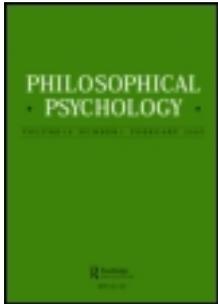


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# Emotions beyond brain and body

Achim Stephan, Sven Walter, and Wendy Wilutzky

*The emerging consensus in the philosophy of cognition is that cognition is situated, i.e., dependent upon or co-constituted by the body, the environment, and/or the embodied interaction with it. But what about emotions? If the brain alone cannot do much thinking, can the brain alone do some emoting? If not, what else is needed? Do (some) emotions (sometimes) cross an individual's boundary? If so, what kinds of supra-individual systems can be bearers of affective states, and why? And does that make emotions "embedded" or "extended" in the sense cognition is said to be embedded and extended? Section 2 shows why it is important to understand in which sense body, environment, and our embodied interaction with the world contribute to our affective life. Section 3 introduces some key concepts of the debate about situated cognition. Section 4 draws attention to an important disanalogy between cognition and emotion with regard to the role of the body. Section 5 shows under which conditions a contribution by the environment results in non-trivial cases of "embedded" emotions. Section 6 is concerned with affective phenomena that seem to cross the organismic boundaries of an individual, in particular with the idea that emotions are "extended" or "distributed."*

*Keywords: Cognitivism; Distributed Cognition; Emotions; Enactivism; Extended Cognition*

## 1. Introduction

Cognitivists regard the human mind as an information-processing input-output device whose neurally implemented, syntactically driven transformations of representational structures give rise to cognitive processing. For them, cognition is the amodal intracranial "filling" mediating offline between input from and output to the extracranial parts of the body and the extrabodily environment. Situated approaches, in contrast, pivot on the fact that cognition is primarily based on reciprocal real-time

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interactions of embodied agents with their environments.<sup>1</sup> Appreciating the contribution of body, environment, and the interaction with it is said to yield important novel insights into the developmental and material basis of our cognitive life. The emerging consensus is that just as we cannot do much carpentry with our bare hands, there is not much thinking we can do with our brain alone (Dennett, 2000, p. 17). But what about *emotions*? If the brain alone cannot do much *thinking*, can the brain alone do some *emoting*, as some have claimed? If not, what else is needed? Do (some) emotions (sometimes) cross an individual's boundary? If so, what kinds of supra-individual systems can be said to be bearers of affective states, and why? And does that make emotions "embedded" or "extended" in the sense cognition is said to be embedded and extended? The role of the body and the (mainly cultural and social) environment has been a principal topic in emotion research for decades, but not under the heading of "situated cognition." We believe that applying the concepts from the situated cognition debate to emotions can open up new avenues of research in the philosophy of emotions. But we will also see that there is still a lot to be done before we get a firm grip on the idea of "situated affectivity" and its various variants. This paper attempts to clear some conceptual ground for future endeavors into this exciting new area of research.

Section 2 shows why it is important to understand in which sense body, environment, and our embodied interaction with the natural and social world contribute to our affective life. Section 3 sets the scene by introducing some key concepts of the debate about situated cognition. Section 4 draws attention to an important disanalogy between cognition and emotion with regard to the role of the body. Section 5 shows under which conditions a contribution by the environment results in non-trivial cases of "embedded" emotions. Finally, Section 6 is concerned with affective phenomena that seem to cross the organismic boundaries of an individual, in particular with the idea that emotions are "extended" or "distributed." We conclude that acknowledging the essentially situated character of some affective phenomena undoubtedly enriches debates in the philosophy of emotions that have hitherto focused too narrowly on certain individualistic phenomena. Some emotions are dynamic engagements with the world rather than inner snapshot responses to external triggers, and some ("joint emotions" and "affective atmospheres") are brought about by groups of interacting individuals.

## 2. Why Situated Affectivity?

Why even raise the issue of situated affectivity? Since the debate about situated cognition is already controversial and muddled enough, applying the conceptual schemes of that debate, under-developed as they still are, to an apparently even more intricate field such as emotions may seem ambitious. But there are good reasons for trying to do so.

Situated approaches to cognition are motivated by the insight that we are not isolated quasi-Cartesian minds housed in a container-like body they intelligently navigate through their environment by repeated sense-think-act cycles. This insight

applies *mutatis mutandis* to emotions. It is not just that we aren't isolated thinkers; we aren't isolated "emoters" either. Our affective life is not "sandwiched" between perception as the input and action as the output of repeated sense-appraise-feel-act cycles,<sup>2</sup> and not detached from our embodied interaction with our environment. If anything, the case for an intimate coupling of brain, body, and environment should have been even more obvious for emotions from the very start. If thinking about cognition had not made us wonder about situatedness, emotions should have.

Moreover, a focus on cognition alone is not going to yield a complete account of our *conditio humana*, given that we were never pure *animalia rationalia* to begin with, but always also *animalia emotionalia* and *animalia motivata* that do not only think, but also feel, evaluate, care, want, and strive. The division into cognition, emotion, and motivation as the three basic and irreducible *facultates mentales* that nineteenth century faculty psychology inherited from philosophy and that still influences some parts of cognitive science is no longer tenable. For the reasons given below, cognition and emotion (and also motivation; see, e.g., Dai & Sternberg, 2004) are so intimately intertwined that we should try to offer an integrated account. And if cognition is indeed situated, there is a straightforward reason why such an integrated account is going to be a situated one. Since most accounts of emotions acknowledge that cognition and emotion are related and therefore in some way or other appeal to cognitive processes, the discovery that the latter almost without exception involve, in some yet to be specified sense, extracranial processes, is obviously going to have an impact on our conception of emotions.

This is most obvious for cognitivist accounts of emotions that were intended as alternatives to pure "feeling theories" à la James (1884). Whereas the latter conceived of emotions as mere feelings of bodily changes which, as such, are not directed at anything in the world, cognitivists regard them as worldly directed cognitive states or processes with a specific intentional content (e.g., Nussbaum, 2001; Solomon, 1976). Crudely put, our fear of a spider just is our belief that the spider is dangerous together with our desire that it go away, and our anger at someone just is our judgment that we have been wronged by that person, while the affective aspects (the unpleasant feelings and forms of bodily arousal characteristic of fear and anger) are denigrated to mere epiphenomena. Obviously, if the cognitive processes to which emotions are said to be reducible are situated instead of purely intracranial transformations of representational structures, the cognitivists' view of emotions is going to be affected as well.

Likewise, a situated view of cognition would also impact accounts that take cognitive processes to be one of several constituents of emotions, for example psychological appraisal theories like Scherer's (2005) "component process model" that treats emotions as complexes of interacting bodily, experiential, and cognitive components, where the cognitive component is an evaluation, or appraisal, that represents the world in the light of the specific concerns of the subject. Again, if the cognitive appraisal-component is situated, the appraisal theorists' view of emotions is going to be affected as well.<sup>3</sup>

The same finally holds for those who reject Scherer's account and similar "add-on"-theories, as Goldie (2000) calls them, that analyze emotions in terms of discrete and in

principle separable components (where the cognitive component accounts for their intentionality and the experiential component for their felt affectivity) in favor of a fundamental, *sui generis* kind of “affective intentionality,” in which emotional feelings are inextricably intertwined with the world-directed aspect of emotions (e.g., Slaby & Stephan, 2008). Insofar as they acknowledge a cognitive aspect, such accounts of emotions as cognitive-experiential “hybrids” or “felt evaluations” will also be affected, if cognition is situated. The interplay of cognitive and bodily aspects in emotional processes will become more comprehensible and, moreover, considering interactions with the environment will enrich these theories.

Despite the fact that there are thus good reasons for raising the issue of situated affectivity, it is still entirely unclear what it would mean for emotions to be situated in the various ways in which cognition can be situated. Since a lot depends on what is meant by calling cognition “situated,” we briefly address this issue in section 3 before returning to affectivity.

### 3. Situated Cognition

“Situated cognition” is currently little more than a placeholder for a “loose-knit family of approaches” (Wilson & Clark, 2009, p. 55) whose common core is a more or less radical break with some traditional tenets of cognitivism. Unfortunately, even after three decades the debate is still fledgling and there is no even remotely unanimous usage of key notions like ‘embodied’, ‘embedded’, ‘extended’, ‘distributed’, or ‘enacted’. This section provides the outlines of a conceptual clarification.

Since the departure from cognitivism is said to consist in the insight that cognition involves not only intracranial, but also extracranial processes, there are two crucial questions: “what does it mean to say that cognition *involves* extracranial processes?” and “what does it mean to say that cognition involves *extracranial processes*?”<sup>4</sup>

The first question draws attention to a *relational dimension*: how are cognitive processes on the one hand and whatever processes have to be invoked over and above intracranial ones on the other hand related? While some insist that cognitive processes are *constituted* by extracranial processes, others argue that they non-constitutionally *depend* upon extracranial processes, where constitution is understood along the lines of the mereological part-whole relationship and dependence either causally or evolutionarily (in the sense that something has been designed to function only in combination with something else on which it depends). Intuitively, a computer is *constituted* (in part) by the CPU and the RAM, while the power plant producing the electricity is not among its constituents, but only something upon which its functioning causally *depends*.

The second question draws attention to a *locational dimension*: what kinds of processes co-determine or co-constitute cognitive processing, over and above the intracranial ones? While some have focused on the *body’s* contribution to cognitive processing (where “body” must be read as “body *minus* brain,” because otherwise the fact that the brain is part of the body would make the position collapse into

cognitivism; see note 4), others have focused on the *extrabodily environment's* contribution.

This leads to four different situated hypotheses that vary in a twofold way along the relational and locational dimension: cognitive processing may be (1) co-dependent upon bodily processes, (2) co-constituted by bodily processes, (3) co-dependent upon extrabodily processes, or (4) co-constituted by extrabodily processes. (1) and (2) capture the idea that cognition is *embodied*, (3) the idea that it is *embedded*, and (4) the idea that it is *extended*.

In addition, *enactivists* characterize cognition as an active engagement in which a cognitive system brings about (“enacts”) its environment (*Umwelt*), thereby rejecting the locational question. For them, it is at best misleading and at worst senseless to ask whether cognitive processing takes place *in* the brain, *in* the body, *in* the environment, or *in* any combination of these, given that cognition is supposed to be an essentially relational and temporally extended process of “sense-making” (Thompson & Stapleton, 2009) by an autonomous and adaptive system in interaction with its environment, so that to ask where a particular cognitive process is taking place at a particular time is to miss the very explanans.

Finally, cognitive processes have been said to be *distributed* over complexes of interacting agents and technological resources, for example when the navigation of a vessel is accomplished by the concerted effort of the technologically equipped crew on the bridge (e.g., Hutchins, 1995). To avoid conceptual muddle, one should distinguish cognitive distribution and cognitive extension. Cognitive extension usually concerns a single system or agent at the “center” of cognitive processes, from where they are then said to extend (under certain conditions) beyond the original organismic boundaries, leading to an extended cognitive system. The point of distributed cognition, in contrast, is that cognitive processes are “spread out” over a collective, no individual member of which can be singled out as the “center” of these processes.<sup>5</sup>

Equipped with these rather pithy classifications, let us return to affectivity. Section 4 draws attention to an important difference between cognition and emotion which makes the environment's contribution to our affective life much more interesting than the body's contribution. The remaining sections will then be concerned with different kinds of environmental contributions.

#### 4. Embodied Cognition and Embodied Emotions

When the idea that the specific morphological, biological, and physiological details of an agent's embodiment make a special and ineliminable contribution to its cognitive life gained prominence in the last quarter of the twentieth century, it stood in stark contrast to the received view of the time, which regarded cognition as a rather abstract and detached process of representation transformation. In contrast, the claim that the body substantially contributes to an agent's affective life should have been uncontroversial from the very start. Emotions have, except perhaps for a short period of radical cognitivism, never been taken to be a purely abstract, “fleshless” affair

to begin with (section 2). Ever since Aristotle pointed out that anger might be considered the striving for revenge by the dialectician but the boiling of the blood around the heart by the natural scientist (*De anima*, 403a/b), the body has played a pivotal role in almost all accounts of emotions. Even a staunch cognitivist like Solomon eventually conceded that in pursuit of an alternative to feeling theories he “had veered too far in the other direction,” acknowledging that “accounting for the bodily feelings . . . in emotion is not a secondary concern and not independent of appreciating the essential role of the body in emotional experience” (2004, p. 85). The mere claim that the body makes a special and ineliminable contribution to our affective life can thus not be one of the hallmarks of a new generation of situated approaches to emotion—we knew that all along. In this sense, the claim that emotions are embodied is less interesting than the claim that cognition is embodied.

It is not entirely uninteresting though. First, quite generally, the question whether (some aspects of) emotions are co-dependent or co-constituted by bodily processes is an important issue in the philosophy of emotions. Second, in light of component theories of emotions (section 2), the question is not whether the body contributes to our affective life per se, say in form of bodily arousal or facial expression, but whether it also contributes to what is generally agreed to be purely cognitive, namely, the appraisal component. If it turned out that the body also contributes to our cognitive appraisal of, say, a colleague’s offense as annoying, anger would be embodied in a hitherto unappreciated way (Colombetti, 2007, pp. 536–538). But in order to show that, it is not sufficient to simply *call* appraisals “embodied,” without showing exactly *how* the body contributes to what is traditionally considered to be the purely cognitive appraisal. Prinz (2004), for example, talks about “embodied appraisals,” but for him the bodily responses merely *draw our attention* to events in the world, while the latter’s relevance, say as annoying, is in fact *assessed* only by so-called “elicitation files”—which are in the brain. Clearly, for appraisals to be embodied, more is required than that (note 4).

Things are different with regard to the role of the environment. While emotions are typically conceived of as responses to changes in the environment, there is no pre-established consensus that over and above that the environment has a more substantial impact on our affective life. Detailing the exact way(s) in which the environment substantially contributes to our affective life will thus further our understanding of emotions, regardless of whether the environmental influence concerns the cognitive, the bodily, or the experiential aspect. Let us therefore concentrate on the contribution of the environment and our interaction with it (for a detailed discussion of embodied emotions, see Wiltzky, Stephan, & Walter, 2011).

## 5. Embedded Emotions

Not any extracranial influence on our affective life renders emotions “situated.” A slim or buff body may enhance our emotional well-being, and a prolonged illness or bodily fatigue may lead to a major depression, but this does not mean that the relevant

emotions are “embodied” in any interesting sense, for these bodily factors are mere triggers, or elicitors, of emotional states. Likewise, not every environmental influence on an emotion makes the latter “embedded.” The structure and character of the environment can undoubtedly influence our affective life, for example when one is disgusted by a fascist rally, or when a usually reserved person is carried away by the euphoria of a cheering crowd. But it would trivialize the idea of situated affectivity to call the corresponding emotions “embedded,” for no one has ever denied that the environment contributes to our affective life in the sense that emotions are responses to changes in the environment that are of import to us. What is needed is a non-trivial notion of “embeddedness” that distinguishes cases where the environment is a mere trigger from those in which it contributes to emotions in a way incompatible with traditional accounts.

This problem is familiar from the debate about situated cognition. Advocates of embedded cognition have to show in which sense they go beyond traditional cognitivism, given that their claim that cognitive processes depend upon extrabodily processes is entirely compatible with the cognitivist’s view that they are intracranial, syntactically driven operations on representations.<sup>6</sup> Two ideas have been invoked in response. First, the partial dispensability of internal representations, and second, the use of an appropriately structured environment or the active structuring of the environment with the goal of reducing cognitive load, the so-called “scaffolding” (e.g., Clark, 1997, p. 63). While cognitivism may be compatible with an environmental dependence per se, it clearly seems to be incompatible with the specific kind of environmental dependence envisaged by the advocate of embedded cognition. For the cognitivist, cognitive processing depends upon the environment in the purely counterfactual sense that if the environment were different, then the internal representations of the environment were different, and if these representations were different, then the internal cognitive processes were different. In contrast, advocates of embedded cognition take the environmental dependence to be *immediate* and *active*. The invocation of the structured environment as an external scaffold makes any mediation by elaborate internal representations (partially) dispensable because it replaces (or at least augments) the intracranial transformation of passively received representations by the active manipulation of the relevant external structures themselves. Embedded approaches to cognition are thus incompatible with cognitivism not because of the environmental dependence per se, but because the kind of dependence posited by the former is unavailable to the latter.

A rather similar picture emerges in the case of emotions. Regarding the first point, the role of the environment as a scaffold, examples where we actively structure or use the appropriately structured environment as an “affective scaffold” in order to influence our emotional well-being abound. We furnish our apartment in such a way that we feel comfortable, we remove everything that reminds us of our ex-partner to alleviate the pain of separation, we deliberately undergo a therapy in order to get over our anxieties, etc. The idea of active structuring is in fact crucial for strategies of *emotion regulation* (e.g., Gross, 2002). It makes a difference for one’s emotional life whether one decides on the eve of an important exam to meet with one’s equally

nervous classmates or an old friend (“situation selection”), and if one goes to see one’s friend, it makes a difference whether one discusses the imminent exam and the consequences of failing or just schmoozes and indulges in good memories from the common past (“situation modification”; see Stephan, 2012, in particular section 3).

Griffiths and Scarantino (2009) also stress the role of the environment as an actively structured scaffold for our emotional engagement with the world. They reject both purely cognitivist accounts and neo-Jamesian “embodiment”-theories (e.g., Prinz, 2004), which in their eyes denigrate the environment to the mere location of the input to and the output of emotional responses (Griffiths & Scarantino, 2009, p. 437). Instead, they conceive of emotions as a form of skillful engagement with the world that can be scaffolded, both synchronically in the unfolding of a particular emotional performance and diachronically in the acquisition of an emotional repertoire (Griffiths & Scarantino, 2009, p. 443). The construction of sacred buildings with a religious function, for example, is aimed at providing specific atmospheres that support religious feelings of sublimity or humility (e.g., Anderson, 2009). In particular, the provision of confessionals in churches enables certain kinds of emotional performance (synchronic scaffolding), and the broader Catholic culture supports the development of the ability to engage in the emotional engagements of confession (diachronic scaffolding). In a similar vein, social emotions like love and guilt function as commitment devices (e.g., Frank, 1988) that can be (partially) offloaded onto social institutions. In the case of romantic love, for instance, marriage creates social pressure that helps ensure mutual support and fidelity, the tradition of exchanging gifts at wedding anniversaries acts as an affective scaffold by making sure the everyday routines of married life are regularly interrupted by acts of romantic generosity, etc.

Regarding the second point, the (partial) dispensability of elaborate internal representations, Griffiths and Scarantino’s account is also illuminating. On their view, emotional content need not have a conceptual representational format; it may instead have a “fundamentally pragmatic dimension, in the sense that the environment is represented in terms of what it affords to the emoter in the way of skillful engagement with it” (2009, p. 441). This supposedly holds even for so-called “higher” cognitive emotions like shame, guilt, or embarrassment. Authentically expressed guilt, for instance, can be understood as a social strategy (see, again, Frank, 1988) aimed at reconciliation in order to repair a relationship, and thus as a form of a skillful engagement for which the conceptual capacities and elaborate internal representations presupposed by classical cognitivist emotion theories are less important than has traditionally been assumed (Wilutzky & Stephan, forthcoming)—as is evidenced by the fact that social “guilt strategies” can already be observed in infants that do not (yet) have the conceptual and representational repertoire required by traditional accounts (e.g., Reedy, 2000).

If the ideas just sketched are on the right track, the two key ideas from the debate about embedded cognition—the partial dispensability of internal representations and the use of the (actively) structured environment as a scaffold—turn out to have close analogues in the affective realm, in which case at least some emotions turn out to be

embedded in a substantial sense not captured by extant accounts in the philosophy of emotions that have hitherto focused too narrowly on affective phenomena of a certain individualistic kind. Some emotions are dynamic engagements with the world rather than inner snapshot responses to external triggers.

## 6. Emotions beyond Brain and Body

Interesting as this idea of embedded emotions may be, it does not address the questions with which we began: do some emotions cross an individual's boundary? If so, what kinds of supra-individual systems can be said to have affective states? And, crucially: why? For even if the environment is a (potentially indispensable) scaffold for an individual's affective life that renders elaborate internal representations dispensable, embedded emotions do not cross organismic boundaries. In order to show that emotions indeed transcend the bounds of brain and body, an additional argument is needed. To see this, consider the situated approach of Slaby, who discusses emotional episodes much like the ones described above (e.g., being drawn into euphoria on an exuberant party) and argues that in such cases "*a part of the world* is what sets up, drives, and energizes our emotional experience" (forthcoming, p. 9), concluding that the environment provides "tools for feeling' ... in something like the way there are 'tools for thinking' in EM [extended mind] theorizing" (forthcoming, p. 10). Without any justification for the transition from a dependence- to a constitution-claim, however, this is just an instance of Adams and Aizawa's (2008) "coupling-constitution fallacy": the mere fact that a part of the world sets up, drives, and energizes our affective life obviously neither entails nor vindicates the claim that emotions are partly constituted by that part of the world.

In the debate about extended cognition, the constitution-claim has been justified either by appeal to a "parity principle" (PP), according to which extrabodily processes are constituents proper if they play the same functional role as comparable internal processes might play, or by appeal to the idea of an "integration by complementarity," according to which extrabodily processes are constituents proper if they complement internal processes in a way creating hybrid systems with characteristics individuals alone, de-coupled from their environmental resources, could not have (e.g., Menary, 2006). Let us consider the application of these two strategies to affective phenomena.

Ignoring a lot of details (for a more comprehensive discussion of PP and its limitations, see Walter, 2010), PP holds that cognitive processes are partially constituted by extrabodily processes if the latter play the same functional role as comparable internal processes we would not hesitate to admit as constituents proper. In the standard example of Otto the Alzheimer patient, for example (Clark & Chalmers, 1998), the entries in Otto's notebook are supposed to be part of what realizes his memories because they play the same functional role vis-à-vis his cognitive and behavioral competences as do biomemories in "ordinary" adults. Therefore, PP provides a viable route to extended emotions just in case the internal constituents of emotions have extrabodily functional equivalents. Hence, since most accounts take

emotions to have various aspects (section 2), much depends upon what internal constituent one is talking about. According to Scherer's (2005) "component process model," for example, emotions are constituted by five highly interacting components: (1) a subjective feeling component (experiences); (2) a cognitive component (appraisals); (3) a motivational component (action-tendencies); (4) a neurophysiological component (e.g., bodily symptoms); and (5) a motor expression component (e.g., mimics). Barring any other constituent of emotions, one of these must have extrabodily functional equivalents, if PP is to support the idea of extended emotions.<sup>7</sup>

Since PP requires that the internal component is exhausted by its functional role (otherwise functional equivalence does not guarantee parity), while experiences notoriously resist a functional characterization, PP is inapplicable to the subjective feeling component.<sup>8</sup>

Since cognitive states or processes do seem susceptible to a functional analysis, the appraisal component fares better in this regard. Nevertheless, it is not obvious that extrabodily processes actually play the functional role characteristic of internal appraisals: Otto's notebook entries are at best dispositional, or standing, beliefs, while appraisals resemble occurrent beliefs that are triggered in concrete situations by concrete events and must be capable of influencing an agent's behavior in timescales of milliseconds. At least currently existing extrabodily resources apparently fail to be functionally equivalent in this regard.<sup>9</sup> However, much depends upon whether a full-fledged equivalence is required or whether a coarse-grained equivalence along the lines of commonsense functionalism is enough (e.g., Clark, 2008, p. 88). If not every fine-grained detail regarding the rapid, automatic, and unconscious integration of the information provided by the appraisal needs to be replicated,<sup>10</sup> then appropriately connected devices that inform an agent about threatening or undesirable situations (say, radioactive pollution or speed traps) will be candidates for extended appraisals. Although the information provided by such devices can of course not be integrated with the other emotion components as intricately and dynamically as the information in "normal" appraisal processes, the non-automatic and conscious evaluations in question can nevertheless affect the agent's experiences and action tendencies.

Or consider Otto's cousin Arnold, an autistic person incapable of directly perceiving and recognizing the emotional states of others in social interactions. If Arnold is equipped with a headset camera connected to a computer running a program for decoding human emotional states, his appraisal system is supplied with online-information in real time about the emotional states of his interaction partners (el Kaliouby, Picard, & Baron-Cohen, 2006). On the basis of this, Arnold can immediately appraise the situation, allowing him to adequately interact with other people. The information provided by such devices may not be processed as quickly in Arnold's appraisal system as in "normal" appraisal processes. As indicated above, however, the question is whether such fine-grained differences matter or whether PP requires only a coarse-grained functional equivalence, so that information provided and integrated within time spans that allow for conscious and non-automatic appraisal processes and inferences could still be functionally equivalent. One reason for thinking that a coarse-grained equivalence suffices is the following: the emotional responses of

high-functioning Asperger patients are slowed down considerably because they have to deliberately and consciously draw inferences about the emotional states of others. But even if these slow, non-automatic, and conscious inferences were the only basis of their emotional responses, we would not take that to be a reason for denying them whatever emotional competences they have (just as we take the amazing cognitive capacities of autistic savants as evidence that they have a quite unusual kind of memory, rather than concluding from the fine-grained functional peculiarities of their mnemonic skills that they do not possess any memory at all; see Kyselo & Walter, 2011).

If only a coarse-grained functional equivalence is required, then PP is applicable to the motivational component of emotions as well. Arnold's device may not only inform him about the emotional states of others, but directly elicit action-tendencies by suggesting, say, when it is a good time to interrupt a conversation or when it is appropriate to apologize for interrupting, etc. (although these action-tendencies may again not be integrated with the other components as rapidly, automatically, and unconsciously as in "normal" cases).

In the case of neurophysiological components (an increase in blood pressure, say, or heightened muscle tone) a device functionally equivalent to the entire human body's physiology is admittedly hard to conceive. However, one may isolate smaller functional units of the neurophysiological component for which functional equivalents can be established, such as hormone secretion: a small device containing vials of hormones known to play a central role in emotion processes (e.g., adrenaline, oxytocin) may be activated by the appraisal component and as a consequence release controlled amounts of hormones into the blood stream. Likewise, an apparatus similar to a cardiac pacemaker that can increase or slow down the heartbeat in accordance with the appraisal component's activity could parallel the modulation of this singular physiological response in normal occurrences of emotion.

If one is willing to countenance bodily expressions as parts of emotions,<sup>11</sup> motor expression components seem to be other candidates for an extension via PP. Instead of grinding one's teeth in anger or smiling in excitement, one may throw a plate against the wall or fire celebratory gunshots in the air. Fine-grained functional equivalences, however, may be unattainable, here, too, for bodily expressions like grinding our teeth or smiling seem to be much more involuntary and much less under the agent's conscious control than their alleged extrabodily counterparts.

Although more work is obviously required here, it seems fair to conclude that if one can justify the appeal to coarse-grained functional equivalences along the lines above and resolve the other problems with PP well-documented in the debate about extended cognition, then at least some emotions can (in a narrow range of special cases) be said to be extended on the basis of PP.

What about the idea of integration by complementarity that for example Slaby favors? The main problem here is that the appeal to complementarity alone does nothing to justify the move from dependence- to constitution-claims and therefore fails to provide an argument for cognitive extension. Not any external resource that enables individuals to do something they could not do otherwise (e.g., cognitive tools that come with representational formats, processing speeds, or bandwidth capacities

unavailable to internal resources on their own) is thereby ipso facto an extrabodily part of their cognitive machinery. Unless we want to commit another coupling-constitution fallacy, the mere fact that, say, we could not see without light should not make the light rays radiating from the sun constituents of our visual perception—they complement our cognitive machinery, but they are not (on pain of so-called “cognitive bloat”) a part of it. Without any additional criterion that distinguishes the “interesting” couplings that give rise to integrated hybrid systems and real extension from those “mere” couplings where external resources complement the cognitive machinery of a system without literally becoming a part of it, the integrationist’s strategy therefore does not get off the ground. PP would obviously be one candidate for such a criterion: the “interesting” couplings could be exactly those where the extrabodily resource is such that were it internal, we would have no hesitation in recognizing it as a part of the cognitive or affective process. That, however, would make integrationism dependent upon PP, to which it was supposed to be an alternative.<sup>12</sup> Of course, the integrationist can always propose another criterion (or accept a radical cognitive inflation, which, we venture, would amount to a *reductio* of integrationism), but so far no convincing candidates are in sight, and, as said above, barring any such criterion, the appeal to integration by complementarity alone cannot close the gap between embedded and extended emotions.<sup>13</sup>

Although unsuitable as an argument for cognitive extension, the idea of integration by complementarity can draw our attention to some interesting phenomena in which an individual’s affective life is enriched by the coupling with other individuals in such a way that complex supra-individual systems are capable of feats that do not come into view as long as one merely concentrates on interacting individuals qua individuals. Consider, for example, Scheler’s (1923/1954) category of *feeling with* (*Miteinander-fühlen*) in the sense of *collective affectivity*. Discussing an example of mother and father mourning at their child’s grave, Scheler argues that the interesting point is not that each of the two is suffering, that each knows the other is suffering or that each is suffering with the other, but that they are suffering *together* in the sense that they, as a collective, share (non-metaphorically) the same pain (*Leid*). In cases like these, suffering is not restricted to the organismic boundaries of the father or the mother: the mother’s suffering may of course provide the input to the father’s emotional state, and the father’s suffering may perhaps be dependent upon the mother’s suffering and the rest of the environment in some more substantial sense. But over and above that, there is also the suffering of the two together that does not come into view if one focuses only on individuals as the bearers of affective states.

Apart from Scheler’s potentially controversial idea of inter-individually shared experiences, more mundane examples of “joint emotions” include social interactions in which emotions are dynamically coupled with a social environment that is not only influenced by but also influencing the unfolding of individual emotional episodes. In such cases, there is not just one single emotional reaction to someone else’s action, but a continuous exchange between socially interacting agents; the affective phenomena in question are not one-shot affective responses to a detected stimulus (as in classical examples such as the lone hunter in the Savanna who comes across a

lion and shows a fear reaction), but must be seen as dynamically unfolding between social agents, where the outcome is initially open, with many factors influencing the development of this process, such as the social setting, cultural conventions, and practices. In such interactions, affective signals are sent back and forth, are received by either party and shape the emotional responses on-line as, e.g., in a marital argument (Griffiths & Scarantino, 2009, in particular p. 438; Wilutzky & Stephan, forthcoming). Dynamic affective phenomena of this kind are not a mere philosophical fancy and by no means unusual, but a well-documented research topic in other disciplines as well. Cole (2009), for example, provides an interesting and illuminating psychiatric perspective on the role of social interaction for emotional experience, and Goodwin and Goodwin (2000) view emotions from an anthropological perspective as social phenomena organized and made visible through situated practices used by individuals to construct their lifeworld.

Other examples of “collective affects” that have their place “between” and not “in” social beings include what Anderson (2009) calls “affective atmospheres” (Stephan, 2012, section 2). Such atmospheres can be encountered in particular spaces of time, landscapes, and buildings, for instance as the mirthless atmosphere of a rainy November dusk, the magnificence of the starring sky in the Andes, or the holy aura of an old cathedral. Typically, such atmospheres are also present in certain epochs, say as a revolutionary atmosphere, but they also ubiquitously emerge in social encounters, for example when a group produces an icy or very welcoming atmosphere for a person, say, in a job interview, and can have stable characters, nearly as objective as secondary qualities.

Cases like these, where supra-individual systems are not (like, say, Arnold) composed of an individual coupled to some technical or non-technical artifact or natural resource but by groups of interacting individuals are the best candidates for affective phenomena that cross an individual’s boundaries. PP or the idea of integration by complementarity play no argumentative role here; the motivation for not restricting affective phenomena of this kind to individuals (or their brains) is that they are an essentially *collective* and *emergent* affair. First, just as a vessel is not navigated by the navigator using his shipmates as an extrabodily resource, but by the navigational crew as a whole, and just as a bill is not passed by one senator relying on the other senators as extrabodily resources, but by the senate as whole, the oppressive atmosphere that emerges when a job interview doesn’t go well and becomes awkward or the contagious euphoria or panic of a crowd do not have a single individual as a bearer but are distributed over supra-individual collectives of interacting individuals. Second, while they supervene upon the individual states of the group’s members plus the nonsocial environment, they are not just the aggregate of individual affective states (as when, say, the three of us are a happy crowd in the sense that each of us considered individually is happy). Rather, they are *emergent* in the sense that the affective states and actions of each individual member continuously and reciprocally influence each other and are themselves shaped and amplified in a top-down manner by the overall dynamics of the group as a whole—a characteristic and psychologically well-documented feature of emotional episodes in groups, in which otherwise sensible and

peaceful people can sometimes get carried away by the contagious nature of euphoria, panic, or the blind rage of lynch mobs as a consequence of “deindividuation.”<sup>14</sup>

Strictly speaking, however, emotions of this kind are not “extended,” but “distributed” (section 3). What is characteristic for them is social groups that are collective subjects of emotions that emerge from the mutual interaction of their members and for which no single member of the group is an appropriate bearer, not individuals whose emotions are in part realized by some extrabodily process. Extended emotions of the latter kind (those that e.g., Arnold might be said to have) are (still) rather exceptional, requiring the special circumstances in which PP is applicable. The more familiar cases we have in mind are not ones where an individual’s emotions are extended into extrabodily, maybe even social, resources (as would be the case if, say, Arnold instead of using his technological device instructed his wife to provide him with information about the emotional states of others), but ones where emotions are distributed over all the members of a group (as in the case of joint emotions), or emerge from the interactions within a social group and are “out there” to be felt (as in the case of atmospheres).<sup>15</sup> Stressing the essentially dynamical nature, one may call affective phenomena of this kind “enacted” rather than “distributed.” It should be clear, though, that by doing so one does not (and should not) commit oneself to the more controversial claims of the enactivist (section 3; see also Colombetti, 2007; Colombetti & Thompson, 2007), and in particular not to the claim that emotions, due to their essentially relational nature, have no location. They do. It’s just that some emotions sometimes have their place beyond the brain and the body.

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### Notes

- [1] Compare, for instance, Marr’s (1982) purely cognitivist account of vision with contemporary situated approaches like Noë’s (2004). While others use “situated” synonymous with what we call “embedded” (Shapiro, 2010) or “extended” (Wilson & Clark, 2009), we use it as an umbrella term for any departure from cognitivism stressing the importance of the body, the environment, and/or the interaction of brain, body, and environment (Robbins & Aydede, 2009).
- [2] Or sense-feel-appraise-act-, sense-appraise-act-feel-, or sense-act-feel-cycles, depending on your favorite account of emotions.
- [3] A crucial question for componential theories of emotion is whether, if cognition is situated, such a neat componential analysis of emotions with distinctly separable bodily and cognitive components is at all possible (Colombetti, 2007).
- [4] Some restrict the departure from traditional cognitivism to the fact that allegedly central, amodal cognitive processes involve (pace, e.g., Fodor, 1983) sensorimotor areas of the brain. However, such a notion of situatedness is entirely compatible with ascribing situated cognitive processes to, say, brains in vats, and thus too weak to be worth that name.

- [5] While Clark and Chalmers (1998) already hint at the possibility of a “socially extended mind,” where, for example, memories are shared between multiple agents, this nomenclature obscures this important difference: the very talk of “extended” cognition suggests that there is an individual whose cognitive processes *ex-tend* into the environment. In transactive memory systems (e.g., Barnier, Sutton, Harris, & Wilson, 2008), however, or cases like the joint navigation of a vessel, there is no such original bearer. The navigational processes do not *ex-tend from*, say, the navigator *into* his fellow shipmates in the same way as, say, Otto’s memories (see below) extend into his notebook; since their bearer is the distributed system to begin with, there is simply nothing from which they can *ex-tend*. This distinction between extended and distributed processes (see also Hutchins’ contribution to this issue) will allow us in section 6 to distinguish different kinds of supra-individual affective phenomena. We are indebted to an anonymous referee for pressing us to clarify this issue.
- [6] The same problem arises for those who explicate the idea that cognition is embodied by saying that cognitive processes depend upon bodily processes.
- [7] Slaby rejects the appeal to PP on the grounds that “it is impossible to assign emotions clear-cut functional roles that capture all their relevant aspects” (forthcoming, p. 12). This is true, but no argument against PP, given that emotions can be extended even if not all their relevant aspects are extended.
- [8] Another reason for restricting experiences to the brain can be found in Clark (2009).
- [9] Since the opponents of situated approaches admit that cognition (or affectivity) *might be* extended (e.g., Adams & Aizawa, 2008), the only interesting issue is whether they actually *are* extended.
- [10] With regard to cognition, it has been argued that such fine-grained details *do* matter and that the states of the Otto-cum-notebook system fail to count as beliefs or memories properly so called because they do not exhibit the kind of rapid, automatic, and unconscious informational integration characteristic of beliefs (Weiskopf, 2008), or the kind of recency-, primacy-, and chunking-effects characteristic of memories (Adams & Aizawa, 2008, p. 61); for a dissenting view, see Kyselo and Walter (2011).
- [11] One of us (S.W.) is highly skeptical: to say that someone blushed *because* she was ashamed is to offer a *causal explanation* of her blushing, not a mereological explanation that accounts for the presence of a part in terms of the presence of the whole.
- [12] As an anonymous referee has pointed out, it is not even clear that the appeal to PP and integrationism are compatible, for given the different format and dynamics of the external resources, functional equivalence may be unattainable. Yet, much depends again upon how fine-grained the functional equivalence has to be (see above).
- [13] Slaby (forthcoming) fails to see this, as does Menary (2006) in the debate about extended cognition.
- [14] For a meta-analysis of the psychological literature on deindividuation, see Postmes and Spears (1998).
- [15] Huebner’s (2011) notion of “genuinely collective emotions” bears some resemblance to this idea, although he, erroneously in our eyes, appeals to parity considerations. According to Wilson’s (2005) *social manifestation thesis*, collectives are unsuitable as the bearer of cognitive (or, in our case, affective) processes, even though some individualistic cognitive (or affective) processes require their bearer to be a member of an appropriately organized and technologically equipped social collective. But as said above, a bill is not passed by one senator embedded in a collective of senators, but by the senate as whole (which, as a whole, is also responsible for passing it). Likewise, while it is true that the blind rage of a lynch mob or a mass riot is possible only in the context of the mob or the mass, as Wilson’s *social manifestation thesis* holds, the rage itself, emerging as it does from the dynamical, top-down influenced interplay among the members, is clearly not a feature of any single member, but of the collective.

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