive processing story is on track, then perception is indeed a process in which we (or rather, various parts of our brains) try to guess what is out there, using the incoming signal more as a means of tuning and nuancing the guessing rather than as a rich (and bandwidth-costly) encoding of the state of the world." (2016, p. 27)

Since you can't guess that P when you know that P, this characterization of perception as guessing would seem to sell the predictive theories short. Both the possibility that prediction globally shapes perceptual experience and the phenomena I've described suggest that some routes to knowledge-generating experiences get their epistemic power in part from the mind's stored assumptions and the relationship of those assumptions to experiences. In short, some routes to experience are intelligent. The Rationality of Perception thesis gives us epistemological framework for understanding intelligent relationships between perception and prior outlooks.

I've argued that the anti-inferential notion of genuine perception used by the Factive Theory wrongly excludes a range of routes to experience from the class of genuine perceptions and (going with that) as perceptual sources of knowledge and rational belief. In this way, the Factive Theory does not integrate well with empirical theories that allow top-down effects on perception. By contrast, when such theories are combined with the epistemological analysis offered by the Rationality of Perception thesis, the result is a better account of which routes to experience can yield knowledge.

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