

Forthcoming in Philosophical Psychology

EXTENDED EMOTION

J. Adam Carter, Emma C. Gordon & S. Orestis Palermos

Abstract: Recent thinking within philosophy of mind about the ways cognition can extend (e.g. Clark 2011; Clark & Chalmers 1998; Wilson 2000, 2004; Menary 2006) has yet to be integrated with philosophical theories of emotion, which give *cognition* a central role. We carve out new ground at the intersection of these areas, and in doing so, defend what we call the *extended emotion thesis*: i.e., the claim that some *emotions* can extend beyond skin and skull to parts of the external world.

0. INTRODUCTION

Under certain descriptions, the claim that emotions ‘extend’ can be used to express ideas that are natural and familiar. Marshall McLuhan, for instance, famously advocated a very broad and intuitive idea of ‘human extension’ according to which individuals’ intellectual and emotional lives could be thought of as ‘extending’ into the world, through the resources of mass media and technology¹. Within academic philosophy, at least one familiar expression of the idea of emotions ‘extending’ can be traced to David Hume’s account of motivational psychology; on this view, sentiment is necessary to motivate action, and thus as the thought would go, we might think of emotions as ‘extending’ through the causal vehicle of the actions they motivate.

A much more provocative way, however, to think about emotions extending is along the following lines: that emotions *themselves* can extend beyond biological agents, and include parts of the physical world, external to the agent. On this proposal, the notion of emotions extending is not a metaphysically innocent metaphor: rather, some emotions *themselves* are claimed to supervene partly on extraorganismic elements in the

¹ McLuhan (1964)

world. Call this more provocative thesis—that some emotions can in principle be extended in the more radical sense just described—the *extended emotion thesis*.

Note that the extended emotion thesis differs in important respects from other views on which emotions may be taken to extend beyond the agent’s head to its body—e.g., *embodied emotion theories* (for a philosophical take see Prinz 2004a, 2004b; for more experimental approaches see Niedenthal 2007, Schnall et al 2008, Sander et al. 2005, Scherer 2009)—or even beyond individual organisms to social groups—e.g., *collective emotions theories* (see for example (Scheve & Salmela, 2014) and (Scheve & Ismer, 2013)).

The extended emotion thesis is more radical than embodied emotion theories in that, unlike the embodied emotion thesis, it takes emotions to extend beyond the agent’s body to aspects of its dynamic environment. It is perhaps less radical however than *collective* emotion theories according to which emotions may be distributed amongst several individuals.²

Although the extended emotion thesis perhaps sounds bizarre on first blush, we will argue here that it is actually a plausible thesis to embrace, and in doing so, we show how it follows from stronger and then progressively weaker pairings of positions on the nature of our minds and on the nature of our emotions.

Our plan is this: in §1 we outline two varieties of ‘active externalism’ in the philosophy of mind; *viz.*, the extended mind thesis (EMT) and the comparatively weaker hypothesis of extended cognition (HEC). In §2, we articulate a range of views within the psychological appraisal family of positions (of which *cognitivist theories* are considered but one version) and show that both EMT and the comparatively weaker HEC, when taken in conjunction with a reasonably stated dynamic interpretation of even the weakest appraisal theories of emotions (§3), entail that some of our emotions extend beyond the brain and body. Accordingly, we conclude (§4), the *prima facie* striking extended emotion thesis is hardly as implausible as it might initially seem.

By way of emphasis, the line we shall be advancing here is *not* the unqualified claim that the extended emotion thesis is true. Rather, it is a more cautious

² We emphasise that a clear distinction must be drawn between two senses of ‘collective emotion’, by perhaps retaining the term ‘distributed emotions’ for the claim that emotions can be constituted in a distributed fashion, while applying the term ‘shared emotion’ to emotions that are merely common between the members of a group. Moreover, with respect to the idea of ‘collective emotions’, a referee correctly points out that the term may apply, and indeed has been applied by, for example, (Scheve & Salmela, 2014) to denote both emotions that are merely ‘common’ between the members of a group and emotions that are constituted by all the (or at least several) members of a group at the same time

exploratory line to the effect that: what sounds *prima facie* like a radical way to think about the nature of emotions as extended can be in fact motivated given progressively weaker (and thus increasingly less implausible) premises about mind and emotion, respectively.

1. EXTENDED COGNITION: AN OVERVIEW

As a general approach to the nature of mind, active externalism (Clark and Chalmers 1998; Clark 2007, 2008; Hutchins 1995; Theiner 2011; Wheeler 2005; Menary 2006, 2007; Rowlands 1999; Wilson 2000, 2004) is standardly contrasted with Putnam (1975) and Burge's (1986) meaning, or *passive*, externalism, because active externalism concentrates on the aspects of the environment that *drive* one's intellect in an ongoing way. Additionally, in the literature, there are several available versions of the view (some admittedly stronger than others), motivated on a wide range of different arguments and denoted by a multiplicity of names that parallels the number of its proponents: the extended cognition hypothesis and the extended mind thesis (Clark and Chalmers 1998), environmentalism (Rowlands 1999), locational externalism (Wilson 2000, 2004), cognitive integration (Menary 2007), third wave extended cognition (Sutton 2008, 2010, Kirchhoff 2012) and so on. Here, however, we will only focus on the two most traditional lines of arguments and corresponding versions of active externalism, namely the extended mind thesis and the extended cognition hypothesis (HEC).³

Focusing on *cognitive processing*, HEC is the claim that “the actual local operations that realize certain forms of human cognizing include inextricable tangles of feedback, feed-forward and feed-around loops: loops that promiscuously criss-cross the boundaries of brain, body and world” (Clark 2007, §2). Think about solving a mathematical problem by using pen and paper or perceiving a chair through a tactile visual substitution system.⁴ According to HEC, the utilisation of the external artefact is

³ We will not here discuss the objections facing active externalism, which we use as a premise to our arguments. In brief, however, many of the existing worries point either to the dissimilarity between the inner cognitive processes and the external elements that are supposed to be parts of one's cognitive system (e.g., Rupert 2004; Adams & Aizawa 2008), or to the perceptive rather than introspective manipulation of those external elements. Others deny the mark of the cognitive to the alleged extended cognitive processes (e.g., Adams & Aizawa 2008), or claim that there cannot be a science of active externalism (e.g., Rupert 2004; Adams & Aizawa 2008). For a short discussion and reply to most of these objections, see Menary (2006).

⁴ See Bach-y-Rita and Kerrel (2003) for a recent review on TVSS.

(much like the consultation of one’s biological brain, in the default case) part of the on-going cognitive processing.

In contrast, instead of concentrating on cognitive processes, the extended mind thesis claims that it is *mental states*—such as beliefs and desires—that get extended.⁵ The typical argument (Clark & Chalmers 1998) involves an Alzheimer’s patient whose mind is taken to extend to his notebook in the sense that his dispositional beliefs are partly constituted by it. Relying on extended dispositional beliefs, however, makes the view significantly more provocative than the claim that there are extended cognitive processes, because the existence of extended mental states—such as extended dispositional beliefs—is a claim that is more counterintuitive and thereby less easily motivated than the claim that there are extended cognitive processes. In fact, arguments for the extended mind thesis usually rely on a sort of common-sense functionalism⁶ that does not seem to be necessary in arguments for HEC.⁷

To see how common-sense functionalism comes into play, consider Otto, the Alzheimer’s patient mentioned above, who compensates for his failing memory by

⁵ Two potential worries might be raised with respect to our distinction between the extended mind thesis and the extended cognition hypothesis. First, as a referee for this journal suggests, one might question the precedent for such a distinction in the literature on the basis that critics of active externalism (e.g., Adams, Aizawa and Rupert) seem to not distinguish between the two views, by being equally hostile to both. Second, the referee also claims that we should not equate the distinction between cognition and mind with the distinction between processes and states, “as if there are no mental processes and no cognitive states”. With respect to the first point, we would like to insist that, indeed, there is such a clear distinction available in the literature and that a failure to address such a distinction on the part of the critics of active externalism can only undermine their objections to this general approach to the nature of mind rather than set the dialectics or determine how we should understand active externalism. Indicatively, when Clark and Chalmers introduce the extended mind thesis in their original paper (1998), they write: “So far we have spoken about ‘cognitive processing’, and argued for its extension into the environment. Some might think that the conclusion has been bought too cheaply. Perhaps some *processing* takes place in the environment, but what of the *mind*? Everything we have said so far is compatible with the view that truly mental states—experiences, beliefs, desires, emotions, and so on—are all determined by states of the brain. Perhaps what is truly mental is internal, after all? We propose to take things a step further” (12). Moreover, for a distinction between the extended mind and the extended cognition hypothesis that is very similar to the one we advocate above, see (Shani 2013)—though note that Shani refers to the extended cognition hypothesis as ‘process externalism’. With respect to the referee’s second point we would like to clarify that we take the adjectives ‘cognitive’ and ‘mental’ to be identical such that ‘cognitive processes’ and ‘mental processes’ refer to the same things and so do ‘cognitive states’ and ‘mental states’. Nevertheless, as Clark and Chalmers’ (1998) above quote indicates, and in line with our distinction in the main text, the extended cognition hypothesis is normally associated with mental/cognitive *processes* whereas the extended mind thesis is supposed to concern cognitive/mental *states*. Thanks to an anonymous referee for this suggestion.

⁶ The term ‘commonsense functionalism’ comes from Braddon-Mitchell and Jackson (2007). Thanks to an anonymous referee for drawing this to our attention.

⁷ This does not mean that the hypotheses of extended and distributed cognition are incompatible with common-sense functionalism, or that they are anti-functional on the whole. In so far as a cognitive process is a function, these two hypotheses are compatible with functionalism. For more details see (Palermos 2014b).

always carrying a well-organized notebook. In order to claim that Otto believes a piece of information inscribed in his notebook even before looking it up—say that MOMA is on 53rd street—Clark and Chalmers (1998) compare him to a normal subject, Inga. Upon hearing about an interesting exhibition at MOMA, Inga thinks, recalls that the museum is on 53rd street and starts walking to the museum. Contemplating the case, Clark and Chalmers claim that if one wants to say that Inga has her belief before consulting her memory, then one can also claim that Otto believes that the museum is on 53rd street, even before looking up the address in his notebook. This is because the two cases are *functionally on a par*; given our everyday, common-sense understanding of how memory works, we can make the following claim: “the notebook plays for Otto the same role that memory plays for Inga; the information in the notebook functions just like the information [stored in Inga’s biological memory] constituting an ordinary non-occurrent belief; it just happens that this information lies beyond the skin.” (Clark & Chalmers 1998, 13)

Moreover, in order to make this common-sense functionalist claim more plausible, Clark (2010) notes that, just as in the case of biological memory, the availability and portability of the resource of information should be crucial. Accordingly, he has offered the following set of (common-sense functionalist) criteria to be met by non-biological candidates for inclusion into an individual’s mind:

- 1) “That the resource be reliably available and typically invoked.”
- 2) “That any information thus retrieved be more-or-less automatically endorsed. It should not usually be subject to critical scrutiny. [...] It should be deemed about as trustworthy as something retrieved clearly from biological memory.”
- 3) “That information contained in the resource should be easily accessible as and when required.” (Clark 2010, 46)⁸

A problem, however, with the extended mind thesis and especially the idea of extended dispositional beliefs is that the above criteria can be too easily satisfied,

⁸ While this paper was first published in 2010, it has been available online since 2006. The ‘glue and trust’ criteria, however, had already made their appearance in Clark & Chalmers (1998), although the phrasing was somewhat different. Also note that, in (Clark & Chalmers 1998, 17), the authors consider a further criterion: “Fourth, the information in the notebook has been consciously endorsed at some point in the past, and indeed is there as a consequence of this endorsement”. As the authors further note, however, “the status of the fourth feature as a criterion for belief is arguable (perhaps one can acquire beliefs through subliminal perception, or through memory tampering?)”, so they subsequently drop it.

leading to unwelcome results. Many critics are suspicious even of the Otto case, but it is easy to generate numerous other counterexamples. Rupert (2004, pp. 401–405), for example, notes that a case similar to Otto is the case of a person who has access to a phonebook, or a directory service, through the use of her cellular phone. Admittedly, however, it would be counterintuitive to conclude that the phonebook, or the directory service is part of her mind in the sense that it allows her to have nonoccurrent true beliefs about the phone numbers of everyone whose number is listed. In other words, if any externally stored information that satisfies the ‘glue and trust’ criteria were to count as a dispositional belief of ours, we would be led to a ‘cognitive bloat’ (Clark, 2001; Rowlands, 2009), whereby our minds would appear to ‘leak’ too far into the world.⁹

As noted before, however, contrary to the extended mind thesis, in order to motivate HEC we do not need to rely on common sense functionalism (and the three criteria it generates). The reason is that the motivation for HEC does not rely on a claim about mental states, but on claims about extended *dynamical* cognitive processes and the extended cognitive systems these processes give rise to—a change of focus that allows, instead, the employment of the conceptual framework of dynamical systems theory (i.e., the most powerful mathematical framework for studying the behavior of dynamical systems in general).

This has turned out to be particularly useful, because, according to dynamical systems theory, in order to claim that two (or more) systems give rise to an overall extended (*viz.*, coupled) system, what is required is the existence of non-linear relations that arise out of *mutual interactions* between the contributing parts (Chemero 2009, Froese et al. 2013, Sutton et al. 2008, Theiner et al. 2010, Tollefsen & Dale 2011, Palermos 2014*b*). Accordingly, on the basis of dynamical systems theory, we can claim that in order to have an extended cognitive system, all we need is that the internal and external parts interact mutually with each other. The existence of such processes of mutual interactions is a requirement that clearly goes unsatisfied in Rupert’s case of the directory service, as well as in similar cases, but may be satisfied in others.

Think, for example, of the solution of a three-digit multiplication problem such as 987 times 789. It is true that few if any of us can solve this problem just by

⁹ Farkas (2012), for example, gives the additional example of Lotte who has downloaded 37 volumes of the history of Europe with a quick search function from a source she completely trusts, and Lynch (forthcoming) worries that, by the extended mind logic, much of the information online should count as our dispositional beliefs.

looking at or contemplating on it. We may only perform the multiplication process by using pen and paper to externalize the problem in symbols. Then we can serially proceed to its solution by performing simpler multiplications, starting with 9 times 7, and externally storing the results of the process for use in later stages. The process involves eye-hand motor coordination and is not simply performed within the head of the person reciting the times tables. It involves intricate, continuous interactions between brain, hand, pen and paper, all the while it is being transparently regulated by the normative aspects of the notational/representational system involved—for instance, that we cannot multiply by infinity, that we must write the next digit under the second to last digit of the number above, what operation we must perform next and so on.

What about the case of Otto, however? If we imagine him as being very well trained and organized, constantly having his notebook open, going back and forth over its pages, looking up its contents as well as taking notes about almost every single detail that would normally be registered in his biological memory, then we can say that he does continuously and mutually interact with his notebook too. Accordingly, we can use HEC in order to provide a less provocative way to understand this case (and similar ones). According to this alternative reading, Otto's cognitive system does not extend because any of his dispositional beliefs extend, but because his utilisation of the notebook has become part of the *cognitive process* that constitutes his memory. This is not a claim about *any* of Otto's beliefs, but a claim about *the process* that supports his occurrent beliefs. According to HEC, our beliefs—no matter whether they are supposed to be dispositional or occurrent—are not what is said to be extended. Our dispositional beliefs, however, are only one part of the overall process of memory and, in contrast to them, the processes supporting, sustaining, or even generating our beliefs may indeed extend in the way explained above. Accordingly, the hypothesis of extended cognition can still lead to the claim that memory (which is closely associated to one's conscious mind) extends, but in a way that avoids the shortcomings of putting forward the same conclusion in terms of the extended mind thesis, as motivated by common-sense functionalism.

2. THE COGNITIVIST ARGUMENT FOR THE EXTENDED EMOTION THESIS

2.1 *Cognitivist Accounts of Emotion*

Due to the fact that epistemic evaluations (e.g. evaluations along truth-linked dimensions) of belief-forming cognitive processes are an important element of epistemological theory, there is a straightforward connection between the hypothesis of extended cognition (HEC) and epistemology:¹⁰ namely, if the former is true, then the subject matter of the latter is expanded so as to include a wider class of processes subject to epistemic appraisal. Meanwhile, cognition also has an indispensable role to play in mainstream philosophical theories of emotion, but this potential connection between HEC and the philosophy of emotions has received so far little sustained attention¹¹.

As we will see, HEC in conjunction with either of the two available appraisal theories of emotion—according to which emotions involve some element of appraisal—form the basis for a straightforward argument for what we'll call the 'extended emotion thesis': The thesis that at least some emotions supervene on parts of the world, external to biological agents themselves. §3 will assess versions of this family of views that do not specifically require any occurrent propositional attitudes; First, however, in this section, we'll consider how the extended emotion thesis is

¹⁰ For a sample of some recent work at the intersection of extended cognition and mainstream epistemology, see Pritchard (2010); Giere (2012); Kirchhoff & Newsome (2012); Menary (2012); Kelp (2013), Carter (2013), Carter et al (2014) Carter & Kallestrup (2014), Carter & Palermos (2014), Carter & Pritchard (*Forthcoming*), Palermos (2013; 2014a) and Palermos & Pritchard (2013).

¹¹ There are a few exceptions. Stephan et. al., (2014), though they focus on *embedded* emotions, consider the possibility of extended emotions in §6 of their paper. See in particular their case of 'Arnold' (p. 74), an autistic individual who is equipped with a headset camera connected to a computer supplying him with real-time online information about the emotional states of his interaction partners. While the information fed into the program causally affects Arnold's responses, his responses do not similarly play a role in shaping or informing the information supplied to him by the external device. Contrast this with the notebook (in Clark & Chalmers' case of Otto, and in INSULT* and GLOSSOPHOBIA*), where the causal interaction reciprocal. See also Greenwood (2013) for an argument that specifically *human emotional ontogenesis* is a world-to-brain transcranial achievement (p. 420). As with the case of Arnold, Greenwood's claims about emotional *ontogenesis* fall short of the stronger claim we motivate here, which is that emotions themselves will (either on EMT or HEC) supervene on parts of the world. See here, also, Krueger (2013) who nicely taxonomises a range of ways emotions might potentially be extended, and argues for the view that 'music... becomes part of the extended vehicle needed to bring about certain emotions' (Krueger 2013, 6); though Krueger's argument seems to establish just that music would, under certain circumstances, be an *enabling condition* for certain emotions. Contrast this with the more radical claim that emotions themselves can supervene on music. While Krueger considers how emotions might be extended in the stronger sense we defend (what Krueger calls the hypothesis of individually extended emotions) Krueger does not go so far as to defend the view. Slaby (2014) by contrast does defend such a position, though, only in the context where it is EMT (rather than HEC) that must be granted in the background. Given that HEC is easier to motivate than EMT, our proposal demonstrates a simpler way to the conclusion, and further, unlike Slaby's proposal, does not rely on a further need to motivate 'phenomenal coupling'. Likewise, Colombetti & Roberts (2014), while they argue that one who endorses EMT should accept more generally extended affective states, they are motivating their argument (as Krueger is) via EMT, rather than the HEC.

straightforwardly motivated by *cognitivist* versions of appraisal theories that *do* involve propositional attitudes.

Unlike non-cognitivist ‘Jamesian’ theories of emotion,¹² according to which emotions are understood broadly in terms of feelings caused by awareness of bodily changes, *cognitivists* view emotions as exhibiting intentionality,¹³ as world-directed, and as characterized by certain *cognitions*. The cognitions usually appealed to by cognitivists are *judgments*, *evaluations* and *appraisals*, whereof these terms are often used interchangeably.¹⁴ Cognitivist accounts, we should note at the outset, face a number of well-rehearsed objections (e.g. regarding the rationality of emotions as well as apparent recalcitrant emotions),¹⁵ and the responses they have available may or may not ultimately vindicate all (or indeed any) forms of cognitivism;¹⁶ further, to be clear, the plausibility of an extended emotions thesis—while as we shall see can be generated straightforwardly given some variety of cognitivism—does not rely entirely on the plausibility of cognitivism. Thus, for our purposes in this section, it is enough that (i) cognitivism (in various forms) is considered a viable option in the philosophy of emotion, and (ii), and (as we shall see) if certain plausible versions of cognitivism and HEC are true, then an argument for extended emotions follows.

Against this background, it is important to note that cognitivist positions come in various strengths *vis-à-vis* the *role* of cognitions in distinguishing emotions, and we can think of these views as ‘stronger’ or ‘weaker’ on the basis of whether cognitions are

¹² See James (1890). James’s account of emotion also features in the well-known James-Lange theory of emotion.

¹³ See here Hutchinson (2009, 61).

¹⁴ We’ll return to the important issue of what these cognitions actually involve.

¹⁵ For example, one of the most common objections (see e.g. Goldie 2000 Lyons (1980) and Elster (2003) is that the view implausibly explains the rationality of emotions with reference to the rationality of standard propositional attitudes (i.e. beliefs or desires) in terms of which cognitivists often advert when characterizing the judgments that feature in emotions. Other dissenters focus on so-called ‘recalcitrant emotions’ (e.g. D’Arms and Jacobson 2003 and Brady 2009). For example, cognitivists struggle with the fact that it seems possible to judge that it is safer to fly than it is to drive and nonetheless find oneself paralyzed by a fear of flying, and that it is possible to believe that someone has bad intentions without having a corresponding emotional response. Some defenders of cognitivism try to respond by arguing that the judgments featuring in emotion are more like that of perception than that of beliefs; others draw on the potential similarity between perceptions and emotions to support the idea that the content of either might not be limited to *propositional* content. See for example Peacocke 2001, Goldie 2000, Charland 2002 and Tappolet 2003.

¹⁶ It is worth noting here that the often cited recalcitrant emotion examples (if they hit the mark) simply show that not *all* emotions can be assimilated to propositional attitudes—as a result, some version of cognitivism may still be used as one of the building blocks for an extended emotions thesis on which *some* emotions extend beyond the skull and skin.

said to be *exhaustive* of, or merely *necessary components* of, emotion.¹⁷ As we'll see, our argument for the extended emotion thesis will follow from *either* the strong or weak construal of cognitivism.

Let's call 'strong cognitivism' (e.g. Nussbaum 2001; Solomon 1980; and Neu 2000) the 'pure' variety of cognitivism according to which emotions are exhaustively explained—with no remainder—in terms of cognitions. For example, a strong cognitivist picture might say that Wesley's indignance is *just* a matter of his judging, appraising, or evaluating a certain behavior as unfair, and that Charles's shame is *just* a matter of his judging himself to have failed to live up to a particular ideal.¹⁸ Accordingly, for strong cognitivists, the cognitions featuring in certain judgments are understood as necessary *and* sufficient for possessing certain emotions.

This view might sound, on first blush, 'over-intellectual'; for instance, one might be tempted to immediately object that emotions surely involve something *more*. When we are sad, for instance, we might find ourselves feeling a 'lump in the throat' sensation and notice that our muscles are more tense than usual. Cognitivists however anticipate this stock worry. Here Nussbaum insists (2001: 56-7) that 'nonthinking movements' are not *necessary* for emotions, in the sense that there is no consistent correlation between particular movements and particular emotions', while certain cognitions *are* strictly correlated with certain emotions¹⁹ (or so the strong cognitivist line goes here).

Now, regardless of whether *strong* cognitivism is itself a plausible theory of the nature of emotion, the following seems to be the case: *if* HEC is right—then if the cognitions that strong cognitivism identifies with emotion are (with reference to HEC) themselves extended, *then some emotions will be extended*.

That said, an interesting worry lurks in the background—one which as we shall see turns on the important distinction between *static* and *dynamic* interpretations of the cognitivist's position. Consider that cognitions claimed by cognitivists to feature in emotion lend themselves to both 'static' and 'non-static' interpretations.²⁰ On cognitivist views according to which the relevant cognitions comprising emotions are

¹⁷ We could also envision an even weaker version than the one we explore here, according to which cognitions are *necessary antecedents* of emotions. The extended emotion thesis, however, cannot be motivated by a view that is this weak, but rather, only by views on which the cognitions are either exhaustive of, or an essential ingredient of, emotion. Thanks to a referee for raising this point.

¹⁸ See Scarantino (2010) for a helpful diagram of such examples.

¹⁹ Some other cognitivists (e.g. Broad (1971) and Lyons (1980)) do branch out from a general claim about emotions as judgments and suggest that emotions should be seen as *affect-laden* judgments.

²⁰ See Kenny (1963, 171-186) for the *locus classicus* of this discussion.

just *propositional attitudes* (e.g. beliefs), the relevant cognitions are ‘static’ (as propositional attitudes, such as beliefs, are supposed to be states rather than processes). Accordingly, the claim that cognitions feature in emotion will be, on this interpretation, orthogonal to HEC’s claim that some cognitive *processes* are extended. As noted in §1, HEC, in this respect, is weaker than the (comparatively more radical) *extended mind thesis*, as HEC, but not the extended mind thesis, remains silent as to whether mental *states* can themselves be extended (e.g. the state of holding some propositional attitude *vis-à-vis* a formal object of emotion). Accordingly, on *static* interpretations of the cognitivist thesis—where emotions are constituted by static cognitive states—it would take the more radical *extended mind thesis*, rather than HEC, to generate what we’ve called the extended emotion thesis.

The ‘static’ interpretation of the relevant cognitions at play in the cognitivist’s thesis, however, can be contrasted with a ‘dynamic’ approach to the thinking about the relevant cognitions—*viz.*, as a kind of *judging process*, rather than a non-dynamic (static) state. On the dynamic interpretation, to be clear, a cognitive process is not a mere causal antecedent to a non-dynamic state, which is supposed to be the only real part of the relevant emotion.²¹ Rather, as Scherer (2009) puts it, ‘the evaluation process is considered to be part of the construct of emotion.’²²

Moreover, we should here mention two points about the dynamic/static interpretation of the cognitivist position, before moving further. Firstly, while strong cognitivists such as Nussbaum and Solomon (and indeed, cognitivists more generally) are happy to talk of judgments, evaluations and appraisals in the familiar language of *propositional attitudes*, they are quick (as we’ll see) to back away from such a conservative construal of the relevant judgments when pressed.²³ Secondly, there is good reason to do so, given that (as Scarantino has noted) various problems accompanying a commitment to the static construal of the view, can be better handled by the dynamic interpretation.

Regarding the first point and in response to the objection that emotions, but not static propositional attitudes, have a distinctive kind of phenomenology,

²¹ Thanks to an anonymous referee at *Philosophical Psychology* for requesting clarification on this point.

²² As Sander, et al. (2005) remark, ‘[Appraisal] requires the interaction between many cognitive functions and their underlying neural circuits in the process of comparing the features of stimulus events to stored schemata, representations in memory and self-concept, and expectations and motivational urges of high priority. See here also Leventhal & Scherer (1987). See here also Scherer’s (2001) component process model of appraisal mechanisms in emotion. For a dynamic systems modeling approach to cognitive mechanisms of emotion, see Lewis (2005).

²³ See Scarantino (2010, 744) for a helpful discussion of this point.

Nussbaum (2001)—one of the strictest proponents of cognitivism writes: “I am conceiving of judging as *dynamic*, not static”—which is to say, in terms of *processes* rather than states. Likewise, Solomon has also submitted a more liberal conception of judgment than one on which only propositional attitudes are doing the relevant work. For instance, in response to objections to do with emotions attributed to animals and children (who lack certain linguistic and conceptual capacities), Solomon has written that ‘[o]ne can, and sometimes must, speak of *bodily judgments*’ (Solomon [2003], p. 213).” And elsewhere, Solomon explicitly claims that the judgments he has in mind can include *skills and practices*, such as knowing-how. These remarks, we want to emphasise, are coming from the very strictest proponents of cognitivism.

Without the move from the static to dynamic interpretation of cognitions, it’s thus hard to see how the cognitivist is going to avoid the phenomenological and child/animal objections that look much more worrying for a view on which the relevant cognitions are non-dynamic. On this point, consider Scarantino’s (2010, 742) remark that:

The strategy of fine-tuning the notion of ‘judgment’ has been the standard strategy employed to protect cognitivism from counterexamples. I call it the Elastic Strategy, to emphasize that the conservative notion of judgment...is progressively ‘stretched’ to accommodate counterexamples.

The upshot appears to be the following: if cognitivism restricts itself to a conservative articulation of the relevant judgments constitutive of emotions, according to which these judgments are exhausted by non-dynamic, static, garden variety propositional attitudes, then the *extended mind thesis* (and not merely HEC) would be required in order to generate the extended emotion thesis. However, as we’ve seen, even the most hardened cognitivists about emotion shy away from such a restrictive account of judgment, and this is (as Scarantino has noted) precisely because such a restricted account faces more difficult counterexamples.

However, for cognitivists who take the more independently plausible position that the relevant cognitions are (as Nussbaum puts it) *dynamic*, wherein judgment is understood as inclusive of the judging *process*, an avenue opens up for generating the extended emotion thesis via HEC, and without ever needing the stronger extended mind thesis.²⁴

²⁴ For dynamic approaches to the kind of appraisals that feature in emotion, see for example Scherer (2001; 2009) and Roseman & Smith (2001),.

The straightforward argument we here have in mind runs like this: if (by HEC) cognitive processes can extend into the world, such that at least some of the cognitive process that feature in the judgments appealed to by strong cognitivists are extended, then what follows is that some emotions will be extended—*viz.*, some emotions will supervene on cognitions that are themselves extended beyond brain and body.

In §2.2 we'll show how such arguments take shape. First, however, we want to highlight a further way in which the extended emotion thesis is easier to generate than it might have first seemed. The further point is that, while *strong* cognitivism paired with HEC is enough to generate the extended emotion thesis, the strong or 'pure' formulation of the cognitivist position isn't actually required. A weaker formulation will do, according to which emotions at least *involve* (as a *necessary* ingredient) a cognitive dimension. After all, if a necessary ingredient of emotion is extended, then so is the emotion itself.

Call 'weak cognitivism' the view that cognitions (e.g. judgments, understood dynamically) are at least necessary ingredients of emotion. Since weak cognitivism submits a less controversial claim²⁵ than does the strong cognitivism, we will focus for the remainder of this section on how the extended emotion thesis can be motivated by pairing weak cognitivism with HEC. This will involve more careful consideration of how (by HEC) we might generate extended analogues of the judging processes that weak cognitivists will insist are at least necessary components of emotion.

2.2. *From cognitivism to extended emotions*

Weak Cognitivist accounts can make good sense of what seems to be going on in typical cases. Take for instance the following:

INSULT: Lauren overhears Jeff talking to a group of musically inclined mutual friends about a terrible singer he heard at open mic night at The Music Café last Saturday. Lauren laughs maliciously at first, but then tries to remember where she played last Saturday. Consulting her biological memory, Lauren quickly realizes that The Music Café is, in fact, the venue where she sung last Saturday night. Lauren now takes Jeff's remark to be an insult, and is angry²⁶.

²⁵ See, for instance, de Sousa (2013). The taxonomy between what we are calling 'strong' and 'weak' cognitivist views is aimed only at illuminating how cognitivists positions could be (on HEC) committed to viewing some emotions as extended. We recognize that this distinction glosses over many other differences between cognitivists views, though these distinctions won't be relevant to our argument.

²⁶ See here de Sousa (2013, Section 4).

Weak cognitivism rightly explains that Lauren’s anger is in part a matter of her construal of Jeff’s remark as a slight.²⁷ Consider now an ‘extended’ analogue of the INSULT case—an amalgam of INSULT and Clark & Chalmers’s case of Otto, which we considered in §1:

INSULT*: Lauren* is a vocalist who suffers from Alzheimer’s disease, and like many Alzheimer’s patients, she relies on information in the environment to help structure her life. Lauren* carries a notebook around with her everywhere she goes. When she learns new information, she writes it down. When she needs some old information, she looks it up. For Lauren*, her notebook plays the role usually played by a biological memory. Lauren* overhears Jeff talking to a group of musically inclined mutual friends about a terrible singer he heard at Open Mic Night at The Music Café last Saturday. Lauren* laughs maliciously at first but then tries to remember where she played last Saturday. Consulting her notebook, Lauren* quickly realizes that Music Café is, in fact, the venue where she sang last Saturday night. Lauren* now construes Jeff’s remark as a personal insult, and is angry.

Weak cognitivism obviously tells us Lauren’s process of judging Jeff’s remark to be an insult is part of her anger, and—in INSULT—this cognitive process essentially involves Lauren’s consulting her biological memory. After all, Lauren’s construal of Jeff’s remark as an insult is in part a matter of her taking herself to have been at the Music Café last Saturday, which is why her memory is integral to her anger.

But if HEC is true, Lauren*’s notebook is part of the process she employs when she construes Jeff’s remark as an insult: a judgment that according to (weak) cognitivism is part of her anger. In other words, a pairing of HEC and (weak) cognitivism gets the result that INSULT* features an extended emotion in the following sense: for the same reasons that cognitivism rules Lauren’s memory supporting her construal of Jeff’s remark as an insult in INSULT as a part of her anger, Lauren*’s extended memory is included, by parity of reasoning, as a component of her anger in INSULT*.

Note here that, while INSULT* involves a neurological abnormality, it needn’t make the point. What is crucial is that Lauren* rely on her notebook to offload the relevant information to a source to which (by the specifications of HEC) she is coupled with; while such offloading is something one would ordinarily do only if

²⁷ This is the point de Sousa (2013, Sec. 4) makes.

compensating for an abnormality, such compensation (and such the manifestation of abnormalities) isn't necessary.

From this case, it is easy to see how we can generalize: HEC in conjunction with weak cognitivism generates the view that some emotions are extended in the following sense: by reference to weak cognitivism, some emotions will essentially involve certain dynamic processes of judgment, and at least *some* of these processes will (by HEC) admit of *extended* analogues (like we saw in the memory case).²⁸

However, we want to note at this point that the plausibility of the extended emotion thesis, given HEC, doesn't stand or fall with cognitivism. This is because there is a yet more inclusive family of views according to which the cognitions necessary for emotions may not always have the same limitations as the ones imposed by the cognitivist views considered so far.

3. THE PSYCHOLOGICAL APPRAISAL ARGUMENT FOR THE EXTENDED EMOTION THESIS

3.1. *Psychological Appraisal Accounts of Emotion*

An idea with rich philosophical precedent—found in Aristotle, Hume, Descartes, Spinoza and Hobbes²⁹—is (put roughly) that emotions involve, in some suitably specified sense, appraisals or evaluations. This is, at any rate, the guiding idea behind the widely endorsed position called *psychological appraisal theory*³⁰. As Ellsworth & Scherer (2003) put it, a basic tenet of psychological appraisal theory (hereafter, PAT) is that ‘the organisms’s evaluation of its circumstances (current or remembered or imagined) plays a crucial role in the elucidation and the differentiation of its emotions.’³¹ Appraisals are most plausibly understood, moreover, as *processes* as

²⁸ We might envision, for the weak cognitivists, *further* explanations for how emotions might be conceived of as extended. For instance, it would be open to a weak cognitivist to hold that emotional responses include actions, or at least tendencies to action and could thus be conceived of as extended in this further sense. We agree that such options would be available for the weak cognitivist (who is not committed to understanding emotions exclusively, but only partially, in terms of relevant cognitions), though it would be incumbent on such proposals to provide argument for why these non-cognitive elements count as metaphysically extended in the sense that cognitive processes are claimed to extend by proponents of HEC. Thanks to an anonymous referee at *Philosophical Psychology* for noting this possibility.

²⁹ See Ellsworth & Scherer (2003).

³⁰ See deSousa (2012) as well as Eysenck & Keane (2005, Ch. 18) for helpful overviews.

³¹ An important contrast here is with *dimensional theories of emotion*, according to which emotions can be distinguished vis-à-vis abstract sensation, or qualia.

opposed to, as Scherer puts it, a ‘one-shot affair’;³² the appraisal cognitivist theories of emotion, as reviewed in the previous section, constitute only one variety of PAT, whereby the relevant cognitions are judging processes which typically involve occurrent, propositional attitudes.

Importantly for our purposes, PAT accounts of emotion, in principle, *need not accept either of these restrictions* on the relevant emotion-distinguishing cognitions. On PAT views, the relevant appraisals can include (along with the kinds of judgments endorsed by cognitivists) appraising processes where no propositional content is ever considered, as well as non-occurrent appraisals.³³

Moreover, it is helpful, for our purposes, to organize PAT into what we can call strong and weak versions. According to strong psychological appraisal views (e.g. Lazarus 1991), appraisals are both necessary *and* sufficient for emotion. In contrast, on weak versions (e.g. Scherer 2001), appraisals are necessary, though not sufficient, for emotion.

Now since, weak views enjoy considerable empirical support³⁴ and since pairing HEC with *weak* PAT, as we will argue, is enough to generate the view that (at least some) emotions are extended, in what follows we can allow ourselves to bracket strong versions of PAT.

3.2. *The Psychological Appraisal Argument for the Extended Emotion Thesis*

Weak PAT views can allow the evaluations that are necessary for emotion to be, as Scherer et. al (2011) put it, ‘automatic³⁵ and unconscious’, as we might find in an instance in which one is suddenly asked to give an impromptu speech.³⁶ In such a case, even if there is no occurrent judgment, it seems that the fear or anxiety one feels is at least partly a function of a kind of ‘perceived significance’ (e.g. Arnold 1960).

³² Consider, for instance, Scherer’s suggestion that: ‘One can use the analogy of a radar antenna to refer to the fact that organisms constantly scan their environment (and their internal state) to detect and re-evaluate changes....Consequently, we expect events or internal changes to trigger cycles of appraisal running through the evaluation checks proposed here until the monitoring subsystem signals termination of or adjustment to the stimulation which triggered the appraisal episode’ (Scherer 1987, 10).

³³ For an explicit denial of the occurrence condition, see Posner (1992) who identifies emotions in part with reference to non-conscious, subcortical states.

³⁴ Lazarus et. al, (1962), Mikula et. al, (1990). Smith, C. A., & Lazarus, R. S. (1993). For support of the view that evaluation affects the duration of emotion, see Verduyn et. al, (2011).

³⁵ See also Prinz (2004a) for a defense of the view that some such evaluations can be embodied.

³⁶ See Feldman, et. al, (2004) for a study showing that one’s anticipation of public speaking correlates with increased cardiovascular response.

Perceived significance of this sort might (for example) be a matter of *implicit memory*³⁷ (e.g. Roediger, H. L. (1990)), which, unlike explicit, or ‘recall’ memory, is both nonverbal and does not require conscious representation.

Consider the following case:

GLOSSOPHOBIA: Angel and Cordelia are asked to give a speech in front of a large audience. Angel has been ridiculed in the distant past by friends after speeches, and while he does not have any explicit memory of this, the negative experience is retained in implicit memory. Angel feels frightened when he stands on the stage, while Cordelia (who is thinking about the popularity she might gain from a good speech), is pleasantly excited.

Here we have a kind of non-conscious appraisal or evaluation that explains Angel’s reaction, and how it differs from Cordelia’s, in the same environment. What would be the extended analogue of a nonconscious implicit memory?

GLOSSOPHOBIA*: Due to an accident, Brian—an aspiring artist—began losing memories in his long-term memory storage. Brian’s biological long-term memory is now almost completely compromised, but before the condition could progress to its present degree of severity, Brian began keeping an artistic journal—which he takes with him everywhere—in order to help him preserve his sense of identity. In the journal, Brian would paint pictures to represent the emotions he has felt over the course of a number of defining experiences over the course of his life. Brian’s journal includes an entry about his experiences of public speaking, during which he had suffered extreme anxiety and social ridicule from his peers; the ominous paintings he painted in the journal correspond for Brian with these kinds of feelings. As it turns out, Brian and Justin (who has a normally functioning biological memory) are on their way to give a joint acceptance speech. Brian, consulting the ominous pictures he had painted, feels frightened, while Justin, who remembers good feedback and a rush of positivity associated with his previous speaking experiences, feels exhilarated.

In this case, it’s evident that had Brian *not* had the accident he had, and his fear of public speaking was a matter of an evaluation *vis-à-vis* public speaking generated by a *biological* cognitive process featuring implicit memory (or, for that matter, *explicit* biological memory of the non-propositional images he had drawn), then PAT would count this cognitive process featuring biological memory as an essential element of Brian’s emotion of being frightened. The proponent of HEC enters at this

³⁷ Implicit memory is a form of ‘non-declarative’ memory. See here Sutton et al. 2010.

point to remind us that in GLOSSOPHOBIA*, we simply have an extended version of such a case—that is, we have a case where one’s non-propositional appraisal is generated by a process that extends. Thus, an implication of extended cognition will be that some emotions are extended in this way *even* if we set aside cognitivists accounts and endorse weaker non-propositional or non-conscious versions of psychological appraisal theory.³⁸

Of course, at this point, one might wish to press the point that, even if some emotions, like anger, are (as weak PAT insists) at least partly a matter of making certain appraisals or evaluations that themselves involve (broadly construed) cognitions, not *all* emotions involve such appraisals or evaluations.³⁹ Call this view *superweak* PAT: The view that *some* (perhaps, just one), but not all, emotions include evaluations/appraisals involving (broadly construed) dynamic cognitions. Now, notice that the extended emotion thesis—that at least some emotions supervene on brain body and world—follows from a pairing of HEC with even *superweak* PAT. In fact, all it takes is for there to be just a single emotion, E, that is *in part* a matter of having some dynamic appraisal/evaluation process that is itself broadly cognitive in way C, and for C to have an extended analogue, by the lights of HEC.

Ultimately, then, it looks like if HEC is right, then the extended emotion thesis is much less radical than one would originally anticipate.⁴⁰ After all, if HEC is right, then the extended emotion thesis could be resisted only by one who endorses the implausibly strong claim that there is *no* emotion E such that it is in part a matter of

³⁸ While this case relies on a psychological abnormality to generate the HEC, it’s not the case that (for instance) *only* in rare cases of amnesia like Brian’s in GLOSSOPHOBIA* would it be possible to generate the extended emotion thesis on psychological appraisal accounts. Compare here with the parallel point, in §2.2, with respect to the case of INSULT*.

³⁹ Of course, this line might be submitted *vis-à-vis* cognitivism no less, and the reply would be that the extended emotion thesis follows from (super) weak cognitivism. We raise the line of thought *vis-à-vis* appraisal theories because we are envisioning, in descending order of strength, the kinds of positions that would suffice to generate the extended emotion thesis, and the superweak PAT would be the weakest.

⁴⁰ Note that our contribution has been to show, on strictly philosophical grounds, that the extended emotion thesis is substantially easier to reach and that, perhaps, it is a view that is, in effect, more plausible than initially expected. A separate and very worthy issue, in light of our conclusion, however, as noted by the referee, is this: What do some *additional* extended emotions look like, and what kinds of real-life shapes might they take? While this is admittedly an important applied question, elaborating on it falls outside the scope of the paper’s philosophical objective. Nevertheless, in fn. 43, we briefly consider some possible real life examples that would qualify as extended emotions by, at least, the pairing of HEC and weak PAT.

having some appraisal/evaluation that's (i) broadly cognitive in some way C, where (ii) by HEC, there is an extended analogue, C*.⁴¹

4. CONCLUSION

We've attempted here to trace out a novel application of the hypothesis of extended cognition, by way of exploring its applications *vis-a-vis* cognitions that are (in different ways) playing indispensable roles in philosophical theories of emotion. The bare suggestion that emotions can be 'extended' is, granted, a claim that seems at first blush more radical than it would appear outside the context of emotion. As we've seen though, once HEC is taken on board, the extended emotion thesis is not far behind. While we've shown how HEC in conjunction with strong cognitivism straightforwardly generates the extended emotion thesis, we've shown also that less 'intellectualised' accounts of emotion can also be paired with HEC to get the extended emotion thesis. That is, if weak cognitivism (according to which cognitions are partly constitutive of emotion) is true, then along with HEC, we get the result that emotions can supervene at least partly on parts of the world external to the biological agent. Further, it was argued that even on the comparatively less controversial and wider class of psychological appraisal accounts of emotion, an endorsement of HEC can generate the view that at least some emotions (partly) extend into the world.

While this is not the place to argue for HEC, it suffices to note that it is an increasingly widespread position in the philosophy of mind and epistemology. The fact that HEC along with even weak psychological appraisal accounts of emotion is enough to generate the view that emotions can be extended rationalizes that future

⁴¹ In relation to fn. 42, and to bring the extended emotions hypothesis down to the ground, imagine the case of Vivi who suffers from Supraventricular Tachycardia and has been advised by her doctor to avoid exceeding 200 beats/minute. To cope with her problem, Vivi recently bought an Apple Watch that can monitor her heart rhythm and display that rhythm on a retina screen. This device allows her to continuously keep an eye on her heart rate every time she goes running. Provided her heart rate is well under the suggested limit, she judges the situation to be fun and exciting. Meanwhile, if the watch tells her that she is getting close to 190 beats/minute then she judges the situation to be precarious and must therefore regulate her speed such that on the basis of the feedback she receives from the watch she can judge the situation to be a safe and enjoyable one. Once the screen shows 190 beats/minute, however, then she judges the situation to be dangerous and gets a fright, until the feedback she receives from her watch is once again a safe one. This seems to be a bona fide case in which the external artefact plays a constitutive role in the agent's emotional appraisal of the situation as exciting or frightening. More formally, the agent *interacts mutually* with her watch, which means that, according to dynamical systems theory, the watch plays a constitutive part in the cognitions involved in her emotional appraisal of the situation, thereby resulting in what may be plausibly construed (even on weak PAT) as a case of extended emotions.

work be directed toward the exploration of the specific *shapes* extended emotions can take⁴².

REFERENCES

- Adams, F., & Aizawa, K. (2008). *The Bounds of Cognition*. Blackwell Publishing Ltd
- Bach-y-Rita, P., and S. W. Kercel. (2003). 'Sensory Substitution and the Human-Machine Interface', *Trends in Cognitive Science* 7, no.12 541-6.
- Brady, M. (2009). 'The Irrationality of Recalcitrant Emotions', *Philosophical Studies* 145(3): 413–430.
- Braddon-Mitchell, D. and Jackson, F. (2007). *Philosophy of Mind and Cognition: An Introduction*. Wiley-Blackwell.
- Broad, C. D. (1971). 'Emotion and Sentiment,' in *Critical Essays in Moral Theory*, London: Allen & Unwin.
- Burge, T. (1986). 'Individualism and Psychology', *Philosophical Review*, 95: 3-45.
- Carter, J. A. (2013). Extended Cognition and Epistemic Luck. *Synthese*, 190(18), 4201-4214.
- Carter, J. A. & Kallestrup, J. (2014). 'Extended Cognition and Propositional Memory', *Philosophy and Phenomenological Research*, forthcoming.
- Carter, J.A., Kallestrup, J., Palermos, S.O. & Pritchard, D. 'Varieties of Externalism', *Philosophical Issues* 24(1): 63-109.
- Carter, J.A. & Palermos, S.O. (2014). 'Active Externalism and Epistemic Internalism', *Erkenntnis* (Online First: DOI: 10.1007/s10670-014-9670-5).
- Carter, J.A. & Pritchard, D. (Forthcoming). 'Extended Entitlement', in *New Essays on Entitlement*, (eds.) P. Graham & N. Pedersen, Oxford: Oxford University Press.
- Charland, L. (2002). 'The Natural Kind Status of Emotion,' *British Journal for the Philosophy of Science*, 53: 511-37.
- Chemero, A. (2009). *Radical Embodied Cognitive Science*. MIT press.
- Clark, A. (1997). *Being There: Putting Mind, Body, and World Together Again*, Cambridge, MA: MIT Press.
- (2001). 'Reasons, Robots, and the Extended Mind', *Mind and Language*, 16;2: 121-145.
- (2003). *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence*, New York: Oxford University Press.
- (2007). 'Curing Cognitive Hiccups: A Defense of the Extended Mind', *The Journal of Philosophy*, 104: 163-192.
- (2008). *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, New York: Oxford University Press.
- (2010). 'Memento's Revenge: The Extended Mind, Extended'. In the *Extended Mind*. (2010), Menary (ed.) Cambridge, Massachusetts, MIT press.
- Clark, A. & D. Chalmers (1998). 'The Extended Mind', *Analysis*, 58: 10–23.
- Colombetti, G., & Roberts, T. (2014). 'Extending the Extended Mind: The Case for Affectivity', *Philosophical Studies*, 1-21.

⁴² This article was written as part of the AHRC-funded 'Extended Knowledge' (#AH/J011908/1) research project that is hosted by the University of Edinburgh's Eidyn research centre.

- D'Arms, J. and Jacobson, D. 2003. 'Emotion and Action' in *Thinking About Feeling: Contemporary Philosophers on Emotions*, (ed.) R. Solomon, Oxford: New York.
- de Sousa, R. (2013). 'Emotion', *The Stanford Encyclopedia of Philosophy* (Spring 2013 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/spr2013/entries/emotion/>>.
- Ellsworth, P. C., & Scherer, K. R. (2003). 'Appraisal Processes in Emotion', *Handbook of affective sciences*, 572, V595.
- Elster, J. (2003). 'Emotion and Action', in *Thinking About Feeling: Contemporary Philosophers on Emotions*, (ed.) R. Solomon, Oxford: New York.
- Eysenck, M. W., & Keane, M. T. (2005). *Cognitive Psychology: A Student's Handbook*. Taylor & Francis.
- Farkas, K. 2012. "Two versions of the extended mind thesis", *Philosophia* 40: 435-447.
- Feldman, P. J., Cohen, S., Hamrick, N., & Lepore, S. J. (2004). 'Psychological Stress, Appraisal, Emotion and Cardiovascular Response in a Public Speaking Task', *Psychology & Health*, 19(3), 353-368.
- Froese, T., Gershenson, C., & Rosenblueth, D., A. (2013). 'The Dynamically Extended Mind', available at: <http://arxiv.org/abs/1305.1958>.
- Goldie, P. (2000). *The Emotions: A Philosophical Exploration*, Oxford: Oxford University Press.
- Giere, R. N. (2012). 'Scientific Cognition: Human Centered but not Human Bound', *Philosophical Explorations*, 15(2), 199-206.
- Greenwood, J. (2013). 'Contingent Transcranialism and Deep Functional Cognitive Integration: The Case of Human Emotional Ontogenesis', *Philosophical Psychology*, 26(3), 420-436.
- James, W. (1890). *The Principles of Psychology*. Harvard UP, Cambridge, MA.
- Hutchins, E. (1995). *Cognition in the Wild*. Cambridge: MIT Press.
- Hutchinson, A. P. A. (2009). 'Emotion-Philosophy-Science', *Emotions and Understanding: Wittgensteinian Perspectives*. Basingstoke: Palgrave.
- Kelp, C. (2013). 'Extended Cognition and Robust Virtue Epistemology', *Erkenntnis*, 78(2), 245-252.
- Kenny, A. (1963). *Action, Emotion, and the Will* (New York; London: Routledge & K Paul.
- Kirchhoff, M. D. (2012). 'Extended Cognition and Fixed Properties: Steps to a Third-Wave Version of Extended Cognition', *Phenomenology and the Cognitive Sciences*, 11(2), 287-308.
- Kirchhoff, M. D., & Newsome, W. (2012). 'Distributed Cognitive Agency in Virtue Epistemology', *Philosophical Explorations*, 15(2), 165-180.
- Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005). 'Oxytocin Increases Trust in Humans', *Nature*, 435(7042), 673-676.
- Krueger, J. (2014). 'Varieties of Extended Emotions', *Phenomenology and the Cognitive Sciences*, 1-23.
- Lazarus, R. S. (1991). 'Cognition and Motivation in Emotion', *American Psychologist*, 46(4), 352.
- Lazarus, R. S., Speisman, J. C., Mordkoff, A. M., & Davison, L. A. (1962). 'A Laboratory Study of Psychological Stress Produced by a Motion Picture Film', *Psychological Monographs: General and Applied*, 76(34), 1.
- Leventhal, H., & Scherer, K. (1987). 'The Relationship of Emotion to Cognition: A Functional Approach to a Semantic Controversy' *Cognition and Emotion*, 1(1), 3-28.

- Lewis, M. D. (2005). 'Bridging Emotion Theory and Neurobiology through Dynamic Systems Modeling'. *Behavioral and Brain Sciences*, 28(02), 169-194.
- Lynch, D. (forthcoming). 'Neuromedia, extended knowledge, and understanding'. *Philosophical Issues Special Issue on 'Extended Knowledge'*.
- Lyons, W. (1980). *Emotion*. Cambridge: Cambridge University Press.
- Marks, J. (1982). 'A Theory of Emotion', *Philosophical Studies*, 42, 227-242.
- McLeod, Carolyn, "Trust", *The Stanford Encyclopedia of Philosophy* (Summer 2014 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/sum2014/entries/trust/>.
- McLuhan, M. (1964). *Understanding Media: The Extensions of Man*.
- Menary, R. (2006). 'Attacking the Bounds of Cognition', *Philosophical Psychology*. Vol. 19, No. 3, June 2006, pp. 329-344.
- (2007). *Cognitive Integration: Mind and Cognition Unbound*. Palgrave MacMillan.
- (2012). 'Cognitive Practices and Cognitive Character', *Philosophical Explorations*, 15(2), 147-164.
- Mikula, G., Petri, B., & Tanzer, N. (1990). 'What People Regard as Unjust: Types and Structures of Everyday Experiences of Injustice', *European Journal of Social Psychology*, 20(2), 133-149.
- Neu, J. (2000). *A Tear is an Intellectual Thing: the Meaning of Emotions*, Oxford, New York: Oxford University Press.
- Niedenthal, M (2007). 'Embodying Emotion'. *Science*. Vol 316: 1005-1005.
- Nussbaum, M. (1990). *Love's Knowledge*, Oxford: Oxford University Press.
- (1994). *The Therapy of Desire: Theory and Practice in Hellenistic Ethics*, Princeton: Princeton University Press.
- (2001). *Upheavals of Thought: The Intelligence of Emotions*, Cambridge: Cambridge University Press.
- (2006). *Hiding from Humanity: Disgust, Shame and the Law*. Princeton: Princeton University Press.
- Oakley, J. (1992). *Morality and the Emotions*. London: Routledge and Kegan Paul.
- Palermos, S., O. (2011). 'Belief-forming processes, extended'. *Review of Philosophy and Psychology*. Vol. 2 (4), pp. 741-765.
- (2014a). 'Knowledge and Cognitive Integration', *Synthese*, 191(8), 1931-1951.
- (2014b). 'Loops, Constitution, and Cognitive extension', *Cognitive Systems Research*, 27, 25-41.
- Palermos, S., O. & Pritchard, D. (2013). 'Extended Knowledge and Social Epistemology', *Social Epistemology Review and Reply Collective* 2 (8): 105-120.
- Peacocke, C. (2001). 'Does Perception have a Nonconceptual Content?' *Journal of Philosophy* 98: 239-264.
- Posner, M. I. (1992). 'Attention as a Cognitive and Neural System', *Current Directions in Psychological Science*, 1(1), 11-14.
- Prinz, J. (2004a). 'Emotions Embodied', in *Thinking about Feeling: Philosophers on Emotions*, R. Solomon (ed.) New York: Oxford University Press, 1-14.
- (2004b). *Gut Reactions: a Perceptual Theory of Emotion*, Oxford: Oxford University Press.
- Pritchard, D. (2010). 'Cognitive Ability and the Extended Cognition Thesis', *Synthese*, 175(1), 133-151.
- Putnam, H. (1975). 'The Meaning of "Meaning"'. In *Language, Mind and Knowledge*. K. Gunderson (ed.). Minneapolis: University of Minnesota Press.

- Roediger, H. L. (1990). 'Implicit Memory: Retention without Remembering', *American Psychologist*, 45(9), 1043.
- Roseman, I. J., & Smith, C. A. (2001). 'Appraisal Theory: Overview, Assumptions, Varieties, Controversies', In K. R. Scherer, A. Schorr, & T. Johnstone (Eds.), *Appraisal Processes in Emotion: Theory, Methods, Research* (pp. 3-34). New York: Oxford University Press.
- Rowlands, M. (1999). *The Body in Mind: Understanding Cognitive Processes*. New York: Cambridge University Press.
- (2009). 'Extended Cognition and the Mark of the Cognitive'. *Philosophical Psychology*, 22(1); 1-19.
- Rupert, R. (2004). 'Challenges to the Hypothesis of Extended Cognition'. *Journal of Philosophy*, 101: 389-428.
- Sander, D., Grandjean, D., & Scherer, K. R. (2005). 'A Systems Approach to Appraisal Mechanisms in Emotion' *Neural Networks*, 18(4), 317-352.
- Scarantino, A. (2010). 'Insights and Blindspots of the Cognitivist Theory of Emotions', *The British Journal for the Philosophy of Science*, 61(4), 729-768.
- Scherer, K.R., A Schorr, & T. Johnstone (eds.). (2001). *Appraisal Processes in Emotion: Theory, Methods, Research*, Oxford: Oxford University Press.
- Scherer, K. R. (2009). 'The Dynamic Architecture of Emotion: Evidence for the Component Process Model', *Cognition and Emotion*, 23(7), 1307-1351.
- (2001). 'Appraisal Considered as a Process of Multilevel Sequential Checking', *Appraisal Processes in Emotion: Theory, Methods, Research*, 92, 120.
- (1987). 'Toward a Dynamic Theory of Emotion', *Geneva Studies in Emotion*, 1, 1-96.
- Scheve, C. von, & Ismer, S. (2013). Towards a Theory of Collective Emotions. *Emotion Review*, 1754073913484170. doi:10.1177/1754073913484170
- Scheve, C. von & Salmela, M. (2014). *Collective Emotions* (1 edition.). OUP Oxford.
- Schnall, S., Haidt, J., Gerald, C., Jordan, A. 'Disgust as Embodied Moral Judgment'. *PSPB*, Vol 34 No. 8, pp. 1096-1109.
- Shani, I. (2013). 'Making it mental: in search for the golden mean of the extended cognition controversy. *Phenomenology and the Cognitive Sciences*. 12: 1-26.
- Slaby, J. (2014) 'Emotions and the Extended Mind', in von Scheve & Salmela, *Collective Emotions*, Oxford: Oxford University Press/
- Smith, C. A., & Lazarus, R. S. (1993). 'Appraisal Components, Core Relational Themes, and the Emotions', *Cognition & Emotion*, 7(3-4), 233-269.
- Solomon, R. (1980). 'Emotions and Choice', in *Explaining Emotions*, edited by Amélie Rorty, Los Angeles: University of California Press, 251-81.
- Solomon, R. (2003) 'On emotions as judgments', in *Not Passion's Slave*. Oxford: Oxford University Press: 92-113.
- Stephan, A., Walter, S., Wilutzky, W. (2014). 'Emotion Beyond Brain and Body'. *Philosophical Psychology*, Vol. 27, No. 1, 65-81.
- Sutton, J., Barnier, A., Harris, C., Wilson, R. (2008). 'A conceptual and empirical framework for the social distribution of cognition: The case of memory'. *Cognitive Systems Research*, Issues 1-2, pp. 33-51.
- Sutton, J. (2008). 'Between Individual and Collective Memory: Coordination, Interaction, Distribution.' *Social Research*, 75(1), 23-48.
- Sutton, J. (2010). 'Exograms and Interdisciplinarity: History, the Extended mind, and the Civilizing Process.' In R. Menary (Ed.), *The Extended Mind* (pp. 189-225). Cambridge: MIT Press.

- Tappolet, C. (2003). 'Emotions and the Intelligibility of Akratic Action,' in Stroud, S. and Tappolet, C. (eds.), *Weakness of Will and Practical Irrationality*, pp. 97-120.
- Theiner, G. (2011). *Res Cogitans Extensa: A Philosophical Defense of the Extended Mind Thesis*, Bern, Switzerland: Peter Lang GmbH, Europaischer Verlag der Wissenschaften.
- Theiner, G. & Allen, C. & Goldstone, R. (2010). 'Recognizing Group Cognition'. *Cognitive Systems Research*, Vol. 11, Issue 4, pp. 378-395.
- Tollefsen, D., & Dale, R. (2011). 'Naturalizing Joint action: A Process-Based Approach', *Philosophical Psychology* 25, 385-407.
- Verduyn, P., Van Mechelen, I., & Tuerlinckx, F. (2011). 'The Relation Between Event Processing and the Duration of Emotional Experience', *Emotion*, 11(1), 20.
- Wheeler, M. (2005). *Reconstructing the Cognitive World*. MIT Press, Cambridge, Massachusetts.
- (2010). "In Defense of Extended Functionalism", in *The Extended Mind*, ed. R. Menary, MIT Press.
- Wilson, R. A. (2004). *Boundaries of the Mind: The Individual in the Fragile Sciences: Cognition*. New York: Cambridge University Press.
- (2000). 'The Mind Beyond Itself', In D. Sperber (Ed.), *Metarepresentations: A Multidisciplinary Perspective* (pp. 31–52). New York University Press.