**Can Contemporary Cognitive Science Coherently Accommodate Itself?**

**Abstract.** It should seem obvious that any purportedly comprehensive account of human cognition should be able to coherently accommodate itself—*qua an instance of human cognition*—where that means accommodating not just the specific tenets that distinguish it from competing accounts, but also the fundamental presuppositions that constitute the framework within which it has been developed and argued for. That seemingly obvious requirement of self-accommodation becomes problematic, I argue, when the cognitive scientist is committed, as most contemporary cognitive scientists are, to a broadly naturalist-physicalist perspective, or framework, and at the same time is moved by empirical findings and theoretical considerations to recognize our active and ineliminable contribution, not only to the sense the world makes to us cognitively, but already to the sense it makes to us at the level of (‘pre-objective’) perception. For the sake of clarity of exposition, this paper presses that difficulty of contemporary cognitive science by looking closely at how it manifests itself in Andy Clark’s *Surfing Uncertainty* (Clark 2016); but the difficulty is principled and general. To avoid it, without denying the active role we play in the constitution of the world as pre-objectively perceived and as cognitively, objectively represented, contemporary cognitive scientists would need, at the very least, to acknowledge that their commitment to the naturalist-physicalist framework may not itself be justified from within that framework. Having taken *that* step, they might as well take another, and recognize that a truly satisfying understanding of human perception and cognition can only be attained from a perspective that, though fully attentive to empirical findings, transcends the naturalist-physicalist framework and affords a critical examination of it.

**Keywords:** Cognitive Science, Self-Accommodation, Naturalism, Physicalism, Predictive Processing, Enactivism, Constructivism, Andy Clark

**Introduction**

It should seem obvious that any comprehensive scientific account of human cognition should be able to coherently accommodate *itself*—*qua an instance of human cognition*—where that means accommodating not just the specific tenets that distinguish it from competing accounts, but also the theoretical presuppositions that constitute the framework within which it has been developed and argued for. That seemingly obvious requirement of self-accommodation becomes problematic, however, when the cognitive scientist is committed, as most contemporary cognitive scientists are, to a naturalist-physicalist perspective or framework, and at the same time is moved by empirical findings and theoretical considerations to recognize our active and ineliminable contribution, not only to the sense the world makes to us cognitively, but already to the sense it makes to us at the level of (‘pre-objective’) perception. When Kant argued for our active and ineliminable contribution to the former, and the phenomenologists later argued for our active and eliminable contribution to the latter, they did so from an avowedly ‘transcendental’ perspective, a perspective that is not itself confined to the procedures and presuppositions of the natural sciences—a perspective, indeed, from which those procedures and presuppositions may themselves be critically examined, and their limits identified and acknowledged. Contemporary cognitive scientists eschew such a ‘transcendental’ perspective, and confine themselves to a broadly naturalist-physicalist perspective, when seeking to account for human cognition (and perception). And the problem they face is that the constructive-enactive nature of human of perception and cognition, which they have come to recognize, seems to imply that thus confining oneself to the naturalist-physicalist perspective, or framework, is itself a theoretical *choice*, not something dictated to us by the nature of things ‘as they are in themselves’—as they are, that is, apart from our cognitive sense-making (and its conditions). And it is not clear how that choice could be accounted for, let alone justified, on constructivist-enactivist grounds and from within the confinements of the naturalist-physicalist perspective.

 The aim of this paper is to press that issue and make it harder to ignore, by looking closely at how it manifests itself in Andy Clark’s *Surfing Uncertainty* (Clark 2016), which has widely been taken to represent the cutting edge of current work in philosophy of mind and cognitive science. What’s striking about the account of human perception and cognition offered in that book is that it seems to offer a vindication, *from within a resolutely naturalist-physicalist perspective,* of the broadly ‘transcendental idealist’ insight that we play an ineliminable, active role in how the world presents itself to us in perception and comes to make sense to us cognitively.[[1]](#footnote-1) That raises the question of whether that insight *could*, in principle,aptly be recognized, and coherently embraced—as Kant and any number of other transcendental idealists of various stripes thought it couldn’t—from within a resolutely naturalist-physicalist perspective such as Clark’s. Even more immediately, it raises the question of whether, and if so how, *Clark* is able to reconcile the broadly ‘transcendental idealist’ upshot of his own account of perception and cognition, on the one hand, and, on the other hand, the naturalist-physicalist framework within which he presents and motivates that account. As we will see, Clark seems mindful of that issue, which is one reason why I have found it useful to focus on his account, but never addresses it head on; and, for the most part, he seems to regard the naturalist-physicalist framework itself—on which perceivers and cognizers are, at bottom, ‘meat’, or ‘matter’, and perception and cognition ultimately begin with nothing more than ‘plays of energies that are washing across [that meat’s, or matter’s] energy-sensitive surfaces’—as if it were simply *given*. The aim of this paper is to show that that cannot coherently be done, and thereby to show just how deep the difficulty is of trying to confine oneself to a naturalist-physicalist framework, while at the same time doing justice to the constructive-enactive nature of human perception and cognition.

1. **Clark’s ‘Predictive Processing’ Account**

 Clark’s basic question is how the ‘meat’ (2016, xiii), or ‘matter’, that he thinks we fundamentally are, can come to perceive a world, to think about it, to imagine it, to dream about it, to interact with it more or less intelligently, and so on, as we evidently do. The ‘mystery’ he sets out to dispel is ‘how matter manages to give rise to thinking, imagining, dreaming, and the whole smorgasbord of mentality, emotion, and intelligent action’ (2016, xiv), or, more generally, ‘how creatures like us come to know the world and to act in it’ (2016, 1). Clark’s answer to that question is ‘predictive processing’: ‘Matter, when organized so that it cannot help but try (and try, and try again) to successfully predict the complex plays of energies that are washing across its energy-sensitive surfaces […] turns out […] to be ideally positioned to perceive, to understand, to dream, to imagine, and (most importantly of all) to act’ (2016, xiv). And how does our brain succeed in predicting the incoming flow and play of energies across its energy-sensitive surfaces? Though technically complex—and involving a ‘top-down’-‘bottom-up’ interplay between hierarchically-organized layers of processing, as well as a capacity to assess and take into account the (un)certainty of its own predictions—Clark’s answer to that question is, at bottom, that the brain does that by building models of the ‘interacting distal causes’ (2016, 21) that supposedly generate that sensory input, and by continually adjusting those models in response to prediction errors. Our brain predicts changes in its own sensory states by ‘learn[ing] about the world (including our own body and actions) that is causing the changes’ (2016, xv): ‘We perceive the world […] by identifying the set of interacting causes that make most likely the current patterns of energies impinging upon our many (exteroceptive, proprioceptive, and interoceptive) sensory receptors’ (2016, 5; see also 21). One important addition Clark makes to that basic account is that our brain is embodied, and therefore is capable of actively, and sometimes deliberately, putting to the test—by way of bodily movement and engagement with things—the causal models it constructs.[[2]](#footnote-2) And that means that perception is, in a sense, doubly active, on Clark’s account: there is the activity of constructing causal models aimed at predicting the incoming sensory stimulation and adjusting those models in response to prediction errors; and there is the activity of moving (the body) about in ways that elicit sensory stimulation, thereby making the predictive process more deliberate and effective.

 Clark’s account, which I have only very roughly sketched, raises any number of basic questions, and faces any number of difficulties. There is, for one, the worry Clark himself recognizes and seeks to alleviate that, on his account, it seems that we do not actually, or directly, perceive the world—or for that matter *a* world—but only, in his own words, ‘guess’ (2016, 5) or ‘infer’ (2016, 17 and 19) it, or ‘bet on what’s out there’ (2016, 19). He tells us, for example, that when a frog sees what ‘we, as external observers, recognize as a fly […] the only thing that is available to the frog’s brain is the perturbations to its sensory systems caused by energies flowing from the world across its many receptors’ (2016, 15); and then, a few pages later, he also tells us that when *we* ‘recognize objects and states and affairs [sic.]’—and so presumably when we recognize a fly being seen by a frog (for example)—we do so ‘by finding the most likely set of interacting factors (distal causes) whose combination would generate (hence predicts, and best accounts for) the incoming sensory data’ (2016, 21). ‘The brain’, he says more generally, ‘must discover information about the likely causes of impinging signals without any form of direct access to their source’ (2016, 16). It might therefore seem that Clark has committed himself to a naturalist version of Descartes’ (non-naturalist) veil of representations. And there is the even more basic worry—an analogue of which could be raised in response to Descartes as well—that if all we (or our brains) ever really have, and have had, are energies washing across our energy-sensitive surfaces, then what gave us (or our brains) so much as the idea (or “idea”) that those stimuli *have* distal, worldly causes?

Responding to these worries, Clark reassures us that, on his account, ‘we see through the veil of surface statistics to the world of distal interacting causes itself’ (2016, 170; see also 194-5). But how are we to understand that reassurance? Normally, when we (say we) see through one thing to something else—for example, when we (say we) see through someone’s displays of humility to his underlying ambition, or see through someone’s professed care for others to her selfish motives—that something else is something we may also, in some way, directly encounter, something (of a sort) with which we are already more or less familiar; and *that* *through which* we see it, is precisely not that *on the sole basis of* whichwe see it (and other things of its sort). But it seems that, on Clark’s story, the frog and the fly (for example) are never more than theoretical posits for their perceivers—posited distal causes of patterns of sensory stimuli, which in turn are nothing but plays of energy washing across their receptors. And it’s not clear that we may aptly or intelligibly be described as *seeing through* phenomena to their theoretically posited distal causes; nor how reassuring it is to be told that *the phenomena themselves* are theoretical posits for those who experience them (or for their brains); nor how it ever occurred to our brains in the first place that the plays of energy across their energy-sensitive surfaces have distal, worldly causes, or even just that there is an ‘out there’, or that they (our brains) are embodied. At issue here is not the threat of Cartesian ‘external world’ skepticism—a “threat” that Clark wisely and reasonably sets aside (2016, 192-4). At issue, rather, is whether Clark has succeeded in giving a resolutely naturalist-physicalist and at the same time coherent and intelligible account that begins with energies washing across our brain’s surfaces and ends with human perception and cognition as we know them.

**The ‘Transcendental Idealist’ (Constructivist-Enactivist) Upshot of Clark’s Account**

 I set aside these and other more or less substantive issues, because, for the purposes of this paper, what matters is that in emphasizing the active role we play in perception and in making sense of what encounters us in perception, Clark seems to commit himself to what is arguably the most fundamental insight of Kant’s ‘transcendental idealism’. In proposing that what we perceive, or the world as perceived, is largely determined by what we expect to perceive (cf. 2016, 81), or that ‘we perceive the world by generating the incoming sensory data “top-down” using stored knowledge about the world to recreate salient aspects of those sensory patterns’ (2016, 8), Clark seems to vindicate (a version of) the Kantian insight that, as Clark himself puts it, ‘perceiving itself involves a form of understanding’ (2016, 8). And in adding that the predictive processing is greatly facilitated by intentional bodily movement and engagement with things, and that the predictive models we (or our brains) construct are ultimately models of *a world as a field of actual and potential bodily engagement* (broadly construed to include social-linguistic engagement), Clark seems to offer a vindication of the phenomenologists’ insight—which may itself be seen as deepening and extending Kant’s transcendental idealism—that ‘the phenomenal world’, or the world *as perceived* and *responded to* prior to being objectively represented (if and when it does), is internally related to the phenomenal body and ‘speaks to us of ourselves’ (see Merleau-Ponty 1996/2012, 132/134; see also 441/465). The world revealed to us in perception, as Clark himself puts it, ‘is a world tailored to human needs, tasks, and actions […] a world built of affordances—opportunities of action and intervention’ (2016, xv; see also 171). That ‘transcendental idealist’ upshot of Clark’s account is most clearly and explicitly expressed in the following passage:

[W]hat we perceive (when all is going well) is the structured external world itself. But this is not the world ‘as it is’, where that implies the problematic notion […] of a world represented independent [sic.] of human concerns and human action repertoires. Rather, it is a world parsed according to our organism-specific needs and action repertoire. The world thus revealed may be populated with items such as hidden but tasty prey, poker hands, handwritten digits, and structured, meaningful, sentences (2016, 195).

Accordingly, though he initially says that his book is ‘about how creatures like us get to know the world and to act in it’ (2016, 1), which seems to invite a ‘transcendental realist’ understanding of what he means by ‘the world’, in other places he is careful to note that theoretical invocations—his own and those of others— of ‘the world itself’ are ‘opaque’ and ‘problematic’ (2016, 168), and that the ‘joints’ we find in ‘nature’ are not independent of us, but rather are ‘interaction-based’ (2016, 185).

Now, it might be thought that if the world *as (‘pre-objectively’) perceived*—the world in which we first and foremost find ourselves and others—is not a world ‘in itself’ but rather is a world that we (or our brains) construct, and moreover construct in terms of its significance to us, or to our embodied brains, then the world *as represented by the natural sciences*—which presumably is the product of higher-level modeling constructed on the basis of (lower-level models of) the world as perceived—is most certainly not a world as it is in itself. But I do not wish to saddle Clark with that view and, for the purposes of the argument of this paper, I do not need to. For Clark might plausibly argue that the predictive models (and theories) generated by the natural sciences abstract, precisely, from our more or less idiosyncratic interests and needs, tendencies and styles, bodily capacities and vulnerabilities, and so on, and at least in that sense bring us closer, or might be bringing us closer, to the world as it is in itself.[[3]](#footnote-3) My question, though, is not about natural science *in general*, and whether it could plausibly be thought to bring us closer—as Kant thought it couldn’t—to something aptly referred to as ‘the world as it is in itself’. My question rather concerns, first, the status of Clark’s own account and, second, the status of the naturalist-physicalist framework within which that account is presented and argued for, *as seen from the perspective of that very account*. It is to these two issues that I now turn.

**Applying Clark’s ‘Predictive Processing’ Account to Itself**

As far as his own account is concerned, Clark seems happy to regard it as just one of the models that our—or, more precisely, *some*—embodied brains have constructed with the aim of better predicting the ‘patterns of energies impinging upon [their] many (exteroceptive, proprioceptive, and interoceptive) sensory receptors’ (2016, 5). When considering the question of what sets humans apart from all other animals, he proposes that we, but not other animals, are able to ‘latch on to distal causes that include not just food, mates, and relative social rankings but also neurons, *predictive processing*, Higgs bosons, and black holes’ (2016, 276, my emphasis); so he seems happy to regard his own theorizing as participating in, and extending, our construction of ‘a world tailored to human needs, tasks, and actions […] a world built of affordances’. I would just add that predictive processing would seem to belong, by Clark’s own lights, at an even higher-level of modeling—hence abstraction—than that of neurons, Higgs bosons, and black holes. Not only because the former is meant to account, among other things, for our knowledge of the latter, but also because the predictions generated by the ‘predictive processing’ model are even less directly or straightforwardly assessable in light of our world of everyday experience and affordances—not to mention the plays of energies across the energy-sensitive surfaces of our brain, on the basis of which that world is supposedly constructed—than the predictions generated by the models that feature neurons, Higgs bosons, and black holes.

It is actually hard, however, to assess the predictive power, or success, of Clark’s model. For even more so than in other branches of empirical science, it seems that it would always be possible to accommodate seemingly recalcitrant phenomena, either by regarding such phenomena as (presumably mechanically-caused) abnormalities, or else by adding various evolutionary/psychological/social epicycles to the basic model. One revealing example of the former strategy is Clark’s discussion of the ‘pathologies’ of hallucination and delusion, which leads him to consider the undeniable and pervasive human capacity to become attached to certain conceptions that may seem clearly misguided to others, and to accommodate within those conceptions any and all candidate prediction errors, however blatant they might seem ‘from the outside’. At first, Clark says this happens ‘when things go wrong’ (2016, 81); but he soon acknowledges that ‘[w]e see milder versions of this everywhere, both in science […] and in everyday life’ (2016, 81). And indeed, *motivated*—but not *chosen* (see Merleau-Ponty 1996/2012, 163-6/165-9)—self-deception, in its connection to trauma and repression, is ‘a universal phenomenon’ and ‘part of the human lot’ (Merleau-Ponty 1996/2012, 83/86; see also and 162-3/165);[[4]](#footnote-4) and calling its everyday, common manifestations ‘milder’ hardly removes the challenge it poses to Clark’s predictive processing model and its underwriting assumptions. The human capacity for accommodating what *could* be seen as prediction errors, for *making* the world fulfill our expectations—relying precisely on the human ‘genius for ambiguity’ (Merleau-Ponty 1996/2012, 189/195) that allows us to affect how the world presents itself to us perceptually—fits well with (Merleau-Ponty’s phenomenological version of) transcendental idealism; but it seems to be at least in tension with Clark’s predictive processing model and its underlying assumptions. And the difficulty it poses for Clark’s model, as well as for anyone who wishes to assess that model’s predictive power or success, becomes even more intractable when we consider that ‘prediction error’ ultimately comes to mean, for Clark, not ‘false or inaccurate prediction’, but rather something like ‘prediction that isn’t conducive to the perceiver’s overall flourishing’ (cf. Clark 2016, 262 and 292), and further consider the fundamental disagreements among us about what constitutes human flourishing, and about what is, or is not, conducive to it.

That brings us to Clark’s second strategy for accommodating seemingly recalcitrant phenomena—that of adding evolutionary/psychological/social epicycles to the basic model. An example of the employment of that strategy is Clark’s attempt to reconcile the natural human inclination toward ‘play, exploration, and the deliberate search for novelty and new experiences’ (2016, 262)—an inclination that surely increases the immediate risk of prediction error, and not always in ways that could plausibly be expected to decrease that risk in the long run—with our (brain’s) supposed aim of minimizing prediction error. Clark says that ‘the solution to the puzzle is to notice the important role of the evolutionary and cultural backdrops against which processes of moment-by-moment prediction error minimization emerge and unfold’, and further proposes that the inclination toward playfulness and search for novelty is in the service, not only of our ‘biological’ well-being, but also of ‘the more rarefied level of human flourishing’ (2016, 262). And that—so long as we recognize that the inclination in question is not universally manifested, and in many cases seems to be absent almost entirely—is fine, except that by now we seem to have gone a verylong way from the initial promise of revealing human ‘perception, imagining, understanding, and acting […as…] different aspects and manifestations of the same underlying prediction-driven, uncertainty-sensitive, machinery’ (Clark 2016, xiv).

Not only is it difficult to assess Clark’s ‘predictive processing’ model itself qua *predictive* model, but it should further be noted that Clark himself hardly uses his model for generating *robust* and *novel* predictions that would expose his model, or him, to prediction errors. Instead, his focus is on showing how his model may accommodate—and arguably better than competing mechanical-physical models—*what we already know* about human perception, cognition, and action.[[5]](#footnote-5) And that means that, by Clark’s own lights, much of the interest of his ‘predictive processing’ model derives not from whatever predictions it might be found to generate when it comes to human perception, cognition, and action, but rather from its promise to account for what we already know about human perception, cognition, and action, from within a resolutely naturalist-physicalist perspective. In other words, its interest lies not in what it reveals about our ‘thinking, imagining, dreaming, and the whole smorgasbord of mentality, emotion, and intelligent action’ of which we have already known we are capable, but rather in its attempt to solve the ‘mystery’ of how all of *that* is achieved, or ‘given rise to’, by the ‘meat’, or ‘mere matter’, that according to Clark we fundamentally are (Clark 2016, xiv). And that brings us to the question of how *that* commitment of Clark’s—his commitment to the idea that we are, at the end of the day, just meat, or matter, and that *that* should be the basis for any scientific account of human perception and cognition—could be accommodated from within the perspective of his own account.

**Can Clark’s Naturalist-Physicalist Framework be Coherently Reconciled with His Own ‘Predictive Processing’ Account?**

What then of Clark’s commitment to the naturalist-physicalist perspective itself, and to the idea that we are, fundamentally, mere matter and ought to be understood as such? How might those be accommodated within Clark’s overall account? When Clark tells us that ‘sensory signals’ are ‘*really*, just impinging energies’ (2016, 5, my emphasis), for example, or that ‘lower level visual patterns’ are ‘*ultimately*, retinal stimulations’ (2016, 21, my emphasis), or that ‘talk of information […] *must ultimately* be cashed in terms of the energies impinging upon the sensory receptors’ (2016, 15, my emphasis), or that ‘perception is […] a process in which we (*or rather, various parts of our brains*) try to guess what is out there’ (2016, 27, my emphasis), and so on, how might those naturalist-physicalist pronouncements be understood *from within Clark’s overall account*?

Perhaps thus: *On the basis of nothing more than energies washing across its energy-sensitive surfaces, Clark’s embodied brain has managed to construct for itself (a model, or models, of) a world, as a way of trying to predict the plays of those energies across those surfaces, with the ultimate aim of increasing and maintaining as much as possible its (or its host’s) overall well-being (however* that *is to be understood); and in the course of doing so, it has found that it makes the best predictions, overall, or maximizes its (or its host’s) overall well-being, when it “assumes” that it itself is only a brain that has nothing else to go on in its activity of world-construction but the plays of energy across its surfaces.*

Assuming, for a moment, that an attempt along these lines to accommodate Clark’s naturalist-physicalist framework within his overall account could be made sense of, what should we say of all of those embodied brains that have evidently also succeeded in constructing a world for themselves that is in most respects very similar to Clark’s (or his brain’s) world, but have for one reason or another concluded that dualism, or perhaps spiritualism, is better—or better for them to “believe” in—than materialism? And what about those embodied brains—Kant’s, Merleau-Ponty’s, Wittgenstein’s, for example—that have concluded that the traditional debate between materialists, spiritualists, and dualists has been confused, and that it would be better to begin elsewhere and proceed otherwise? It certainly does not seem that those other embodied brains have, on the whole, done worse for themselves or for their hosts than ‘materialist’ brains such as Clark’s.

But these are, at best, clever mind-games whose value, such as it is, lies in bringing out what should have been clear anyway: namely, that Clark does not actually regard his naturalist-physicalist starting point, or perspective, as falling within the scope of his naturalist-physicalist account. He does not regard his naturalism-physicalism as a theoretical *assumption* (or ‘guess’) whose value is to be determined by its overall predictive power, let alone by its conduciveness to his overall well-being or flourishing. Nor could he regard that commitment as one made by *his brain*, as part of *its* attempt to predict *the plays of energy across its energy-sensitive surfaces*,without making it manifest that that commitment actually *underwrites* his account, rather than lying within its scope.[[6]](#footnote-6) And it’s a commitment *Clark* made, whatever was happening in his brain when he made it.

**Concluding Remark**

A plethora of empirical findings and theoretical considerations have led contemporary cognitive scientists to recognize and accept what Kant and any number of philosophers following him, all the way to the phenomenological tradition, have argued long ago—namely, that we play an active and ineliminable role in the constitution, not just of the world as cognitively represented and understood, but already of the world as perceived and responded to prior to becoming the object of empirical, objectively true or false representations. Unlike Kant and the phenomenological tradition, however, contemporary cognitive science has arrived at that ‘transcendental idealist’ insight from within what is supposed to be a resolutely naturalist-physicalist framework, and has regarded that framework itself as a ‘transcendental realist’ (in Kant’s sense) would—that is, as dictated to us by the world ‘as it is in itself’. I have argued that that cannot coherently be done; and I have tried to bring out that incoherence in the case of Clark’s ‘Predictive Processing’ account. In order to avoid the incoherence, the contemporary cognitive scientist would need, at the very least, to give up the (transcendental realist) presumption that the naturalist-physicalist framework for thinking about human perception and cognition is itself somehow dictated to us by the world as it is in itself. More coherently still, the contemporary cognitive scientist could embrace more fully and resolutely the basic ‘transcendental idealist’ insight that a truly satisfying understanding of human perception, cognition, and action, may only be arrived at from a perspective that, while fully attentive to empirical findings, transcends the naturalist-physicalist framework—a perspective, indeed, from which that very framework may critically be examined.[[7]](#footnote-7)

**References**

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1. Though I do consider recent enactivist-constructivist accounts of perception and cognition, of the sort presented and argued for by Clark in *Surfing Uncertainty*, to be a vindication of what I take to be the basic insight of Kant’s ‘transcendental idealism’, let me clarify outright—in order to avoid terminological misunderstandings and exegetical disputes—that what I mean when I speak of that insight is nothing more, nor less, than my characterizations and explications of it *in this paper* will make manifest. Even more importantly, since I will argue, in section Two, that what I think of as the transcendental idealist insight is clearly and explicitly endorsed by Clark himself in *Surfing Uncertainty*, my critique of Clark will essentially be internal, with no reliance, really, on historical terminology, or authority. [↑](#footnote-ref-1)
2. Here Clark is drawing on ideas already found in some of his earlier work. See, for example, the early chapters of Clark 2008. [↑](#footnote-ref-2)
3. I’m grateful for an anonymous reviewer for pressing me on this point. [↑](#footnote-ref-3)
4. As Dostoyevsky’s underground man observes, ‘man has such a predilection for systems and abstract deductions that he is ready to distort truth intentionally, he is ready to deny the evidence of his senses only to justify his logic’ (2016, 19). [↑](#footnote-ref-4)
5. Or, more precisely, and at best, *some of* what we already know; or, even more precisely, some *simplified versions* of *some* ofwhat we already know human perceivers and cognizers can do (cf. Clark 2016, 173). [↑](#footnote-ref-5)
6. Not that we have any idea of what it could be, or mean, for *a brain­­*—thought of as a machine, or ‘engine’, however sophisticated—to make a theoretical *commitment*. [↑](#footnote-ref-6)
7. I’m very grateful to three anonymous reviewers and to the editor, for helping me to make the argument of this paper clearer and tighter. [↑](#footnote-ref-7)