

Knowing *what*? Radical versus conservative enactivism

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Abstract. The binary divide between traditional cognitivist and enactivist paradigms is tied to their respective commitments to understanding cognition as based on knowing that as opposed to knowing how. Using O'Regan's and Noë's landmark sensorimotor contingency theory of perceptual experience as a foil, I demonstrate how easy it is to fall into conservative thinking. Although their account is advertised as decidedly 'skill-based', on close inspection it shows itself to be riddled with suppositions threatening to reduce it to a rules-and-representations approach. To remain properly enactivist it must be purged of such commitments and indeed all commitment to mediating knowledge: it must embrace a more radical enactivism.

Key words: cognitivism, consciousness, enactivism, experience, knowledge, perception

The enactivist challenge

The defining feature of the recent enactivist turn in cognitive science is that it challenges the representationalist paradigm, stressing instead the embedded and embodied nature of cognitive acts. In particular, the movement has been associated with the rejection of the very idea that we can make sense of the basis of everyday skills in terms of the manipulation of underlying tacit representations of a pre-given world. Typically, the binary divide between traditional and enactive approaches is presented in terms of their respective commitments to understanding cognition as based on knowing that as opposed to knowing how. Thus Varela, Thompson and Rosch make clear that understanding what enables us to move through and engage with the world intelligently does not rest on the deployment of explicit, propositional knowledge. Rather such abilities are "largely a matter of readiness to hand or 'knowledge how' based on the accumulation of experience in a vast number of cases" (Varela, Thompson and Rosch 1991, p. 148).

Distinguishing these two kinds of knowledge when challenging classical cognitivism is now commonplace.¹ Ryle gave us an initial handle on this distinction when he first introduced it into philosophical parlance, observing that

There are certain parallelisms between knowing *how* and knowing *that*. We speak of learning how to play an instrument as well as of learning that something is the case; of finding out how to prune trees as well as of finding out that the Romans had a camp in a certain place; of forgetting how to tie a reef-knot as well as forgetting that the German for 'knife' is 'Messer'. We can wonder *how* as well as wonder *whether*.

On the other hand we never speak of a person believing or opining *how*, and though it is proper to ask for the grounds of someone's reasons for someone's acceptance of a proposition, this question cannot be asked of someone's skill at cards or prudence in investments (Ryle 1949, p. 28).

According to the standard view, despite imperfect philosophical attempts to capture its essence, propositional or factual knowledge is minimally held to consist in justified true belief – knowledge that can be articulated in the form of true propositions which say how things stand (or which states of affairs obtain). In contrast, practical knowledge is not 'representational' in this way. It is what enables one to achieve certain results reliably or to engage in particular activities competently. Thus, I know how to tie my shoes; to ride a bike; to play table-tennis; but these abilities do not rest on a kind of propositional rule-following. It follows that we cannot say, even in principle, how we achieve such feats by articulating the set of tacit rules or maxims followed since there are none. Even so, such knowledge is normative in that our performances are still subject to assessment in terms of achievement or failure. This is either determined by the way or manner in which they conducted, skilfully or otherwise, or in the outcomes that ensue from them. In cases of actions exhibiting know-how, my ability to Φ is demonstrated by how well I Φ or if I manage to Φ at all, having tried to do so. But having a general ability to Φ is not to have an infallible ability to Φ . These points will be important later.

Ryle's reason for introducing this divide was precisely to attack what he called the 'intellectualist legend'. He cautioned us that if we are to avoid regress, knowing how could not be defined in terms of knowing that – since even if we could make sense of the idea of 'regulative propositions' guiding our performances, knowing how and when to apply them could not be a matter of knowing yet another set of 'regulative propositions' without engendering a regress (Ryle 1949, p. 31–32). Indeed, he took this to be the 'crucial objection' to the intellectualist legend. Yet, he also predicted that "Champions of this legend are apt to try to reassimilate knowing how and knowing that by arguing that intelligent performance involves the observance of rules, or the application of criteria" (Ryle 1949, p. 29).

Ryle was perceptive. I fear that this very tendency is present in certain of today's enactivists. The fact is that the nature of know-how is not always carefully explicated and this is important because enactivism relies so heavily on this notion for its distinctiveness. Without it, the new paradigm would be unable to mount a serious challenge to existing orthodoxy. Its viability therefore rests on making sense of practical knowledge without falling back on the representationalist paradigm for support. In what follows, I focus on one high profile, parade example of an account of enactivism that appears to be too conservative in precisely this way: the sensorimotor contingency (SMC) approach to perceptual experience, as recently expounded in various papers by O'Regan, Noë and Myin (including O'Regan, Myin and Noë, this volume).

Their positive thesis is that visual experience ought to be identified with a kind of embodied know-how, exemplified by the set of expectations and possibilities for action that manifest themselves, or would manifest themselves, in the perceptual exploration of environments. These authors regard themselves as further developing the central ideas of recent researchers such as Clark, Grush, Hurley and ultimately following in the footsteps of Evans, Merleau-Ponty, Dreyfus and Gibson. Tellingly, in their 2001 paper, O'Regan and Noë also approvingly cite Ryle as inspiring the approach. The reason for his inclusion in their canon is clear from the way they set out their stall. "The central idea of our new approach is that vision is a mode of exploration of the world that is *mediated by knowledge* of what we call sensorimotor contingencies" (O'Regan and Noë 2001, p. 940).

And, in elaborating on this, they write:

Visual experience is a mode of activity involving *practical knowledge* about currently possible behaviours and associated sensory consequences. Visual experience *rests on know-how, the possession of skills* (O'Regan and Noë 2001, p. 946, emphases mine).

While I endorse the general spirit and core message of the SMC approach – i.e., that the character of experiences is determined by sensorimotor contingencies specific to the various sense modalities – I find the invocation of knowledge, as in the above passages, to be treacherous (and ultimately unnecessary). For wherever it appears the authors typically revert to deploying the idiom of propositional knowledge or some confused mix of practical and propositional knowledge (see also Rowlands, in press).² This is deeply ironic given that, in line with enactivism generally, they claim that their position is:

... distinctive in at least two respects compared to more traditional and still 'mainstream' cognitive science. First, by emphasising that perception concerns the activity of an organism in an environment, the traditional focus on the 'inner' as the locus of importance is abandoned. This implies – and this is the second respect – that perception is not, as in many traditional approaches seen as the establishment of inner representations of the outside world, but rather engagement with this outer world (Myin and O'Regan 2002, p. 32–33).

Importantly, as above, where the emphasis is on 'interaction with the world' mention of 'knowledge' *per se* need not figure at all. Trouble starts when attempts are made to coherently and non-vacuously explicate the *mediating* role that knowledge is meant to play. In the next two sections I focus, in turn, on the putative role and nature of such knowledge at each level of their two-tiered account. For they maintain that perceptual experience involves not only a mere implicit practical knowledge or mastery of sensorimotor contingencies but also a further and distinct intentional (or cognitively engaged) skilled-based access to the exploratory possibilities that implicit knowledge affords (see Myin and O'Regan 2002, p. 35).

Subpersonal implicit knowledge

According to the proponents of the SMC theory, perceiving is not just an activity: it is a skilful, knowledge-based activity. As they repeatedly stress, it is ‘*mediated* by knowledge’ and indeed at the bottom level this mediation, *inter alia*, is meant to account for the elusive qualitative character of perceptual experience.³ In this section, I briefly attempt to unpack what this claim about mediating knowledge comes to at the sub-personal level. Several remarks suggest that it in fact boils down to a claim about the brain’s mastery of contingences concerning the structure of the various sense modalities in relation attributes of the objects with which they are dealing. We are told that:

...seeing is a skilful activity whereby one explores the world, drawing on one’s *mastery of the relevant laws* of sensorimotor contingency (O’Regan and Noë 2001, p. 966, emphasis added).

For this to constitute a form of knowledge – even if we break with the traditional tripartite analysis involving, at a minimum, true, justified, propositional believing – it at least implies: (i) that there ‘really’ are independently existing laws; (ii) that these laws concern the properties of real objects and their effects on our various perceptual systems; and (iii) that “the animal, or its brain, must be ‘tuned to’ these” (O’Regan and Noë 2001, p. 943).

If we understand the attunement mentioned in (iii) using the standard ‘rules and representations’ paradigm then talk of mastering laws would be symptomatic of just the kind of conflation of practical and propositional knowledge that Ryle, with characteristic foresight, warned against. Presumably, that is what the SMC theorists want to avoid too. Yet, given their chosen examples and descriptions, the knowledge upon which the brain’s mastery depends hardly comes across as practical *per se*. We are told:

The question nevertheless arises of how the *brain is able to accurately judge* whether an object is stationary (O’Regan and Noë 2001, p. 949, emphasis added).

If the retinal receptors did not signal a global smear during saccades, then the *brain would have to assume that* the observer was not seeing and that he or she was perhaps hallucinating or dreaming (O’Regan and Noë 2001, p. 950, emphasis added).

...if retinal sensation were not to change dramatically when an object falls into the blind spot, then the *brain would have to conclude that* the object was no being seen, but was being hallucinated (O’Regan and Noë 2001, p. 951, emphasis added).

In the light of their ambitions, it is ironic that the proponents of the SMC theory so easily fall into talk of the brain assuming, judging and concluding all sorts

of things about observers and objects. This suggests that in performing its operations the brain employs propositional knowledge (or uses subpersonal representations that effectively serve as such).⁴ Perhaps such talk is just a kind of shorthand and not meant to be taken too seriously. But if so, it is not clear what it is shorthand *for* or to what it commits one about *how* the brain achieves its various feats. Still, even if we try to understand this literally as a kind of unspecified non-representational ‘knowledge’ the authors’ talk of our brains being attuned to (or more strongly having skilful mastery of) SMC laws is implausible for a different reason. Putting aside the question of what such attunement consists in, what could possibly motivate us to postulate the independent existence of such laws, as required by condition (i), to which organisms or brains are supposedly attuned? Certainly, we need not do so in order to accept the weaker claim that the character of our experiences is determined by the structure of our perceptual modalities.

Objects, as we sometimes say, obey basic physical laws. What does this entail? Take the relatively simple case of the effect of gravity. We can, of course, describe the rate of acceleration at which bodies move towards one another, expressed in the form of an equation. The so-called Law of Gravity applies to all falling bodies equally causing them to accelerate at a rate of 32 feet per second squared, on Earth. Of course, in making their descent, falling objects are neither attuned to, nor do they represent, either this local variant or a more universal law. This law does not describe an external force, as Newton originally thought when he included it in his calculations alongside acceleration and mass. The ‘force of gravity’ was postulated as something external that explained why all bodies, despite their differences in mass, fall at the same rate. Tellingly, the only *evidence* for the existence of such a force was this uniform rate of acceleration itself, which troubled astute physicists. It wasn’t until Einstein reformed our understanding of physics by introducing us to the idea of general relativity (and the concomitant notion of curved space time) that it became clear why there was no need to postulate any such force of gravity. This much is common knowledge. What then does the ‘Law of Gravity’ so accurately describe? It is neither an internal rule, the common following of which causes bodies to fall uniformly, nor it is some exogenous force that externally governs the motions of all such bodies. It simply describes (in an idealised fashion) the behaviour of bodies when accelerating, nothing more.

No one in this day and age would be tempted to explain the behaviour of a falling rock by suggesting that it, or any of its integral parts, is attuned to such laws or that it exhibits a mastery of them. Why then should operations of our sensory systems be regarded as essentially different, despite the fact that these too can be described mathematically – for example, in the way exemplified by the description O’Regan and Noë give of the operations of the simple arm-mounted photocell (O’Regan and Noë 2001, p. 957)? The mere fact that these

causal procedures are complex and inside the ‘skin’ or ‘skull’ provides no justification for treating them differently than the behaviour of other physical bodies. Perhaps, the fact that they generate reliable effects based on target adjustments entails that these ‘internal’ changes must be using *special means* to keep pace with environmental changes. This would be a kind of attunement. But it is possible to understand such co-ordinated responsiveness without introducing the idea that the brain makes use of ‘inner representations’ or that its responses are law *governed* in the sense that it consults nomological ‘principles’ that specify what it is to do. Certainly, rejecting these standard approaches is the major agenda item for enactivists.

Without a convincing account of the content and ‘status’ of such laws (e.g. are they something independent to be grasped or a set of ‘guiding’ representations in the brain) and a sound argument showing why they are needed, we should be wary of claims such as “visual exploration *obeys* certain laws of sensorimotor contingency” (O’Regan and Noë 2001, p. 941). But there is some evidence that the authors do not wish to commit themselves to anything very extravagant in saying this. For in the very next sentence we are instead told that, “The laws *are determined by* the fact that exploration is being done by the visual apparatus” (O’Regan and Noë 2001, p. 941). This last remark could be interpreted as the utterly innocuous claim that the laws in question are nothing other than what can be ‘read off’ from the activity of perceptual systems as they respond to different types of objects.

Such a reading is in keeping with the authors’ claim that “even [an] out-of-order missile guidance system has a kind of ineffectual mastery of its sensorimotor contingencies” (O’Regan and Noë 2001, p. 943). Yet, if there are no independently established laws that the missile breaks or fails to follow, what does its ‘ineffectual mastery’ amount to (other than merely failing to meet *our* stipulated designs)? Since it is still operating, even if presumably failing to track its target properly, why not say it has a competent or effective grasp or a sound mastery of different set of sensorimotor contingencies? These might be determined by what the malfunctioning system *actually* does with respect to tracking its target. This underlines that such ‘laws’ lack any normative or prescriptive force. Nothing in any purely descriptive comparison of the ‘structure of the rules’ of a properly functioning as opposed to a malfunctioning missile guidance system would enable us to tell which one was breaking *the* law (or laws) appropriate to it. To do that we would need independent grounds for determining how the systems are *meant* to respond. In the case of artefacts, deciding this is easy because we know in advance what ends they are supposed to serve. It is different with the products of Mother Nature, as Dennett and Millikan taught us. In relation to just this sort of case I have elsewhere argued in greater detail that it is possible (at least in principle) to understand natural systems, such as our perceptual systems, as end-directed in a way that allows

us to determine if they are functioning properly or otherwise (see Hutto 2006, forthcoming).

Another virtue of the proper function approach is that it reveals how devices might be ineffectual in achieving their ends, without introducing the notion of ‘*skilful mastery*’ at all. For example, my ability to breathe is not an exhibition of practical knowledge; it is not an achievement of mine, skilful or otherwise. It is not something that I have learned how to do, nor is it the result of training (contrast this with learning how to control one’s breathing for deep sea diving or in response to an asthma attack). But is it then an achievement of my body or my lungs? Is it evidence of a kind of know-how of theirs? At best, this would be to speak metaphorically – at worst, it is simply confused. My lungs can fail to perform as they *ought*. They have biological proper functions and in this sense they may not operate as they should; they can fail to carry out these functions by not producing the kinds of results that items of this type historically produced to good effect. The point is such failure is not to be explained in terms of lack of knowledge or an ineffectual application of knowledge on the part of lungs. If they fail it will be due to mechanical malfunction or breakdown or because they find themselves in an ‘abnormal’ environment (e.g. if they have been artificially removed from their usual partner devices). But whether or not they are fulfilling their proper biological functions, we can still describe their operations. If we like, we can use our understanding of their proper or Normal functions as a baseline to determine what their proper motor contingencies should be.

A consequence of this view is that no ‘laws’ govern such bodily behaviour in the sense of acting as a set of representations that are consulted. Any laws we might construct when describing what governs a creature’s behaviour will be an account of the fallout of their activity. On such a view creatures and their sub-personal mechanisms do not follow rules when acting in the world – there are no laws or principles that are internally (or externally) represented, consulted, mastered or obeyed. Rather any laws we might describe turn out to be descriptions of the *process* or *products* of the activity in question – and, although such activity instantiates real patterns, these are only articulated as laws for *our* benefit. These laws are not *used* by the organisms or their sub-systems.

In taking this line, we can do away with the idea that our perceptual systems rest on skilful practical mastery of SMC laws on the part of brains. Nevertheless, we can still accept the weaker claim that the basic *character* of perceptual experiences is determined by the features of the different sensory modalities and how they respond to specific objects. An important virtue of this more modest approach is that in rejecting the need to invoke ‘skilful mastery’ of SMC laws, it is possible that even if a creature fails to perceive what it ought it can nevertheless have perceptual experiences even if these are of a different character (depending on the nature and the extent of the failure).

Personal level implicit knowledge

Perhaps little hangs on the foregoing, since according to the SMC theorists ‘the brain’s mastery of laws’ at the subpersonal level is not sufficient for visual experience in any case. We are told:

...there are facts about what experiences are like. But these, however, are facts not about a person’s qualia or raw feels. They pertain, rather, to the person’s (or animal’s) active engagement with the world he or it inhabits. They are facts at the personal (as opposed to subpersonal) level (O’Regan and Noë 2001, p. 965).

Despite talk of the brain being skilfully attuned to sensorimotor contingencies it is a red herring to think that making the SMC account work requires explicating the know-how in question in terms of the brain’s mastery of a set of laws. For, although such mastery fixes the character of the perceptual experiences, the above quotations make clear that it is practical knowledge at the personal level that makes acts of perceiving into full blown experiential ones. Nevertheless, once again, despite the claim that this too is a kind of know-how, the examples used point in a different direction. For example:

Having the feeling of seeing a stationary object consists in the *knowledge that* if you were to move your eyes slightly leftwards, the object would shift one way on your retina, but if you were to move your eye rightwards, the object would shift the other way. The knowledge of all such potential movements and their results constitute the perception of stationarity (O’Regan and Noë 2001, p. 949, emphases added).

...the experience of red, for example, arises when we know, though this is not propositional, but rather *practical knowledge that*, for example, if we move our eyes over a red region, there will occur changes typical of what happens when our non-homogeneously sampling retinas move over things whose color is red (O’Regan and Noë 2001, p. 963).⁵

Despite protestations to the contrary the cases cited look, for all the world, to involve propositional knowledge of the very sort that is derived by consideration of what we typically do when looking at things. After all, we are told that “to reflect on the character of experience is to reflect on the character of one’s law-governed exploration of the environment, on what one does in seeing” (O’Regan and Noë 2001, p. 961).

A natural way to explicate these remarks is treat them as referring to run-of-the-mill *propositional knowledge about* our practices – of the sort obtained by reflecting on what we do, after the fashion of Aristotle’s attempt to articulate of the principles of logic or Walton’s prescriptions about angling. This would be a straightforward case in which “Efficient practice precedes theory of it” (Ryle 1949, p. 30). But this cannot be what enables us to see, *simpliciter*. The authors claim that organisms’ attending (their cognitive engagement) is what ultimately makes for ‘seeing’ – and that this is equivalent to visual awareness.

If so any kind of theoretical reflection that would make us *skilful* attenders would have to be based on *attending* to acts of attention. So surely this proposal is heading for trouble.

This observation won't trouble defenders of SMC theory. They clearly would not want to endorse this rendering of their claim in any case since it treats know-how as explicit propositional knowledge gained through reflection. They adamantly insist that the implicit knowledge to which they refer should be "understood as *literally constituting* a perceptual skill, analogous to a skill such as tying one's shoelaces" (Myin and O'Regan 2002, p. 34, emphasis added). But there are problems here too: the comparison does not hold up well. In line with the spirit of what SMC theorists want to claim, let us now evaluate one of the quotations cited just above, having replaced all instances of talk of knowledge *that* with those of knowledge *how*, as in this rewritten version.

Having the feeling of seeing a stationary object consists in [knowing how to] . . . move your eyes slightly leftwards, [so that] the object would shift one way on your retina, . . . [and knowing how to] move your eye rightwards, [so that] the object would shift the other way (O'Regan and Noë 2001, p. 949, with changes).

The problem is that on this new formulation it is easy to see that it is not remotely plausible to say my capacity for visual experience depends on *my knowing how* to move eyes in any way that relates to the behaviour of my *retina* at all. Of course, in an important sense, I can and do move my eyes, especially during acts of attention, but there seems to be no good reason to think of this as a kind of skill-based, personal level knowledge.⁶

What 'skill' is exercised in seeing that is fundamentally different to that involved in breathing or walking? Or are these cases meant to be equivalent? If so, in what possible sense should we regard seeing as a kind of know-how expressed in action? Do I learn *how* to see skilfully? Certainly, this ability develops over time – but it is hardly dependent upon 'training' in the normal sense of the word. In contrast, the ability to tie my shoelaces rests on my previous training. Perceiving is – unless we are prepared to stretch the analogy too far – an unlearned ability. Isn't seeing, although it involves complicated activity and co-ordination, more like breathing than, say, dancing in this regard? If we consider cases of trained skills that involve implicit knowledge, it is clear that such knowledge can be demonstrated if not stated. Although I may not be able to say quite how I tie my laces I can *show* you how I do it and I can train others to tie theirs too. But with abilities such as the basic capacity to see things it is perfectly intelligible to say that although I can Φ , I don't know how I Φ nor can I show you how to Φ . It is just something I am able to do. My worry can be expressed another way: What kind of failure is it to *see* badly or imperfectly? What is it that organisms do not *know* or do

not *know how to do* in such cases? Even if there were some answer to that question given that such knowledge is meant to be *constitutive* of perception, the follow-up is quite serious: Why doesn't a lack of knowledge result in a lack of experience altogether? I think the answer is because seeing is not a skill-based achievement at all in the way as dancing or tying one's shoelaces are. This I hold to be true of at least those basic encapsulated kinds of perception which are not influenced by contributions from central cognition (see Fodor 1983).

It is important that the authors are minimally advancing a claim about constitution (although sometimes they appear to making one about identity) and not just dependence, which is a considerably weaker relation (see Baker 2000, ch. 2 for an excellent discussion of these differences). Construed as a claim about dependence the SMC thesis is reduced to one about what underwrites visual experience. The danger here is that if visual experience only depends upon or involves skill-based activity it is easier to imagine that 'it' might be 'carved off' or put to one side when certain aspects of 'seeing' are studied. Since the authors deny that there is any explanatory gap and that experience involves nothing extra they must be presenting us with either an identity or constitution thesis. A general worry about this strategy might be that be that the relevant 'explanatory gap' can always be recast at the level of sense rather than that of ontology – it thus possible to describe a given activity, just as we might an object, event or process, using only the language of physics and/or physiological language, without mention of the subjective character of 'experiences' at all. Given that the authors do not deny that there are legitimate questions that can be asked about the character of experiences there will always be an issue about how these different levels of description relate (see Hutto 2000).

It should now be evident why the SMC claim is too strong. Being able to see does not depend on our having skilful knowledge "*about how* sensations will change when you move your eyes, or move the object" (O'Regan and Noë 2001, p. 946, emphasis added). If it did, visual experience would be very limited indeed, since very few of us have either explicit propositional or even implicit but demonstrable skill-based knowledge of this kind. For example, I know that if I take an object from a well lit room to a poorly lit one it will look different. In which ways, I cannot say exactly – even when the object is familiar to me. This does not mean that the way I experience is not dependent upon the appropriate sensorimotor contingencies, only that it is not knowledge of them, at any level, that matters to my perceiving.

No doubt talk of mediating knowledge is encouraged by the thought that the sum total of what we are experiencing at any time extends beyond what we are presented with. Having an experience embodies more than just having a series of discrete sensations – it involves having *expectations* about what is not directly experienced at a specific moment. For example, these expectations

explain our feeling of the ‘perceptual presence’ of whole objects, even when it is only their parts that are strictly speaking visible to us. The thought is that we anticipate or see possibilities for action even if these aren’t actually explored. This is why “visual experience only occurs when there is the potential for action” (O’Regan and Noë 2001, p. 949).⁷

It is natural enough to want to make sense of these expectations in terms of knowledge. For example, Magritte has this to say of his painting *Carte Blanche*:

Visible things can be invisible. If somebody rides a horse through a wood, at first one sees them, and then not, yet one knows that they are there. In *Carte Blanche*, the rider is hiding the trees, and the trees are hiding her. However, our powers of thought grasp both the visible and the invisible – and I make use of the painting to render thoughts visible (René Magritte 1965 quoted in Paquet 2000, p. 45).

Magritte talks of thoughts; modern philosophers will cash these out in terms of propositions. In resisting this move, advocates of the SMC approach appear to be enlightened. Yet, even if we translate their talk of knowledge in a way that doesn’t require the invocation of propositions and their proprietary form of knowledge, it may be wise to reject the idea that strictly speaking experiences are constituted by a practical knowledge of potential actions, based on the great range of perceptual possibilities that are afforded to us. For what if my current practical expectations are thwarted? If I can be surprised without failing to have perceptual experience altogether then it follows that such experience cannot simply consist of such expectations (cf. O’Regan, Myin and Noë 2005). Picking up on concerns raised earlier, it is incumbent on SMC theorists to address the following query: If someone’s expectations are abnormal in some way would this mean he or she would no longer see or only that he or she would see differently? It might be thought that a subject’s less than fully competent mastery of the relevant SMC laws would result in a kind of partial seeing, but it is important to realise that there are countless ways in which one might perform less than competently. If there are different grades of experience associated with each of these along a continuous spectrum then it is evident that there is no special connection between having a skilful mastery of SMC laws and having experiences after all. The dilemma is that either the SMC approach is too strong to be plausible or, if suitably modified, it looks too weak to be anything more than a descriptive account: the notion of skilful mastery of SMC laws at either level does no independent explanatory work.

Ultimately, the problem is that SMC theorists fail to be radical enough. For, if we give up on the idea of experience as a static inner representation and truly think of perception as a kind of exploratory activity, extended over time, then there is no need to introduce ‘knowledge’ as a kind of bond that holds

together various percepts in order to *explain* phenomena such as perceptual presence. Refreshingly, by endorsing an action-based account the SMC approach openly stands against those who employ an object-based schema when it comes to understanding experiential activity (see Hutto 2000).⁸ For example, their rejection of attempts to model experiences as sorts of inner objects or properties is at the heart of their critique of those endeavouring to identify neural correlates of consciousness. We can see both their basic challenge to the tradition and the central idea of their alternative approach epitomised in the following passage:

From the point of view of the brain, there is nothing that differentiates nervous influx coming from retinal, haptic, proprioceptive, olfactory, and other senses, and there is nothing to discriminate motor neurons that are connected to extraocular muscles, skeletal muscles, or any other structures. Even if the size, the shape, the firing patterns, or the places where the neurons are localized in the cortex differ, this does not in itself confer them with any particular visual, olfactory, motor or other perceptual quality.

On the other hand, what *does* differentiate vision from, say, audition or touch, is the *structure of the rules* governing the sensory changes produced by various motor actions, that is, what we call the *sensorimotor contingencies* . . . Because the sensorimotor contingencies within different sensory domains (vision, audition, smell, etc.) are subject to different (in)variance properties, the structure of the rules that govern perception in these different modalities will be different in each modality (O'Regan and Noë 2001, p. 941, emphases in the original).

The point is that once we give up modelling experiences on objects it should be clear that just as there no sensible basis for trying to locate experiences in an internal phenomenal space, there is, equally, no question of making fine-grained determinations about the timing of experiences independently of understanding the character of the whole experience in question (see, for example, Dennett's discussion of phi-phenomena in Dennett 1991). Exploration takes time – it unfolds – therefore once experiences are understood *as* exploratory activity they cannot also be treated as a series of discrete synchronic occurrences: They cannot be identified with what is 'given in perception' at a specific time. But if we accept this there is no longer any clear rationale for the SMC theorist to account for the anticipatory element of experience in terms of mediating knowledge. To embrace enactivism fully is already to deny that we ever experience the world in as thin a manner as most philosophers have supposed. For this reason, the very idea of only partial or fragmented experiences being directly given to perception, upon which the puzzles about how to account for the richness of our experience are based, is suspect.⁹

In my view, with some important pruning we can modify the original SMC claim so as to address this shortcoming by removing references to the adjective 'skillful'. The original version was: "...seeing is a skillful activity whereby

one explores the world, drawing on one's *mastery of the relevant laws of sensorimotor contingency*" (O'Regan and Noë 2001, p. 966, emphasis added). The modified version would be: "seeing is [a form of] activity whereby one explores the world. . .".

Recast thus we now have the simple claim that the sensorimotor contingencies of the various modalities, in conjunction with the features of the particular things encountered, account for the qualitative differences in the character of particular perceptual experiences. In this form, the position remains consistent with the following sort of claim:

Under the present view of what seeing is, the visual experiences of a red colour patch depends on the structure of the changes in sensory input that occur when you move your eyes around relative to the patch . . . (O'Regan and Noë 2001, p. 951).

The point is that this much weaker rendering of the core claim does not make any reference to 'practical knowledge' or 'skillful mastery' of laws, at any level. Know-how does not come into it at all. In some places, the authors present their main thesis in a weak form that is entirely consistent with this. For instance, we can uncover this idea at the heart of a truncated version of the claim we examined earlier:

. . . there are facts about what experiences are like. . . They pertain, rather, to the person's (or animal's) active engagement with the world he or it inhabits (O'Regan and Noë 2001, p. 965).

Presented in this way, it is not knowledge – not embodied *know-how per se* – that gives perceptual experiences their character but facts about the nature of our embodiment in relation to particular active engagements. These are facts that we do not know and do not need to know in order to have experiences. Let us now rewrite the earlier claim once more, removing all reference to knowledge, so it reads as follows:

Having the feeling of seeing a stationary object consists in [the fact that] if you were to move your eyes slightly leftwards, the object would shift one way on your retina, but if you were to move your eye rightwards, the object would shift the other way (O'Regan and Noë 2001, p. 949).

I take it this is to be uncontroversial. All it commits one to is the idea that perceptual experience is a mode of activity, requiring a certain set of abilities. The point is that even with these somewhat dramatic modifications the revised approach still stands opposed to the *ultra-passive* view according to which seeing involves nothing more than the having of static inner representations.

New theory or reformed thinking?

So far I have been trying to clarify, explicate and evaluate the SMC proposal about perceptual experience as if it were a theoretical hypothesis with a clear content. But perhaps it is better to understand it not as a new theory but as a rejection of the misleading ‘copy view’ of visual experience: the idea that experience is somehow constituted by the formation of passive, internal representation of outer scenes. This proposed interpretation is surely not *wholly* off the mark for the authors harbour transformative ambitions for their approach of the kind Newton’s introduction of the notion of a field of force had in physics. Of Newton’s idea they claim, it was “not a theory at all, just a new way of defining what is meant by force. It is a way of abandoning the problem being posed, rather than solving it” (O’Regan and Noë 2001, p. 949). Seen in this light, the work of O’Regan, Myin and Noë is also meant to provide “a general framework for the study of vision . . . [in which] old problems appear as non-problems” (O’Regan and Noë 2001, p. 948).

We can best see this aspect of their work in their attack on ‘qualia’, as motivated by the realisation that *understanding* experience is equivalent to *understanding* the temporally extended perceptual activity of organisms. Once we better understand our quarry we will come to recognise that the experiences in question are already rich and diachronically stretched or extended in time. Experiences can only be understood by giving attention to such activity: they cannot be reduced to a collection of discrete sensations in the brain which are somehow bound together. This point has been familiar to phenomenologists, pragmatists and even a few reflective artists, for some time.

But even if we accept that it is wrong to imagine experiences as reduced to sets of ‘sensations’ alone – modelled as inner objects or representations – this does not lend support to the claim that “experience *derives* not from the sensation itself, but from the rules that govern action-related changes in sensory input” (O’Regan and Noë 2001, p. 956, emphasis added). Nor does it directly support the idea that “the experience of perception *derives from* the *potential* to obtain changes in sensation, not from the sensations themselves” (O’Regan and Noë 2001, p. 956, emphasis added). Although, we may agree that the very possibility of experiencing in a temporally extended way depends upon the potential for such changes, it is quite another thing to say that such experiencing consists in the manipulation of rules or the potential for making changes in any explanatorily interesting way.

A note of caution is in order about sensations. For, in rejecting this false picture, we must take care to check the bathwater for babies. In acknowledging that focusing on the character of sensations is not the whole story concerning experience we should not be led to think that sensations are not an essential part of it. To see why we have but to consider O’Regan and Noë’s discussion of the use of an echolocation device to somewhat compensate for lack of sight in

blind patients. According to them what makes this an alternative form of ‘seeing’ is the fact “the brain extracts the same invariants from the structure of the sensorimotor contingencies” (O’Regan and Noë 2001, p. 956). Still, they acknowledge that that this echolocation device “*obviously* cannot provide visual experiences” (O’Regan and Noë 2001, p. 956, emphasis added). I suggest the reason that this is *obvious* is precisely because such devices do not generate the characteristic types of visual sensation that are part and parcel of normal sight. Nor would this be surprising, for isn’t it the difference in these sensations partly what distinguishes echolocational from normal modes of seeing?

There is no reason why we should not allow that differences in the various modalities coupled with kind of objects perceived through them make a difference to the kind of sensations we enjoy, as Aristotle proposed in *De Anima* long ago. There is nothing wrong in accepting this provided we do not try to imagine sensations as being strange types of objects or properties. Moreover, reminding ourselves that they are part and parcel of what we experience in acting and being acted upon is a useful counter to the ideas that experience is nothing but ‘something extra’ added to otherwise undifferentiated neural activity or that visual experience should be understood in terms of sensations *alone* (see O’Regan and Noë 2001, p. 940).

All of this is consistent with the much edited version of the central idea of the SMC approach, as presented in the previous section. Once again, with the appropriate edits the main thesis looks less exciting. It is recast as: “vision is a mode of exploration of the world . . .” (O’Regan and Noë 2001, p. 940). Or: “seeing is [an] . . . activity whereby one explores the world . . .” (O’Regan and Noë 2001, p. 966). It would be hard to disagree with these remarks. Indeed, they could almost serve as definitions of our ordinary understanding of seeing. They are hardly philosophical theses that one would be tempted to dispute, unless one was under the spell of a philosophical picture and hoping to explain what seeing ‘really’ is – despite appearances. Hence to the extent that we regard the SMC revolutionaries as reduced to making claims such as this, they have hardly offered a ‘new definition of visual experience’ – rather they will have reminded of something we ought already to know. The real payoff of reminding ourselves that perception is an activity is not that it provides the basis for a new theory of experience, but that, if treated with care, it should drive us away from certain standard philosophical confusions about the nature of experience.

Notes

1. In distinguishing between linguistic and non-linguistic thoughts Bermúdez calls the distinction into play, remarking that “It does not seem right to describe the processes of thinking-how as defined over states with determinate content” (Bermúdez 2003, p. 37). See also Millikan 2000 and 2002 for extended discussions of ability-based accounts.

2. This ensures that we cannot understand experience in merely dispositional terms. For clearly, on the SMC account, there is something ‘between’ the inputs and outputs – the knowledge that enables the systems to respond to the inputs according to particular laws.
3. For example, they write “Perceiving . . . is an organism’s exploration of the environment that is *mediated by knowledge* of sensorimotor contingencies. For example, a perceiver perceives a line if her visual interaction with a line is *guided by or corroborated by, or coherent with* the [appropriate] sensorimotor contingency” (Myin and O’Regan 2002, p. 34, emphases added).
4. It is, in fact, doubly ironic, given that the authors readily accuse others of committing a naïve ‘homunculus error’.
5. Myin and O’Regan talk in places as if this were a kind of second-order knowledge. They write: “With any exploratory movement the perceiver makes, she has *knowledge about how* input will change, and this knowledge is never disconfirmed during her exploration” (Myin and O’Regan 2002, p. 34, emphases added). Though, what is implied by the claim that such “knowledge is never disconfirmed” is puzzling.
6. It would be tricky business for a philosopher of action to unpack the sense in which ‘I’ do these things – but they are certainly not automated responses.
7. This should not be confused with the ridiculous claim that where there is a ‘potential for action’ perceptual exploration experience occurs since we have the potential to perform a great many actions *all* the time without this generating corresponding experiences.
8. The authors are equally concerned to reject the conception of visual experience as the harbouring of inert or passive ‘inner’ representations of external scenes. They amass a great deal of empirical evidence, citing a host of experiments concerning change and inattention blindness, which they successfully marshal to discredit this idea.
9. It is argued that, “specifying the brain state is not sufficient to determine the sensory experience, because we need to know how the visual apparatus and the environment are currently interacting” (O’Regan and Noë 2001, p. 966). And in turn it follows that, there is “no one-to-one correspondence between visual experience and neural activations” (O’Regan and Noë 2001, p. 966). But if we take this very seriously it puts paid to the very idea of distinguishable perceptual experiences as ‘inputs’ (even if no longer manipulated by rules) and actions as ‘output’. Pretty clearly, once we reconfigure our understanding of experience in line with the authors’ important challenge to the traditional view, we find the whole process of ‘seeing’ is better understood along the lines that Hurley has proposed when she rejects what she calls the classic ‘sandwich model’ and argues. that action and perception are related, at least in some instances, internally and not merely causally related (see Hurley 1998).

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