

Penultimate Draft: Forthcoming in *The Journal of Consciousness Studies*.

Extending Emotional Consciousness.

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Abstract

Recent work on Extended Mind theory has considered whether the material realizers of phenomenally conscious states might be distributed across both body and world. A popular framework for understanding perceptual consciousness in world-involving terms is sensorimotor enactivism, which holds that subjects make direct sensory contact with objects by means of their active, exploratory skills. In this paper, I consider the case of emotional experience, and argue that although the enactivist view does not transfer neatly to this domain, there are elements of emotional consciousness whose physical underpinnings include parts of the extra-bodily environment.

1 Introduction

Are the physical boundaries of our conscious minds to be found within the physical boundaries of our skin? The orthodox answer to this question is *yes* – the material underpinnings of consciousness are strictly confined to structures in the brain. While philosophers who endorse the extended mind hypothesis (EMH) have argued that *cognitive* states and processes may have extra-bodily constituents – typically, informational artefacts that instantiate a closely-coupled, dynamic relationship with a thinking subject – even externalists of this stripe have balked at the prospect of extending the physical basis of phenomenal character (Clark 2009, 2012). There is a theoretical approach to perceptual experience, however, within which the idea that conscious states supervene upon more than just the neural is fully endorsed. On this family of views, veridical perceptual experience is irreducibly relational: sensory consciousness constitutively involves worldly objects and their properties (e.g. Hinton 1973; Martin 2004). A recent influential formulation of this approach that has engaged explicitly with the concerns of extended mind theory is sensorimotor enactivism (Noë 2004, 2008, 2009; Ward 2012), which holds that the perceptual relation between subject and object is made possible through the exercise of embodied skills and understanding. The agent's perceptual contact with environmental features – objects, sounds, shapes, colours – is mediated by her implicit grasp of the patterns of dependence that hold between her exploratory movements and their sensory consequences. The enactivist argues that a full picture of the physical underpinnings of conscious perceptual experience must therefore appeal to forms of activity that loop through the agent's body and her material environment, and thus that the internalist, neurally-confined analysis of consciousness is false. This brand of relationalism about perception, in which external objects form a constitutive component of an episode of experience, thus amounts to an “extended” view of consciousness, albeit one that eschews the representationalism and functionalism that have driven standard formulations of the EMH.

This paper forms a preliminary investigation into the ways in which considerations of this sort play out in the domain of conscious *emotional* experience. My concern is with the possibility that emotional phenomena might be amenable to an extended-mind analysis; specifically, whether the qualitative character of emotional episodes might supervene upon more than just the subject's internal makeup.¹ I will argue that although the resources of sensorimotor enactivism do not transfer neatly across from the perceptual to the affective domain, there are two familiar aspects of emotional experience that lend themselves to a strongly externalist analysis. The first is the closely-coupled engagement between a subject and an external artefact that occurs in certain varieties of emotional self-regulation, while the second involves the distinctive pattern of ways in which opportunities for action show up in the environment to a creature undergoing a particular emotional episode. In both cases, it is appropriate to ascribe a deep and ineliminable role to external objects in the realization of conscious emotional experience.

2 Extending Perceptual Experience

Most of the debate surrounding the possibility of extending the mind has centred upon whether the material realizers of distinctively cognitive states and processes might lie outside the boundaries of the organism (Clark & Chalmers 1998; Clark 2008; Adams & Aizawa 2001; Rupert 2004). More recently, the question of whether conscious states might also extend has been the subject of prefatory examination, in which the focus has been on the nature of the role played by the material environment in episodes of sensory experience. In the cognitive domain, the possibility of extension has largely been motivated by appeal to a coarsely-grained functionalist approach to the mental: we identify a suite of functional characteristics belonging to some familiar psychological phenomenon, and consider whether these features can be instantiated within a system whose physical makeup includes extra-biological constituents.²

When it comes to extending the physical basis of *perceptual* phenomena, however, quite different considerations come into play. The competing parties in the debate do not share a common conception of the fundamental nature of perception, and differ only over whether its material realization is housed within or beyond the head. Instead, the root of their disagreement lies in contrasting metaphysical commitments concerning the kind of relationship that is instantiated when a subject perceptually encounters her environment. On the one hand, there are those who think of perception as the construction of a more-or-less detailed representational depiction of the outside world, generated on the basis of informational input received by the senses. Here, although brain and world can both be seen as partaking in a complex network of causal relations, involving dynamic networks of informational entanglement, it is the neural components alone that are treated as forming the minimal supervenience basis of perceptual consciousness (Clark 2009, 2012).

On the other hand, there are those who conceive of physical objects as playing an ineliminable role in a subject's perceptual experiences, which are understood as

¹ For discussion of the application of EMH to emotion, see Stephan *et al* (2013), Ward & Stapleton (2012), Colombetti & Roberts (forthcoming).

² With those in favour of the extended mind hypothesis arguing that, indeed, they can, such as when the system made up of Otto and his notebook exhibits the functional profile definitive of dispositional belief (Clark & Chalmers 1998). Those critical of the view from an internalist perspective hold that neural resources play a distinctive, and thus constitutive, role in cognition - for instance in virtue of a unique ability to bear underived content (Adams & Aizawa 2001).

essentially relational episodes in which the agent makes contact with parts of the material environment. Rather than thinking of the qualities of experience as arising from some specific pattern of neural activity, that is, this picture sees these qualities as constitutively dependent upon the perceiver's interaction with worldly objects and their properties. Such a view permits an "extended" theory of conscious perception insofar as it does not restrict the physical substrate of a given experience to within the subject's head; however it is a version of the extended mind hypothesis that departs quite significantly from its roots in Clark & Chalmers' original exposition. We are no longer considering the location of representational vehicles, nor examining whether such states are sufficiently well-integrated within an agent's activity to merit being attributed to a single, extended cognitive system. Instead, we have a proposal that disavows the representationalist and functionalist commitments at the core of existing analyses of the extended mind, in favour of a relationalist conception of this element of the mental. The key move permitting the extended or world-involving view of perception here is the switch from thinking of experiential episodes as those in which external objects impinge upon sensory systems in a merely causal manner to thinking of them as relational in nature.

Recent work assessing the relative merits of internalist versus externalist approaches to conscious experience has been pursued in the specific context of evaluating sensorimotor or enactivist³ theories of perception (Ward 2012; Clark 2009, 2012; Noë 2004, 2009). This approach is a variety of relationalism, and aims to explain an agent's perceptual contact with the world by appeal to her exercise of embodied, practical skills and expectations concerning the sensory consequences of her movements. As she actively explores the world, an observer's perspective on its constituents alters: things loom in and out of view; surfaces make fleeting contact with the fingertips; sounds approach and recede. A grasp of these sensorimotor contingencies - predictable patterns of dependence that hold between movements and their sensory implications - is, the defining claim of this view proposes, a prerequisite upon achieving perceptual contact with external phenomena.

These competing philosophical accounts of perception, of course, have commitments both at the personal and subpersonal levels.⁴ The personal level conception of experience offered by the sensorimotor relationalist is the description of perception as a dynamic interaction between the subject and parts of the material world, mediated by her grasp of sensorimotor contingencies, and typically carried out through exploratory action. Although the language of the subpersonal has typically been confined to the distinctively neural structures and mechanisms described by cognitive science, there is no reason why a naturalistic story of the underpinnings of consciousness cannot make ineliminable reference to properties and objects outside of the head, and this is the strategy adopted by the sensorimotor relationalist. At the subpersonal level, this account emphasises not only the internal state of the conscious subject, but also the extended, essentially world-involving loops of interactive engagement that are instantiated during perception.⁵

³ Note that a number of quite distinct views have come under the "enactivist" label, and my comments in the current discussion are to be restricted to those that lay special emphasis on the contribution of sensorimotor understanding to perceptual experience.

⁴ For extended discussion, see Hurley (2010), Ward (2012).

⁵ As Ward (2012: 741) points out, it isn't clear how things could be otherwise if we accept the relationalist view of perception: there is no plausible neurons-only account that would be congruent with this personal-level treatment.

In contrast, the personal level account preferred by the internalist will tend to appeal to conscious states with representational content, understood as the causal deliverances of the agent's various perceptual capacities (such as colour vision, or sensitivity to heat and cold). At the subpersonal level, this approach identifies the physical, informational, and intentional structures and activities responsible for these capacities, such as the mechanisms of detection found in the early visual system, and may preferentially emphasise certain neural phenomena in particular as being minimally sufficient for the qualitative character of perceptual experience.

Any theory that the mind is extended, we can now see more clearly, involves a proposal that is pitched firmly at the subpersonal level: it is a thesis about the spatial boundaries of the material underpinnings of mental phenomena, be they cognitive or experiential. But it is also a thesis that is constrained by one's commitments at the personal level. A certain conception of the nature of a person's *cognitive* states, as representations functionally poised to guide thought and action, is what allows Clark & Chalmers to speak of these states' extended subpersonal vehicles. Attempting to transfer this representationalist way of thinking to the perceptual domain, and to approach the question of whether conscious states might be extended from this perspective, has (so far) failed to yield promising results for the proponent of EMH, given the privileged status typically attached to the neural contribution to experience. Relationalism, as exemplified by the sensorimotor theory, offers an alternative conception of perceptual experience that motivates a different form of externalist, or "extended", subpersonal account: one that sets aside representational vehicles in favour of dynamic and embodied interactions with the environment.

3. Emotional Consciousness

With this in place, the issue of whether *emotional* consciousness can extend is revealed as the question of whether the subpersonal phenomena responsible for the qualitative character of an emotional episode are to be found only within the agent's organismic boundaries. One's answer to this question will again be shaped and constrained by one's personal-level conception of what such episodes essentially involve, as different analyses at this level of description will be more or less congruent with a world-involving subpersonal story. What we ought to pursue, if seeking a treatment of emotional consciousness that is compatible with the extended mind approach, are personal-level accounts of the ways in which subjects come to be related to the world during emotional experience that entail a genuinely world-involving subpersonal analysis of these episodes' realization.

If one adopts a representationalist approach, upon which emotional phenomenal character is exhausted by intentional content, then the prospects for an extended treatment of emotional experience will rest upon whether the vehicles of relevant contents might be located beyond the head. Can the realizers of the intentional content associated with grief, fury, or romantic love include extra-bodily materials? Although it may be unwise to reject this possibility as a matter of principle, as with the perceptual case there are no obvious candidates for external vehicles of conscious emotional content. It simply isn't clear what it would take for an environmental resource to be a component of a mental state whose representational content is distinctively emotional, nor for this to determine the qualitative character of an affective episode. The prospects for an extended mind analysis of emotional consciousness thus appear to be improved

by setting representationalist considerations to one side and pursuing a relationalist platform.

A comprehensive philosophical examination of the material realization of emotional episodes would speak both to the complex dimensions along which these conscious experiences can vary, and to the implications that the various ontologies of emotion that have been developed in the literature have for questions of subpersonal manifestation.⁶ In the current preliminary discussion, however, I will restrict my attention to the more general issue of the ways in which subjects tend to be related to the world during their emotional encounters, as this is the starting point for an assessment of whether an extended analysis of their realization is ever appropriate. Given the wide spectrum of psychological phenomena that we characterise as emotions, it can be expected that some cases may fall more naturally than others into the categories I mention, and some emotional experiences may resist any of the efforts that proponents of EMH may bring to bear.

Recall that sensorimotor enactivism, as a brand of relationalism about sensory experience, offers an alternative to our standard, causal picture of a subject's perceptual encounters with the world. No longer are sensory experiences regarded as neurally-encoded end-products of causal chains leading from outer to inner. Instead, they are construed as interactive episodes of skilful engagement with objects. The first issue to be considered in pursuit of an extended, world-involving analysis of emotional experience, then, is whether what appears to be a *causal* story about the generation of felt emotions in ordinary cases (such as when one is scared by the arrival of a bear, or moved to pity by the sight of suffering) can instead be similarly re-interpreted in relationalist terms. In the following section, I argue that a sensorimotor relationalist approach of the sort that provides a viable candidate for the extension of perceptual consciousness does not offer a suitable understanding of the causal connection between emotional experiences and the world in ordinary cases. However, as I argue in sections 5 and 6, there are alternative ways of thinking about the involvement of parts of the environment in emotional episodes that ascribe to objects a deep role in determining these episodes' qualitative character, without requiring any conceptual upheaval concerning our standard causal picture of how emotional experiences arise in typical cases.

4. Causation

On an internalist analysis, emotional experiences are the causal products of our sensory encounters with the external world, and they supervene upon neural goings-on: replicate the brain activity and the phenomenology of emotion would remain the same. The job of the outside world, on this view, is to causally constrain the inner machinery that is responsible for emotional consciousness. Compare this with the perceptual case, where the default, neurocentric position affirms that information flow through sensory channels sets up the brain states that constitute the supervenience base of experience. The relationalist alternative, we saw above in the form of sensorimotor enactivism,

⁶ The former includes the relative intensity, valence, duration, and so forth of different conscious emotional episodes, as well as the varying degrees to which they involve somatic changes, the contribution of the intellect, or motivational pull. The latter differ over the centrality ascribed to conscious features of emotions in giving a philosophical analysis of these episodes' essential nature. It is plausible, moreover, that emotional experiences involve a multiplicity of components – some embodied, some evaluative, some representational – and an exhaustive treatment, which I will not offer for reasons of space, would disambiguate each component and assess its compatibility with the extended mind approach.

reinterprets this putatively causal connection in terms that ascribe to extra-bodily objects a fully constitutive role in the perceptual relation, and thus captures sensory experience under a strongly externalist framework.

Is it possible simply to transfer the sensorimotor enactivist framework to the emotional domain and draw the same externalist lesson by conceptualising ordinary emotional experiences not as causal products of sensory input, but as world-involving episodes of skilful and dynamic contact with the environment? There are, I suggest, several reasons to believe that the sensorimotor view does not apply to standard examples of emotional experience, and that it is preferable to maintain the view that conscious episodes of this sort are caused, but not constituted, by exposure to the environment.

Firstly, the sensorimotor view adopts a realist perspective on the properties that we encounter in perception – colours, sounds, textures, shapes, and so forth – which are responsible for the qualitative character of experience. To have a visual experience of redness, for example, is to access a property that is out there in the world, by means of exercising one's sensorimotor knowledge and expertise (Noë, 2008, 2009). Redness is not to be considered an intrinsic property of one's conscious perceptual state, but an independent feature of the environment with which it is possible to make sensory contact. This realist framework has no obvious parallel within the emotional domain, however. Feelings of terror, or joy, or surprise have a phenomenal character that cannot be identified with any property of the external object encountered (a bear, a winning lottery ticket, a rude interlocutor). Whereas colours, for instance, are readily (if controversially) understood as mind-independent features of surfaces, available to creatures with appropriate visual sensitivities, there is no plausible candidate environmental property that might explain how a particular emotion feels to its subject.

Secondly, this form of enactivism appeals to a characteristic kind of embodied sensorimotor understanding that has no obvious equivalent in emotional experience. Enactive perception is said to depend upon the agent's implicit grasp of the contingencies that hold between her own exploratory bodily movements and the patterns of sensory change they engender. In the case of shape, for instance, the perceiver must grasp that objects will appear to deform, shorten, narrow, or elongate in characteristic ways as one moves towards, around, or away from them (e.g. Noë 2004: 198-199). Once again, it is not clear that such contingencies hold in the case of emotion experience, nor that emotional encounters with the world have the kind of active, exploratory structure emphasised by the sensorimotor enactivist. Upon encountering the charging bear, the character of one's conscious state of terror is, surely, not determined by an understanding of the sensory consequences of one's movements - the threat of the bear, not its look, is what is important.

Thirdly, a relationalist analysis of emotional experience is challenged by scenarios in which the conscious affective episode occurs in the absence of the external state of affairs that is its ordinary cause and object. Although one may be nervous (guilty, ashamed, resentful, etc) about some feature of one's current, perceivable environment, it is equally possible for one's emotional feelings to detach or decouple from the present state of the world around one, as when one's nerves concern tomorrow's exam, or one is angry about having suffered a past offense. In such cases, the emotional experience is generated endogeneously, and need not involve a direct causal connection to one's surroundings. Importantly, these cases may be just as phenomenologically rich and intense as standard examples; indeed, an episode in which one confronts the object of

one's emotion may feel just the same as one in which the object is absent. This indicates that the phenomenal character of an emotional experience essentially depends upon the subject's internal state in typical cases: the same kind of emotional feeling can be instantiated whether it is caused by an external state of affairs or produced from the inside. Endogenously generated emotions, resulting from memory, imagination, or prediction, are felt despite the subject's not being in any kind of coupled relationship with an object (indeed, where the object of the emotion may not even exist). When the world *is* implicated, moreover, it is best seen as providing merely causal impetus for an emotional experience: the bear triggers my fear when I see it, but it does not form a constituent element of a relationally-construed conscious emotion.

These considerations do not yet demonstrate that we must view the physical underpinnings of episodes of emotional consciousness as biologically confined (indeed, I will defend the position that they are not to be so restricted in what follows), nor that extra-bodily items never make more than a causal contribution to the character of emotional experience. There may be competing brands of relationalism within the tradition of enactivism, or elsewhere, that are capable of overcoming the obstacles that face the distinctively sensorimotor version of this approach. To do so, though, they would have to identify which features of the external world are the ones to be preferentially emphasised as components of emotional experience; explain what kind of active or interactive relationship must be set up in order for an agent to be appropriately connected to these components; and account for the qualitative character of those emotions that are caused by internal rather than external phenomena.

It is significant, though, that sensorimotor enactivism – an influential framework for extending consciousness in the perceptual case – does not appear to have the resources to accommodate emotional experiences in its distinctive terms. If we cannot reconceive the causal influence of the environment upon our emotional experiences as, instead, a constitutive relationship, we must look elsewhere for ways to motivate a strongly externalist conception of these episodes. In the following section, I argue that the kind of world-engaging relationship in which a subject partakes during certain episodes of emotional self-regulation offers a promising option for exploitation by the extended mind theorist.

5. Regulation

A relationship of emotion regulation is set up when part of the world is modified, confronted, attended to, or manipulated in order that it have a certain effect upon one's emotional consciousness.⁷ Enjoying a soothing artwork, drinking strong coffee, or playing a musical instrument are examples of this. The agent is able to predict how her emotional experience will respond to events or changes in the world, and exercise her regulatory capacities in order to bring about the desired phenomenological effects (of relaxation, say, or heightened pleasure). In many standard cases, the contribution of a worldly item to this relationship will be purely causal, and purely uni-directional – a change in the world yielding a modification of one's emotional consciousness. If I listen to soothing music in order to calm my nervous excitement, for instance, the radio I employ need not be seen as anything other than a causal influence upon my ongoing emotional experience. Scenarios of this sort are thus no threat to a strictly internalist analysis of the supervenience base of emotional consciousness.

⁷ See, for example, Gross (1998, 2002), Gross & Thompson (2007) for discussion.

There is a second class of regulatory cases, however, in which objects outside of the agent appear to play a more significant role in accounting for the character of her emotional experiences as they unfold over time, and which are thus plausibly implicated in their material realization. Here, there is a pattern of dynamic, temporally extended activity in which subject and object are densely and tightly woven together in the creation and expression of an emotional experience, such that there are loops of bi-directional causal influence spanning brain, body, and environment. Consider, for example,⁸ a jazz saxophonist, whose musical performance both drives and is driven by her emotional experience, forming a cycle of self-stimulating activity: the tempo, volume, and tone of the music affects the quality of her emotional feelings over time, which in turn govern what, and how, she plays next. In this way, we can suppose, the musician is capable of achieving hitherto-inaccessible emotional feelings, with a depth, intensity, and specific diachronic character that she cannot enjoy without actively engaging with the instrument. An extended theory of the emotional experiences that are achieved in cases of this sort holds that the material basis for the conscious episode is not restricted to the subject's internal states or processes, but essentially includes the dynamic loop of physical activity instantiated within the coupled system as a whole. Any complete account of the physical states upon which the experience supervenes must, on this externalist view, make ineliminable reference to extra-bodily phenomena.

There is an intuitively tempting internalist objection that can be offered at this juncture, and it is worth exploring this in some detail in order to shed light on the responses available to the proponent of EMH here. What if we were to somehow replicate the moment-to-moment unfolding of internal goings-on that transpire within the musician, while extracting her from her world-involving interaction with the saxophone? Wouldn't the internal states, on their own, be sufficient to realise an experience with the same phenomenology? This objection is structurally similar to those involving brain-in-a-vat scenarios (e.g. Smith 1984), which promote internalist theories of consciousness by pumping the intuition that a disembodied brain, somehow kept alive and functioning, would suffice for phenomenal character. Where this strategy has been considered elsewhere in the literature, three related responses have been developed. I will consider each of these briefly in this section, in order to demonstrate that internalism about the material underpinnings of emotional consciousness is not mandatory in cases of tightly-coupled self-regulation.

Firstly, we might accept the feasibility of the thought-experiment, grant that there is a phenomenal experience in the hypothetical, world-excluding scenario, but deny that this has any significant implications for how the experience is subserved in the real-world case (Clark, 2009: 981; Wilson & Clark 2008). Imagine, Clark urges, that we isolate some ever-smaller component of a subject's brain, perhaps down to a single neuron, and house it within an inordinately complex 'vat' that is capable of replicating the intricate web of inputs and outputs that this component typically enjoys when biologically embodied and environmentally embedded. Even if such an artificial system is capable of conscious experience, this gives us no temptation to believe that it is the tiny neural component alone upon which such an experience supervenes. As Clark puts it, brain-in-a-vat scenarios "prove too much" (p980): if successful, they would entail that a single neuron suffices for phenomenal character. Because this is obviously false, we should not trust

⁸ This case is introduced in Colombetti & Roberts (forthcoming). For an examination of musical performance and extended mind theory, see Cochrane (2008).

arguments with this structure that purport to motivate a strongly internalist view. Transferring this result to the saxophone case, we can see that the conceivability of envatting the musician's brain (or some isolated part of it), and simulating the remainder of the integrated loop of regulatory musical activity, does not entail that the neural properties suffice for consciousness on their own.

The second response to the internalist's objection involves denying that the disengaged brain would, in fact, support phenomenal consciousness when unplugged from its interaction with the world (Ward, 2012). The relationalist conception of perceptual awareness, in which both subject and object are constitutive elements of experience, entails this denial: phenomenal character is determined by the properties of the external world, on this view, not simply by neuronal activity. If we conceive of perception as an active, exploratory phenomenon, then experience is simply not possible if we extract the agent from the environment with which she is coupled during perception. Although the intuition that the disembodied brain could enjoy conscious awareness is strong, this position understands it as an artefact of a pre-existing, but defeasible, inclination towards internalism.

We saw above, however, that the relationalist view, with its concomitant realism about perceived properties like colours and tastes, does not apply readily to the emotional domain. It is not easy to conceive of properties of the external world that might be identified with the felt qualities of emotional experience. If we wish to pursue this line of response to the internalist, then, we should not think of the external as supplying qualities that are picked up by the agent, in the way that a red surface determines the character of a visual encounter. If the felt character of an emotion such as grief or envy is not to be understood in terms of the subject's making contact with pre-existing features out in the world, then we should not look to the saxophone as a source or bearer of the properties encountered in emotional experience. Might it still be the case that the neural part of the loop of world-including activity set up in relevant cases of self-regulation is insufficient for the phenomenal character of the episode, and that the supervenience basis of this character subsumes the outer as well as the inner? Without a solution to the notoriously vexed question of the nature of the relationship between the physical and the phenomenal, it is difficult to address this issue decisively. However, there are alternatives to the internalist thesis that neural structures are the only possible substrates of emotional experience in instances of closely-coupled self-stimulating systems. For instance, if it is dynamic and diachronic features of information-flow that are responsible for consciousness, rather than brute biological or neurochemical properties, then the most localised region in which these might be instantiated may be the coupled system as a whole rather than the brain alone.⁹ Although much more would have to be said in order to motivate this option, we can see that it is the kind of candidate theoretical position that might be exploited in the service of extending emotional experience, and so that such an approach is not ruled out by anything other than a very strict commitment to a bio-centric view of phenomenal consciousness. To defend a view that brain properties alone suffice for emotional consciousness, that is, the internalist is obligated to tell us what it is about neural activity that cannot also be instantiated in a world-including coupled system, and it is not obvious that persuasive forms of such arguments exist.¹⁰

⁹ The saxophone case might thus be a counterexample to Clark's (2009) claim that only neural structures are capable of the relevant dynamic properties required for consciousness to arise.

¹⁰ Hurley (2010) dubs this the "magical membrane" problem for internalism.

Thirdly, and finally, we might deny that the thought-experiment in which we are supposed to extract the internal, brain-bound component of some conscious system from the external features with which it is dynamically entangled, while somehow ensuring that it goes through an identical sequence of physical states, is really possible in any interesting sense. Cosmelli & Thompson (2011) develop this response in the course of defending an embodied theory of consciousness, according to which the physical underpinnings of phenomenal character include non-neural aspects of the living body. They argue that any ‘vat’ that is truly capable of replicating the complex array of multi-directional information flow undergone by the brain would itself be a surrogate body (requiring life-sustaining processes of nutritional regulation, metabolism, circulation and so on), and so that what happens inside the brain is not “unpluggable” from the activity of the rest of the organism in the way that the thought-experiment indicates. Neural and non-neural factors are explanatorily inseparable – relevant patterns of dynamic neural activation can only be achieved when they form part of a system functionally equivalent to a living body – and thus the brain-in-a-vat scenario as traditionally formulated is not a physically possible one. For the purposes of neuroscientific explanation, then, the question of the minimal supervenience base of consciousness cannot be addressed without making essential reference to factors that go beyond the neural, and into the rest of the living body. Although it may be *conceptually possible* to disengage the brain from the body while retaining the former’s complicated pattern of activation over time, perhaps through the intervention of some sort of quantum miracle, this mere conceivability claim tells us “nothing of interest”, and leaves the explanatory indispensability of somatic features intact (Cosmelli & Thompson 2011: 174).

Again, we can transfer this lesson to the case of a tightly-interconnected system involved in emotional regulation, and treat the musician’s saxophone, for example, as explanatorily essential for the purposes of the empirical study of her emotional consciousness. In particular, the diachronic ebb and flow of her emotional feelings, their distinctive lurching dips and euphoric peaks, can only be accounted for by appeal to the unfolding cycle of musical give-and-take that occurs between subject and instrument. While it may be conceptually possible to extricate the musician’s brain from her embodied engagement with the saxophone while keeping its activation intact, these hypothetical conditions tell us little about how we ought to investigate the material basis of emotional experience under real-world conditions. The only realistic way to replicate the state achieved by the musician’s brain when she is playing (and when her emotional experience has a peculiar richness and intensity), is to plug it into a dynamical system that replicates the properties of the original musical set-up to a fine degree over time. The internalist perspective does not capture everything of explanatory interest, and this gives us reason to adopt the extended, world-including view of emotional consciousness for scientific purposes.

The three responses to the brain-in-a-vat thought experiment differ in how much they concede to the internalist. The first treats the brain-disengagement scenario as possible, but does not accept that it reflects anything significant about the real-world case. The second treats it as possible, but denies the intuition that neural activity is minimally sufficient for consciousness. The third treats the scenario as not possible in any sense that might be interesting for the science of consciousness, given the explanatory inseparability of inner and outer in cases of closely-coupled self-stimulating systems. If we wish to defend an extended theory of the physical basis of emotional consciousness, then these responses let us counter what is a popular, and superficially quite compelling,

case for internalism and view those objects that partake in especially interactive forms of emotion regulation as full material constituents of emotional experience.

6. Emotions and Affordances

There is a further kind of subject-world relationship instantiated during emotional experience that may be exploited by the proponent of extended consciousness, and that is more pervasive than that which is exhibited in special cases of emotion regulation. Certain forms of emotional experience are intimately tied to the global character of a subject's ongoing patterns of behavioural and perceptual relatedness to the environment. When one is undergoing a conscious emotional episode, one is often drawn towards certain forms of practical engagement with the world and away from others;¹¹ some action possibilities 'show up', and others do not. An episode of intense disgust, for instance, shapes and constrains one's bodily responses towards the object(s) of this emotion: one is strongly disinclined to approach or touch a potent contaminant, say, or to taste it or inhale its odour. An experience of irritation, likewise, structures one's ongoing interactions both with objects and other people; blunting one's civility, sharpening one's voice, or adding a forceful quality to one's movements. In more positive cases such as joyful exuberance, the space of possible activities and opportunities that strike one as available expands, and one encounters one's environment as an arena for free and playful embodied activity, for cordial social engagement, and for the successful pursuit of projects and goals. A fruitful way to understand this emotional modification of one's involvement with the world is to speak in terms of *affordances*: possibilities for action and performance that an environment offers to suitably equipped and embodied observers.

Although several competing theoretical analyses of affordances exist, both in philosophy and ecological psychology (Gibson 1979; Chemero 2003, 2009; Michaels 2003; Scarantino 2003; Turvey 1992), there is a consensus on several of their core features. Affordances are opportunities for action furnished by an environment for a subject, depending not only on the physical features of the situation but on the interests, skills, and embodied capacities of the observer. The same environmental feature can have different affordances for different creatures: an irregular vertical surface, for instance, may afford climbing for animals with strong arms, good balance, and the right kind of training history, or perching for airborne organisms of a suitable size and dexterity. To perceive an affordance is to perceive something both about oneself and about the environment: it implies a fit between one's own capabilities and an opportunity for action, engagement, and achievement.

Affordances can be perceived merely as *possibilities* for action, as when one regards one's surroundings with a disinterested or neutral air, but one's current condition, interests, and appetites tend to ensure that certain opportunities show up as desirable, attractive, or irresistible. The world *solicits* certain possibilities; it *seduces* one into action; it has a particular *allure*.¹² While a well-fed creature may see a ripe mango as edible, this fruit will not attract and draw her attentive engagement in the way that it will for a hungry, undernourished organism, for example. A very tired observer, meanwhile, will not be struck by

¹¹ See Frijda (1986) for a well-known account of emotional experience that emphasises these states' links to action tendencies.

¹² The "soliciting" locution comes from Siegel (2014); "seduction" is described in Ben-ze'ev (2000); "allure" is raised by Rietveld (2008).

the same pattern of opportunities for physical activity that show up with special salience to an invigorated, energetic animal.

If we accept this, it is natural to extend the framework of affordances to the affective domain more widely, and to treat emotional experiences as being intimately related to the array of action-opportunities that appeal to a subject at a time.¹³ It is plausible, too, that the agent's sense of what the world offers her forms a component of the way that her emotional condition feels to her. The claim is, for example, that part of feeling sad and gloomy *just is* feeling that certain opportunities are off-limits, that one is powerless, or that familiar things have lost their appeal. We can think of selective awareness of affordances as composing an element of the phenomenal character of emotional experience even if we do not treat it as exhausting this felt quality (for instance if we want to leave room for a somatic component grounded in an awareness of bodily changes, or for an evaluative or appraisal component with a certain cognitive phenomenology, or for other sources of emotional consciousness). On such a componential picture an experience of fear, for instance, might include feelings of distinctive somatic changes, and an evaluative sense of threat or danger, in addition to elevated awareness of things to be avoided, escape routes to be utilised, and so forth. Consider an individual who is scared of heights. Ascending a vertiginous rock-climbing route, her conscious fear may incorporate feelings of churning in the gut, raised pulse and shallow breathing, and an acute sensitivity to balance and posture. But it also seems inseparable from her experiential relation to the slope and its uneven surface underfoot, to possible hand-holds and her confidence in reaching them, and to her precarious grip on a current place of rest. A relaxed and expert climber, in contrast, will perceive the route as affording easy, fluid movement and an exhilarating sporting experience, with the threat of falling fading into the background of her awareness.

If we grant that the subject's awareness of distinctive patterns of affordance contributes to the conscious character of emotional experience, then the question for current purposes is whether the material substrate of this phenomenon might somehow be distributed across both inner and outer. Consider the internalist perspective first. It is possible to treat one's awareness of affordances as a representational matter: possibilities for skilful bodily engagement are included in the content of experience, alongside more obviously action-neutral features such as colours, shapes and sounds (e.g. Millikan 1996; Siegel 2014; Ward *et al* 2010). Here, the distinctive pattern of affordances associated with a particular emotion would be depicted by an intentional state – part of being fearful, for instance, would be to represent one's environment as furnishing certain opportunities for action. The vehicles for these contents are then naturally understood as in-the-head products of sensory processing, in line with the tenets of traditional representationalist theories. This would be to think of the physical manifestation of emotional colouring as coincident with the material vehicles of relevant intentional states.

There are reasons to believe, however, that the representationalist analysis of the perception of affordances can be resisted. Indeed, ecological psychology has long preferred a *direct* account of affordance perception (Gibson, 1966, 1979), according to which organisms pick up on affordances by means of a sensitivity to dynamic patterns of information that are available in the environment, and do not construct representational depictions of them. Without rehearsing the full details of the Gibsonian framework, we can note some of its central tenets. Chemero (2009) argues, in a sustained recent defense

¹³ For discussion, see Ratcliffe (2009).

of the ecological approach, that the resources of dynamical systems theory obviate the need to posit representational intermediaries between the subject and the affordances she encounters. Perception is noninferential and non-computational, and its function is to guide adaptive behaviour. There is sufficient information within the environment that perceivers who are actively engaged with the world do not need to add a further layer of cognitive processing or representation-building in order to act intelligently.

The direct theory of the perception of affordances is, of course, a relationalist view: it makes ineliminable reference to features that belong not (or not only) to the subject of experience but to the world beyond the limits of the organism. The supervenience basis of perception, conceived of as the direct pick-up of information concerning possibilities for action, includes the extra-bodily phenomena that partake in cycles of interactive engagement between the organism and her environment. Thus, if we think of the agent's awareness of distinctive patterns of affordances as forming one component of her emotional experience – perhaps among several - we have the basis for an extended treatment of this aspect of her affective consciousness.

We can think of this as a partial success in transferring the sensorimotor enactivist's view to the emotional domain, albeit with some caveats. While the perception of affordances is, indeed, to be understood as a form of direct contact with the world that is mediated by a grasp of motor-induced sensory changes, the action-possibilities that are picked up by the agent are not the kind of subject-independent properties appealed to by the sensorimotor enactivist.¹⁴ Moreover, note that when a subject undergoes an emotional experience that has a certain object, the things in the world that show up as affording opportunities for action may include *other* objects. My rage, for instance, may be directed at a specific event but come to colour my interaction with a variety of people and things. It follows that this affordance-involving aspect of an emotional experience can be exhibited even when the object of the emotion isn't present: my nervous anticipation about tomorrow's exam (not something with which I can currently become dynamically coupled) can have an effect upon how I am drawn to, or away from, the affordances furnished by my environment today.

7. Conclusions

Is the physical basis of emotional consciousness always biologically confined? We have seen that a solution to this question rests upon one's prior take on the essential nature of emotional experience. If one's starting point is a representationalist analysis of emotional phenomena, for instance, then the default internalist position is hard to overthrow, for it is difficult even to conceive of conditions under which the material vehicles of conscious emotional contents include parts of the nonbodily environment. In defending a relationalist treatment of (some aspect of) emotional experience, however, further externalist options become available. In the perceptual domain, this line has been pursued in the form of sensorimotor enactivism, according to which the subpersonal underpinnings of consciousness are said to include parts of the world with which the agent makes a form of active, exploratory contact, mediated by a skilful grasp of the sensory consequences of movement. The externalist theory of perception that this position incorporates differs in structure from standard formulations of EMH in that it

¹⁴ Affordances are, however, comparatively well understood and naturalistically respectable features, and so treating them as part of a relationally-defined component of emotional experience ought to be largely unproblematic.

does not see sensory experience as something that is usually found within the head, only to extend under exceptional conditions, but instead construes it as always and constitutively world-involving.

This fully relationalist picture does not appear to transfer neatly to the case of emotional consciousness, for there are reasons to believe that not all affective experiences involve entering into the necessary kind of coupled relationship with the environment. Some emotions are felt in the absence of their objects, and so cannot gain their phenomenal character from the world in the way that the enactivist has proposed. The subject's understanding of patterns of sensorimotor dependence, too, does not obviously determine the subjective quality of her emotional experiences in the way that it may do in the sensory case. Emotions are more concerned with how the agent is faring in the world – how her interests are threatened or promoted by events around her – than with the fine details of motor-induced sensory consequences.

Nevertheless, a relationalist approach bears fruit when applied to two more narrow elements of emotional phenomenology. Firstly, there are instances of emotional regulation in which the agent's engagement with a material artefact during a prolonged conscious episode involves such a dense and mutually-constraining cycle of entanglement that any explanation of the episode's conscious character appears to implicate both internal and external constituents. Secondly, emotional experience tends to involve a transformation of the space of affordances – the pattern of action-opportunities that show up with special salience for an agent – and a relationalist account of this form of awareness can be found in the direct perceptual theories of ecological psychology.

Acknowledgements

Thanks to Giovanna Colombetti and Joel Krueger for helpful input on an earlier draft. This work has been funded by the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013), project title "Emoting the Embodied Mind (EMOTER)", ERC grant agreement 240891.

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