

Deep Impact: Wittgenstein's enduring enactivist legacy

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Abstract

In this chapter, I explore the impact that Wittgenstein continues to have on contemporary cognitive science. In particular, I focus on an emerging set of views called "enactivism". Enactivists, broadly understood, insist that mind and experience are activities enacted by subjects as and when they engage with the world around them. For example, Sensorimotor Enactivists claim that a subject's perceptual experience is a skillful engagement with an object or objects in their environment. If so, then there is no explanatory gap between the subject's skillful action and the subject's perceptual experience. Here I will defend this Sensorimotor claim by appealing to Wittgenstein's *On Certainty*, specifically, Moyal-Sharrock's reading of *On Certainty*. Her reading, so I shall argue, can be used to support the Sensorimotor dismissal of the explanatory gap. This then demonstrates the deep impact that Wittgenstein can continue to have on enactivist thinking.

Key words: Wittgenstein; *On Certainty*; Moyal-Sharrock; hinge perceptions; Sensorimotor Enactivism; explanatory gap; skilful action; perceptual experience;

1. Introduction

Hurley (1998) accurately characterised what has long been the orthodox view of the relationship between the brain and the body within cognitive science. She called this view the Input-Output

picture. According to this picture, our sensory organs (eyes, ears, hands etc) deliver input to the brain. The brain then processes this input, which is then turned into output or bodily behaviour. Varela, Thompson and Rosch (1991) famously challenged this picture (as did Hurley herself). For example, Varela, Thompson and Rosch claimed that mind and experience are not things processed by the brain at all. Rather they are activities enacted by subjects as and when they engage with the world around them. This idea has since come to be called “enactivism”.

This enactivist idea has in recent decades given rise to a number of distinctive lines of thought. Mind/life enactivism (Thompson 2007) aims to describe the biological conditions that allow for human and animal experience to emerge, focusing in particular on the sense-making activities of large and small autonomous systems. Radical Enactivism (Hutto and Myin 2013 2017) insists that our capacities to represent worldly states of affairs in meaningful ways are scaffolded by some of our social and linguistic practices. Sensorimotor Enactivism (Noë 2004 2006 2012 2015; O’Regan 2009 2011 2014; O’Regan and Noë 2001) argues that while there is an “explanatory gap” (Levine 1983) between brain states/processes and perceptual experiences, there is no such gap between a subject’s skilful engagement with environmental objects and a subject’s perceptual experiences. This is because perceptual experiences just are skilful engagements with such objects.

Now, among the thinkers usually listed as forerunners of these various enactivist proposals, one often finds pragmatists, like James, phenomenologists like Merleau-Ponty, and ecological psychologists like Gibson. Someone only rarely included in such a list however is Wittgenstein. This is despite the fact that, just like

many enactivists, Wittgenstein regarded action and reaction as at the basis of all human and animal mentality.¹

Still, the idea that Wittgenstein has much to teach enactivists is one that continues to gain traction within contemporary cognitive science (Heras-Escribano et al 2014; Hutto 2013; Hutto, Kirchhoff and Myin, 2014; Loughlin 2014 2019 2020; Moyal-Sharrock 2013 2019; Steiner 2018). Indeed, Moyal-Sharrock even goes so far as to say that Wittgenstein was 'the first enactivist' (2013, 266). Moreover, for Hutto, "the enactive approach [...] fundamentally agrees with the emphasis on primacy of action, forms of life, shared practices and customary ways of going on [found] in Wittgenstein's [later] philosophy of psychology" (2013, 5).

In this chapter, I aim to show how (some) enactivists can use Wittgensteinian considerations in order to develop issues currently being debated within enactivism. My focus here will be on Sensorimotor Enactivism (I will set aside the other versions of enactivism mentioned earlier). I shall argue that proponents of Sensorimotor Enactivism can use Moyal-Sharrock's reading of Wittgenstein's *On Certainty* in order to support their dismissal of the explanatory gap.² If so, then this demonstrates the deep impact that Wittgenstein can continue to have on enactivist thinking.

¹ Some selected quotes from Wittgenstein: "The origin and the primitive forms of the language-game is a reaction; only from this can more complicated forms grow. Language – I want to say – is a refinement; 'in the beginning was the deed'" (Wittgenstein 1998, 36; see also Wittgenstein 1993, 395). "The essence of the language-game is a practical method (a way of acting - not speculation, not chatter.)" (Wittgenstein 1993, 399). "This has often been said before. And it has often been put in the form of an assertion that the truths of logic are determined by a consensus of opinions. Is this what I am saying? No. There is no opinion at all; it is not a question of opinion. They are determined by a consensus of action: a consequence of doing the same thing, reacting in the same way. There is a consensus but it is not a consensus of opinion. We all act in the same way, walk the same way, count the same way" (Wittgenstein 1983, 183-184).

² In this chapter I will only discuss perceptual experience, which, for Sensorimotor Enactivists, refers to a subject's skillful engagement with an

The layout of this chapter then is as follows. In 2, I discuss Sensorimotor Enactivism. In 3, I introduce Wittgenstein's *On Certainty*, concentrating on Moyal-Sharrock's reading of *On Certainty*. In 4, I show how proponents of Sensorimotor Enactivism can use her reading in order to support their view.

2. Sensorimotor Enactivism

Suppose I am looking at a tomato sitting on the kitchen counter top. The tomato looks round and inviting. However, if I stop to think about what I am actually seeing, then I will likely come up short. For if the tomato is placed directly in front of me (and let's take it as given that it is), then I only see the front side of the tomato. Nonetheless, I see the tomato as round. This well recognized perceptual phenomenon is often referred to as amodal perception (Noë and O'Regan 2002, 578; Noë 2012, 56). One of the questions such perception raises is this: how do I see the tomato as round if I only see the front side of the tomato?

A standard reply within cognitive science is that all intelligent activity requires internal representational states. This is true of amodal perception. For example, Nanay (2018) writes: "Amodal completion [that is, amodal perception] is the representation of those parts of the perceived object that we get no sensory stimulation from. In the case of vision, it is the representation of occluded parts of objects we see: When we see a cat behind a picket fence, our perceptual system represents those parts of the

environmental object or objects. For those interested in how Sensorimotor Enactivism deals with other forms of sensory experience, readers can consult Cooke and Myin (2011), who discuss smell, and Miller (2020), who discusses smell and taste.

cat that are occluded by the picket fence" (ibid). Nanay goes on to say that this internal representation state should be understood in neuroscientific terms, that is, in terms of early cortical processing in the brain (ibid). In which case, I see the tomato as whole even though I only see the front side of the tomato because of the internal processing that is currently occurring in parts of my brain.

Not everyone accepts this, however. Among those skeptical about this neuro-scientific account are proponents of what is called "Sensorimotor Enactivism" (Noë 2004 2006 2012 2015; O'Regan 2009 2011 2014; O'Regan and Noë 2001). One of the key objections such proponents raise against this account is that it leads to an irresolvable "explanatory gap" (Levine 1983). For no appeal to brain processes, no matter how detailed or complex, can explain why such processes should give rise to, say, a perceptual experience rather than an auditory experience, or even why such processes should give rise to any experience at all.

Sensorimotor Enactivists dismiss this gap problem by denying that perceptual (and others forms of sensory) experiences are in fact things happening inside our heads. They argue instead that such experiences are skills that we implicitly, that is, unthinkingly and unhesitatingly know how to enact (Noë 2004, 1).

In more detail, these skills display a subject's "sensorimotor know-how". Sensorimotor know-how involves what are called "sensorimotor contingencies". Sensorimotor contingencies are relations of dependency enacted by a subject as and when they engage with an environmental object or objects. These contingencies are sensory in that they refer to the subject's various sensory modalities (touching, tasting, smelling, hearing, looking) and they are motor in that they refer to how the subject's various

ways of sensing their environment will change as and when the subject moves in their environment and/or when an object or objects move in the subject's environment (Noe, 2012, 22).

Consider then those contingencies particular to the visual modality. Our eyeballs, for example, have a particular size and shape. This size and shape means that whenever our eyeballs saccade, the light hitting off our retinas will alter in particular ways determined by those saccades (O'Regan and Noë 2001, 941). Moreover, flow patterns on our retinas will expand whenever we move forwards and contract whenever we move backwards. Finally, images on our retina will, under normal circumstances, disappear whenever we close our eyelids (ibid). O'Regan and and Noë call these "contingencies of the visual modality".

Notice that the contingencies discussed here are not simply facts about our embodiment. The fact that, for example, our eyeballs saccade is obviously not something that we can master, since it is simply an automatic bodily response. Nonetheless, understanding the way that those saccades will alter the light hitting off our retinas (or how bodily movement will alter the flow patterns on our retinas) is something that we can, in an unthinking and unhesitating fashion, master as and when we engage with an environmental object or object. This is why sensorimotor contingencies are relations of dependence enacted by us as and when we engage with an object or objects in our environment (as stated above).

Other sensorimotor contingencies O'Regan and Noë call "contingencies of visual attributes" (ibid). For instance, objects are always positioned at different angles from us. This means that we always view objects from a certain distance. Moreover, in normal circumstances, we only ever partially see an object, which is

ensures that whenever we move around the object, some parts of the object will appear and other parts will disappear. Finally, the colour and brightness of the light reflected from the surface of an object will change as we move and/or the object moves and/or the light source moves (ibid, 941, 942).

Summarizing then, we can thus say that, for Sensorimotor Enactivists, subjects, in an implicit, that is, unthinking and unhesitating fashion, master the contingencies particular to a given modality, like the contingencies of the visual modality and visual attributes listed above, as and when they have engaged with or are engaging with an environmental object or objects.³ Thus, when it comes to perceptual experiences, such experiences are skillful in that such experiences can be identified with a subject's implicit, that is, unthinking and unhesitating mastery of the contingencies particular to that modality.⁴

With this summary in place, we can then return to amodal perception. We can now see that for Sensorimotor Enactivists, while processing in the brain is of course needed for the subject to see

³ Note that Sensorimotor Enactivists do not claim that objects in a subject's environment are themselves experiential. Rather the claim is that when it comes to perceptual experience, objects fulfil non-trivial roles in determining a subject's perceptual experience. This is because it is the precise characteristics of objects that shape a subject's mastery of the contingencies particular to the visual modality and visual attributes and thereby give the subject's perceptual experiences their unique character.

⁴ This raises an important question. What is the status of the Sensorimotor claim? For example, is it a metaphysical or ontological claim about the nature of perceptual experience? Or is instead a psychological or empirical claim about how normal perceivers engage with objects in their environment? Or is it something else (perhaps a grammatical claim about what we mean when we talk about perceptual experience)? I don't propose to answer these thorny questions here. This is because doing so would require determining the exact status of enactivist approaches generally. Yet there is currently little clarity within the enactivist (Sensorimotor or otherwise) literature as to what are the exact statuses of such approaches.

the tomato, such processing, contrary to Nanay, cannot explain how or why the subject is able to see the tomato as whole. Instead, it is the subject's implicit, that is, unthinking and unhesitating mastery of those sensorimotor contingencies enacted as and when the subject engages with the tomato, such as their mastery of how when they move in relation to the tomato, some parts of the tomato will appear while other parts will disappear (a contingency of visual attributes) that explains how and why the subject sees the tomato as whole.

Now, as discussed earlier, the principal aim of Sensorimotor Enactivism is to dismiss the explanatory gap. In other work, I have claimed that Sensorimotor Enactivists can only achieve this aim if they can show that the relation between skillful action and perceptual experience is a necessary one (Loughlin 2020). By the term "necessary relation", I mean a relation between a subject's implicit mastery of the contingencies of the visual modality and visual attributes and a subject's perceptual experience such that there is no possibility that the subject could enact their unthinking and unhesitating mastery of these contingencies (either now or in the past) and not undergo a perceptual experience. Contrarily, suppose the relation between a subject's skillful mastery and their perceptual experience was not a necessary relation. Then it would be possible to imagine a subject enacting their skillful mastery but having no perceptual experience. Under these circumstances, Sensorimotor Enactivism would then raise its own explanatory gap. Sensorimotor Enactivists thus need to exclude this possibility if they are to successfully dismiss the explanatory gap. They can do this, so I have argued, if they can show that the relation between skillful action and perceptual experience is a necessary one.

In what follows, I will build on this point by showing how Sensorimotor Enactivists can use Wittgenstein's *On Certainty*, in particular Moyal-Sharrock's reading of *On Certainty*, in order to confirm that the relation between skillful action and perceptual experience is indeed a necessary one. If so, then Moyal-Sharrock's reading of *On Certainty* can help such enactivists demonstrate how and why there is no explanatory gap between skillful action and perceptual experience.

3. *On Certainty*

Central to Wittgenstein's last major work, *On Certainty* (henceforth OC), is Wittgenstein's critique of Moore's attempt to dismiss the skeptic. The skeptic doubts that there is an external world beyond our senses. Moore sought to refute this skeptical doubt. We can say, for example, "This is a hand", while simultaneously pointing to our own hand. Moore took this proposition (and other propositions like it) as proof of our knowledge of an external world, since knowing that this is a hand is only possible if there is an external world in which such knowing can occur. If so, then the doubt raised by the skeptic can be refuted.

Wittgenstein insisted however that in his supposed refutation of the skeptic, Moore misunderstood the nature of what "lie[s] at the bottom of the language-game" (OC 204). For what lies at the bottom of the language-game, according to Wittgenstein, are not things we know but rather things we do. As Wittgenstein put it, "certain things are *in deed* not doubted" (OC 342, italics in original). These certainties have the character of sureness: "[i]t is just like directly taking hold of something, as I take hold of my towel without having any doubts" (OC 510). Elsewhere he asked: "Why do I not satisfy myself that I have two feet when I want to get up from a

chair? There is no why. I simply don't. This is how I act" (OC 148). Importantly, these certainties are not only ways of acting that are not susceptible of doubt. They also form the foundation upon which all doubts, hesitations and further enquiries take place. As such, they are not something "hasty but excusable" (OC 150), that is, something about which one could be wrong. They are instead the "hinges" (OC 341) upon which all of our thoughts and actions turn.

Wittgenstein thus took certainty and knowledge to belong to different categories (OC 308). This is because to claim to know is to allow for the possibility that one's claim to know could be doubted, since the justification for one's claim to know may be wrong. Knowledge and doubt are logically intertwined in the sense that once doubt is excluded, then so too is the claim to know. Wittgenstein puts this point as follows: "'If 'I know etc.' is conceived as a grammatical proposition, of course the 'I' cannot be important. And it properly means, 'There is no such thing as doubt in this case' or 'The expression 'I do not know' makes no sense in this case". And of course it follows from this that "I know" makes no sense either [that is, Moore's 'I know etc.' is in fact not epistemic, but grammatical – not expressive of knowledge at all, but rather of hinge certainty]" (OC 58).⁵ Our hinge certainties then, which lie at the bottom of our language-game, are not susceptible of doubt, and so are not claims to knowledge.

Recall then the skeptic and their supposed doubt about an external world. According to Wittgenstein, the correct response to such a doubt is to say: I cannot claim to know that there is an external world because I cannot doubt my claim to know that there is an external world. For my certainty that there is an external world is

⁵ Thanks to Daniele Moyal-Sharrock for help in clarifying this quote from *On Certainty*.

indubitable. To treat it otherwise, that is, to treat it as something that could be doubted, has no meaning. Consequently, the skeptic's doubt about an external world is meaningless, equivalent to continually opening the same empty drawer, hoping to now find the object you are looking for (OC 315). Wittgenstein wrote: "[a] doubt that doubted everything [as the skeptic's doubt tries but fails to do] would not be a doubt" (OC 450), since "[a] doubt without end is not even a doubt" (OC 625). In which case, the doubt promoted by the skeptic is not a doubt at all. Moore's mistake then was to think that the skeptic's doubt needed to be refuted. For if skeptical doubts are meaningless, then it is equally meaningless to try to refute such doubts. For there is in fact nothing to refute.

I take the foregoing summary of OC to be uncontroversial. What is controversial, however, are the exact nature of our hinge certainties. Are these certainties propositional, non-propositional or some combination of both? I won't attempt to resolve this controversy here. Rather I am going to briefly discuss one particular reading of OC, namely that provided by Moyal-Sharrock.

Moyal-Sharrock (2004) offers a non-propositional account of our hinge certainties (see also Pleasants 2009 for another non-propositional account). According to her reading, these certainties are non-propositional because it is only in action that something is a hinge. In her words, "our foundational certainty is a *practical* certainty (not a theoretical or propositional or presuppositional certainty) which manifests itself as a way of acting" (ibid, 65, italics in original). Moreover, "it can *only* manifest itself thus – that is, in action, and not in words; not in our saying it" (ibid). Hinges certainties are thus "*logic in action* ... Logic is embedded in our practices, in our *deeds*" (ibid, 99).

However, Moyal-Sharrock also notes that, for Wittgenstein, some of our visual perceptions are what she calls “hinge perceptions” (ibid, 130). These are perceptions that are indubitable, that is, there is no possibility of being in doubt about what is being perceived. She states: “the circumstances of [hinge] perception must be such that the perceiver cannot be mistaken” (ibid). Building on work by Crispin Wright (ibid, 225), she lists six conditions needed for a visual experience to be a hinge. These are:

“the object

(1) is in clear view (not far away; in good light; sufficiently stationary), and

the subject

(2) is possessed of operative typical visual equipment, and

(3) is free of afterimages and spots before the eyes, and

(4) is lucid, and

(5) is familiar with the object at hand, and variations thereof, and

(6) is free of hesitation or doubt about the satisfaction of any of these conditions” (ibid, 132).

According to Moyal-Sharrock, the satisfaction of all six conditions will result in indubitable or hinge perception (ibid, 132). Thus, on Moyal-Sharrock’s reading of OC, “logic in action” applies to perception. For some of our perceptions are hinges. Moreover, when such perceptions are hinges, then they operate as rules or norms of description (ibid, 126).

This ends my brief outline of Moyal-Sharrock’s reading of OC. Much more could of course be said about her reading. However, my aim here is not to defend it. Rather it is to show how proponents of Sensorimotor Enactivism can use it in order to support their view. This will be the target of the following section.

4. On *Certainty* and Sensorimotor Enactivism

I earlier pointed out that if proponents of Sensorimotor Enactivism are to dismiss the explanatory gap, then they need to show that the relation between a subject's implicit grasp of sensorimotor contingencies and a subject's perceptual experience must be a necessary one. I will now argue that such proponents can use Moyal-Sharrock's notion of hinge perceptions in order to achieve this aim. For when a subject's perception is a hinge, then the relation between a subject's skillful engagement with an object and a subject's perceptual experience is indeed necessary. Key to my argument will be showing that the conditions needed for a perception to be a hinge can be framed in sensorimotor terms. Before providing this framing however, I will first introduce some everyday examples of hinge perceptions.

I have had my current laptop for over ten years and while it no longer functions as well as it should, its very familiarity is the reason I continue to use it. I am currently typing these words on that laptop. My perception of the laptop in front of me as I type these words is a hinge. My perception fulfills all six of Moyal-Sharrock's conditions. First, I am directly looking at my laptop. Second, I have two eyes to see. Third, I am not currently suffering from any problems with my eyes. Fourth, I am lucid. Fifth, I am entirely familiar with my laptop. Sixth, I have no hesitation or doubt about any of the previous conditions. I thus have an attitude of basic certainty, which is to say that there is no possibility that I could be in doubt about what I am looking at. My perception of my laptop is consequently an indubitable or hinge perception, not just because I am looking at my laptop, but rather because of what I am

unhesitatingly doing with my laptop, namely using it to type these very words.

Another example: this morning, I had breakfast with my wife and my two-year old daughter. As I ate my breakfast, my wife and I discussed, as we often do, who would drop our daughter off at pre-school. We also discussed, as we also often do, when we would both be home, who would cook dinner, what our plans were for the coming evening etc. During those moments at the breakfast table, my perception of my wife was a hinge. She was in clear view. My eyes were in working order. I was not suffering from any problems with my eyes. I was lucid and entirely familiar with what I was looking at, in this case my wife. Finally, I had no hesitation or doubt that all these conditions were fulfilled. I thus had an attitude of basic certainty, which is to say that there was no possibility that I could have been in doubt about what I was looking at. As such, my perception of my wife across the breakfast table this morning was an indubitable or hinge perception, not simply because I was looking at her, but rather because of what I was doing as I was looking at her, namely chatting about our various plans for the coming day.

Someone could of course try and challenge my certainty in both instances. They might ask questions like, "How do you know that the object you are looking at is your laptop?" or "How do you know that the person you are looking at across the breakfast table is your wife?" However, such questions are meaningless. As pointed out in section 3, claiming to know is to be open to doubt. But I cannot claim to know that I am looking at my laptop, since I cannot doubt that I am looking at my laptop. Similarly, I cannot claim to know that I am looking at my wife, since I cannot doubt that I am looking at my wife. That is, my attitude of basic certainty in both examples

excludes as meaningless questions that attempt to challenge my certainty.

We can expand on the previous paragraph in the following way. Recall Wittgenstein's quote: "Why do I not satisfy myself that I have two feet when I get up from a chair. There is no why. I simply don't. This is how I act" (OC 148). This applies to our two examples. There is no why that supports my certainty that I am looking at my laptop just as there is no why that supports my certainty that I am looking at my wife. For my certainty requires no support. It is simply how I act. Wittgenstein also gives the example of looking at a man who is sick. He asks: "I know that a sick man is lying here? Nonsense! I am sitting at his bedside; I am looking attentively into his face. – So I don't know, then, that there is a sick man lying here? Neither the question nor the assertion makes sense" (OC 10). This also applies to our two examples. Not only is the demand for claims to knowledge here meaningless. So too is any attempt to satisfy those demands. I thus cannot answer the questions raised in the previous paragraph, not because of some inability on my part, but rather because there is nothing in need of answering.

Other examples of hinge perceptions could of course be given. Nonetheless, for my purposes, these two examples highlight what it means to have an attitude of basic certainty when it comes to perception. It is to perceive in such a way that the possibility of being in doubt about what you are currently looking at is excluded as meaningless.

Now, in her account of hinge certainties, Moyal-Sharrock insists that what is being referred to is "a background which in fact amounts to a seamless expertise" (2004, 63) and that "[t]he relationship

between a person and her background or *Weltbild* is a know-how" (ibid). However, "this is no run-of-the-mill, ordinary know-how" (ibid). It is instead an accomplished, unhesitating know-how, a way of behaving that is both expert and smooth, thoughtless or mindless. As Moyal-Sharrock puts it, such know-how resembles "a reflex or automatic action" (ibid, 64).

Think back to the Sensorimotor Enactive account (see section 2). We saw there that when it comes to perceptual experiences, subjects, in an implicit, that is, unthinking and unhesitating fashion, master the contingencies of the visual modality and visual attributes, as and when they have engaged with or are engaging with an environmental object or objects. If we focus then on those circumstances when subjects are currently engaging with an environmental object, for example, during amodal perception (see section 2), then, so I claim, there is a parallel between the Sensorimotor account and the account given by Moyal-Sharrock. For the unthinking and unhesitating skill highlighted by Sensorimotor Enactivists is akin to the unthinking and unhesitating know-how highlighted by Moyal-Sharrock. For in both cases, what is being highlighted is a know-how that is a reflex or automatic action.

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⁶ Note that this might not hold true of all the examples Sensorimotor Enactivists have used to support their account. Sensory Substitution Devices may be a case in point. Bach-y-Rita's (1972) Tactile Vision Substitution System or TVSS is a device which consists of a head or eyeglass mounted camera, the visual output of which is used to turn on a series of vibrators that are attached to the body of a blind (or blindfolded) subject. The subject is then trained in how to use the TVSS device, that is, they come to learn how bodily movement in an environment with the device changes the patterns of tactile vibrations on their skin. After doing so, subjects begin to report that they can experience objects as arranged in the environment around them. If so, then "seeing" with a TVSS device requires learning how to use such a device. In which case, the skill that subjects need in order to see with such a device is not a reflex or automatic action but rather something learned or acquired (see Clark 2009 for a similar point). However, while this may be true of TVSS, I maintain that it is not true of the example I cite in the text, such as amodal perception. In this latter instance, the skill displayed by the subject is a reflex or automatic action.

As support for this parallel, consider that if Sensorimotor Enactivism is correct, then my perceptual experiences can be identified with my implicit, that is, unthinking and unhesitating mastery of the contingencies of the visual modality and visual attributes. But if so, then it is not possible for me to doubt, in any meaningful way, this implicit mastery. For doubting such mastery is not, for example, to doubt what I see (an apple rather than a tomato, say). It is instead to doubt the very fact that I see. Yet the very fact that I see is not something that I can meaningfully doubt, since it is hinge certainty for me that I see. To try and doubt this certainty is meaningless, equivalent to the skeptic's doubt about an external world.

This parallel between the Sensorimotor account and the account given by Moyal-Sharrock means that we can then frame the six conditions Moyal-Sharrock cites as needed for a perception to be a hinge in terms of sensorimotor contingencies.

For example, the first condition is that the object must be in clear view (not far away; in good light; sufficiently stationary). Moyal-Sharrock characterises this as a condition of the object. However, I claim this is a condition of both the subject and the object. For it can involve both contingencies of the visual modality - flow patterns on my retinas will expand whenever I move towards the object and contract whenever I move away from the object - and contingencies of visual attributes - whenever I move around the object, some parts of the object will appear and other parts will disappear. The second condition is that the subject must possess operative typical visual equipment. This is a contingency of the visual modality. The third condition is that the subject must be free

of after images and spots before their eyes. This is also is a contingency of the visual modality. The fourth condition is the subject must be lucid. Here lucidity will impact on both sets of sensorimotor contingencies. For if I am not lucid (perhaps because I am hallucinating), then the images on my retina may not disappear whenever I close my eyelids (in which case, a contingency of the visual modality cannot be mastered) and/or the colour or brightness of an object may be a figment of my imagination and not due to environmental conditions (in which case, a contingency of visual attributes cannot be mastered). The fifth condition is that the subject must be entirely familiar with the object. Here familiarity can be understood as implying some previous history with the object and so refers to a contingency of visual attributes. The sixth condition is that subject must have no hesitation or doubt about any of the previous conditions. As with the fourth condition, this condition could refer to either or both sets of contingencies, since hesitation or doubt about any of the previous conditions will impact on both contingencies of the visual modality and visual attributes.

Crucially, this sensorimotor framing of Moyal-Sharrock's six conditions reveals the skill involved when it comes to hinge perceptions. For among the contingencies of visual attributes is the contingency that objects are always positioned at different angles from us, which means that we always view objects from a certain distance. Think of my laptop. I cannot not use my laptop in such a way that my perception of my laptop is a hinge unless I implicitly understand that my laptop must be positioned at a certain angle and so a certain distance from me. For only when it is so positioned can I use my laptop in an unhesitating fashion. In which case, it is my implicit mastery of this sensorimotor contingency, along with my implicit mastery of a host of other contingencies of the visual modality and visual attributes, which ensures that my perception of

the laptop is a hinge. Thus, by framing Moyal-Sharrock's six conditions in sensorimotor terms, this demonstrates why it is a subject's skilful engagement with an environmental object that makes the subject's perceptual experience a hinge.

This then impacts on the explanatory gap in the following way. For when a subject is displaying the sort of unthinking and unhesitating mastery of sensorimotor contingencies characteristic of Moyal-Sharrock's six conditions, then the subject's perceptual experience must be a hinge, in the sense that there is no possibility that the subject could be displaying the sort of implicit mastery of the sensorimotor contingencies characteristic of these six conditions and their perceptual experience not be a hinge. In which case, the relation between a subject's mastery of sensorimotor contingencies and a subject's hinge perception is a necessary one. Hence, by framing hinge perceptions in sensorimotor terms, such perceptions then demonstrate how and why there is no explanatory gap between skilful action and perceptual experience and so support the Sensorimotor dismissal of the explanatory gap.

5. Conclusion

The object of this chapter was to show how some enactivists could use Wittgensteinian considerations in order to develop issues currently being debated within enactivism. This objective has now been achieved. By focusing on Sensorimotor Enactivism, I have shown how proponents of this view can use Moyal-Sharrock's reading of Wittgenstein's *On Certainty* to support their dismissal of the explanatory gap. This then offers yet another example of the deep impact that Wittgenstein can continue to have on enactivist thinking.

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Bibliography

Bach-y-Rita, P (1972). *Brain Mechanisms in Sensory Substitution*. Academic Press, New York.

Clark, A (2009). Spreading the joy: Why the machinery of consciousness is still probably inside your head. *Mind*, Vol. 118, 472, 963-993.

Cooke, E & Myin, E. (2011) Is Trilled Smell Possible? How the Structure of Olfaction Determines the Phenomenology of Smell. *Journal of Consciousness Studies*, 18,11-12, 59-95.

Heras-Escribano, M, Noble, J & de Pinedo, M (2015). Enactivism, action and normativity: a Wittgensteinian analysis. *Adaptive Behavior*. 1–14. DOI: 10.1177/1059712314557364

Hurley, S (1998). *Consciousness in Action*. Harvard University Press.

Hurley, S, Noë, A (2003). Neural Plasticity and Consciousness. *Biology and Philosophy*, 18, 131-168.

Hutto, D (2013). Enactivism, from a Wittgensteinian Point of View. *American Philosophical Quarterly*, vol 50, no. 3, pp281-302.

Hutto, D, Kirchhoff, M & Myin, E (2014). Extensive Enactivism: why keep it all in? *Frontiers in Human Neuroscience*, vol 8, article 706.

Hutto, D & Myin, E (2013). *Radicalising Enactivism: Basic Minds without Content*. Cambridge, MA: MIT Press.

Hutto, D, & Myin, E (2017). *Evolving Enactivism: basic minds meet content*. The MIT Press.

Levine, J. (1983). Materialism and Qualia: the explanatory gap. *Pacific Philosophical Quarterly*, 64: pp354-361.

Loughlin, V (2014). Radical Enactivism, Wittgenstein and the cognitive gap. *Adaptive Behaviour*. Vol: 22, no: 5, pp350-359.

Loughlin, V (2019). Wittgenstein's challenge to enactivism. *Synthese*, <https://doi.org/10.1007/s11229-019-02244-3>

Loughlin, V (2020). Why enactivists should care about Wittgenstein. *Philosophia*, [http://doi: 10.1007/s11406-020-00286-3](http://doi:10.1007/s11406-020-00286-3).

Miller, R (2020). Towards a sensorimotor approach to flavour and smell. *Mind and Language*, <http://doi.org/10.1111/milla.12275>

Moyal-Sharrock, D (2004). *Understanding Wittgenstein's On Certainty*. Palgrave MacMillan.

Moyal-Sharrock, D (2013). Wittgenstein's razor: The Cutting Edge of Enactivism. *American Philosophical Quarterly*, Volume 50, number 3, pp263-279.

Moyal-Sharrock, D (2016). The Animal in Epistemology: Wittgenstein's Enactivist Solution to the Problem of Regress. In Annalisa Coliva and Daniele Moyal-Sharrock (Eds), *Hinge Epistemology*, pp24-47. Brill.

Moyal-Sharrock, D (2019). From deed to word: gapless and kink-free enactivism. *Synthese*. doi.org/10.1007/s11229-019-02218-5

Nanay, B (2018). The importance of amodal perception in everyday perception. *i-Perception*, vol 9, issue 4.

Noë, A (2004). *Action in Perception*. The MIT Press. Cambridge, MA.

Noë, A (2006). "Experience without the head". In Gendler, T. S, and Hawthorne, J (eds), *Perceptual Experience*. New York: Oxford University Press.

Noë, A (2012). *Varieties of Presence*. Harvard University Press.

Noë, A (2015). Concept Pluralism, Direct Perception, and the Fragility of Presence. In T. Metzinger & J. M. Windt (eds), *Open MIND*: 27(T). Frankfurt am Main: MIND Group. doi: [10.15502/9783958570597](https://doi.org/10.15502/9783958570597).

Noë, A, O'Regan, K (2002). On the Brain-Basis of Visual Consciousness: A Sensorimotor Account. In Noë, A and Thompson, E (eds), *Vision and Mind: Selected Readings in the Philosophy of*

Perception, pp567-593. A Bradford Book, MIT Press.

O'Regan, K (2009). Sensorimotor Approach to Phenomenal Consciousness. In Bayne, T, Cleeremans, A & Wilken P (Eds.) *The Oxford Companion to Consciousness*, pp588-593. Oxford University Press.

O'Regan, K (2011). *Why Red Doesn't Sound Like a Bell: Understanding the feel of consciousness*. Oxford University Press.

O'Regan, K & Noë, A (2001). A sensorimotor account of vision and visual consciousness. *Behavioural and Brain Sciences*, 24 (5), 939-1031.

Pleasants, N (2009). Wittgenstein and Basic Moral Certainty. *Philosophia*, 37, 669-679.

Steiner, P (2018). Reading and understanding: on some differences between Wittgenstein and 4E cognitive science. *Revista Italiana di Filosofia del Linguaggio (RIFL)*, vol 13, n 2: 124-137.

Thompson, E (2007). *Mind in Life: Biology, Phenomenology, and the Sciences of the Mind*. Harvard University Press.

Varela, F J, Thompson, E, Rosch, E (1991). *The Embodied Mind: Cognitive Science and Human Experience*. The MIT Press.

Wittgenstein, L (1983). *Remarks on the Foundations of Mathematics* (Third Edition, eds: G.H.von Wright, R.Rhess and G.E.M.Anscombe). MIT Press.

Wittgenstein, L (1993). *Philosophical Occasions: 1912-1951* (eds: J.

Klagge and A. Nordmann). Hackett Publishing Company, Indianapolis and Cambridge.

Wittgenstein, L (1998). *Culture and Value*. Blackwell Publishing Ltd.