

# Emotions Beyond Brain and Body

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# situated cognition

For **traditional cognitivism**, cognition is the intracranial “filling” mediating between input from and output to the extracranial parts of the body and the extrabodily environment (the so-called “sandwich model of cognition”).

**Situated approaches**, in contrast, pivot on the fact that cognition is primarily based on reciprocal real-time interactions of embodied agents with their environments.

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.

# situated 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 or other affective processes (sometimes) cross an individual's boundary? If so, what kinds of supra-individual systems can be said to be bearers of these states, and why?

And does that make those processes or states “embedded” or “extended” in the sense cognition is said to be embedded and extended?

# overview

- Section 1 shows why it is important to understand in which sense body, environment, and our embodied interaction with the natural and social world around us contribute to our affective life.
- Section 2 sets the scene by introducing some key concepts of the debate about situated cognition.
- Section 3 draws attention to an important disanalogy between cognition and emotion with regard to the role of the body.

# overview

- Section 4 shows under which conditions a contribution by the environment results in non-trivial cases of “embedded” emotions.
- Section 5 finally 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.”

# overview

1. Why Situated Affectivity?
2. Situated Cognition
3. Embodied Cognition and Embodied Emotions
4. Embedded Emotions
5. Extended or Distributed Emotions

# overview

1. *Why Situated Affectivity?*
2. Situated Cognition
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# situated affectivity

Situated affectivity is interesting because

some discoveries recently made in the study of cognition apply to emotions as well:

Our affective life is not “sandwiched” between perception as the input and action as the output of repeated sense-appraise-feel-act cycles, and not detached from our embodied interaction with our environment.

# situated affectivity

Situated affectivity is interesting because

a focus on cognition alone is not going to yield a complete picture of our mental life, and

most accounts of emotions acknowledge that cognitive processes are one aspect of emotions, and so these accounts will be affected if cognition is situated.

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1. Why Situated Affectivity?
2. **Situated Cognition**
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# situated cognition

(1) What does it mean to say that cognition involves **extracranial** processes?

(2) What does it mean to say that cognition **involves** extracranial processes?

# situated cognition

Cognitive [or affective] processes are

**embodied** if they depend upon or are constituted by bodily processes;

**embedded** if they depend upon extrabodily (environmental) processes;

# situated cognition

Cognitive [or affective] processes are

**extended** if they are constituted by extrabodily (environmental) processes;

**enacted** if they are essentially relational processes and as such have no location

**distributed** if they involve different individuals none of which is “the” bearer

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# embodied emotions

For Aristotle, e.g., it is without question that all human affections involve matter, namely our body. Hence, their definitions are such as:

“Being angry is a particular movement of a body of such and such a kind, or a part ... of it, as a result of this thing and for the sake of that”. –

# embodied emotions

The student of nature and the dialectician, however, would define each of these differently, *e.g.*, what anger is:

“the latter would define it as a desire for retaliation or something of the sort, the former as the boiling of the blood and hot stuff round the heart. Of these, the one gives the matter, the other the form and principle.”  
(*de anima* 403 a/b)

# embodied emotions

Even Robert Solomon conceded:

“But what led me to an increasing concern about the role of the body and the nature and role of bodily feelings in emotion was the suspicion that my judgment theory had been cut too thin, that in the pursuit of an alternative to the feeling theory I had veered too far in the other direction. ...

# embodied emotions

[A]ccounting for the bodily feelings (not just sensations) in emotion is not a secondary concern and not independent of appreciating the essential role of the body in emotional experience. ... [T]he kinds of *bodily experience* that typify emotion and the bodily manifestations of emotion in immediate expression ... are not mere incidentals, and understanding them will provide a concrete and phenomenologically rich account of emotional feelings ...” (2004, 85)

# embodied emotions

Thus, the claim that emotions are “embodied” is not very controversial, because the body has always been taken to play an important role for some aspects of our emotions.

What would be interesting would be the discovery that the body not only contributes to the experience or arousal aspect of emotions, but also to their cognitive appraisal process.

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# embedded emotions

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.

# embedded emotions

Not any environmental influence renders emotion embedded in an interesting sense, for the environment may simply be that which delivers the input to internal processes.

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.

What makes the idea of embedded cognition interesting is the idea that the environment acts as a “scaffold”.

# scaffolding

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:

# scaffolding

The invocation of the structured environment as an external scaffold

- makes any mediation by elaborate internal representations (partially) dispensable
- because it replaces the intracranial transformation of passively received representations
- by the active manipulation of the relevant external structures themselves.

EXAMPLES for cognition and affectivity

# emotion regulation

“Emotion regulation refers to the processes by which we influence **which emotions we have, when we have them,** and **how we experience and express them.**” (Gross 2002, 282)

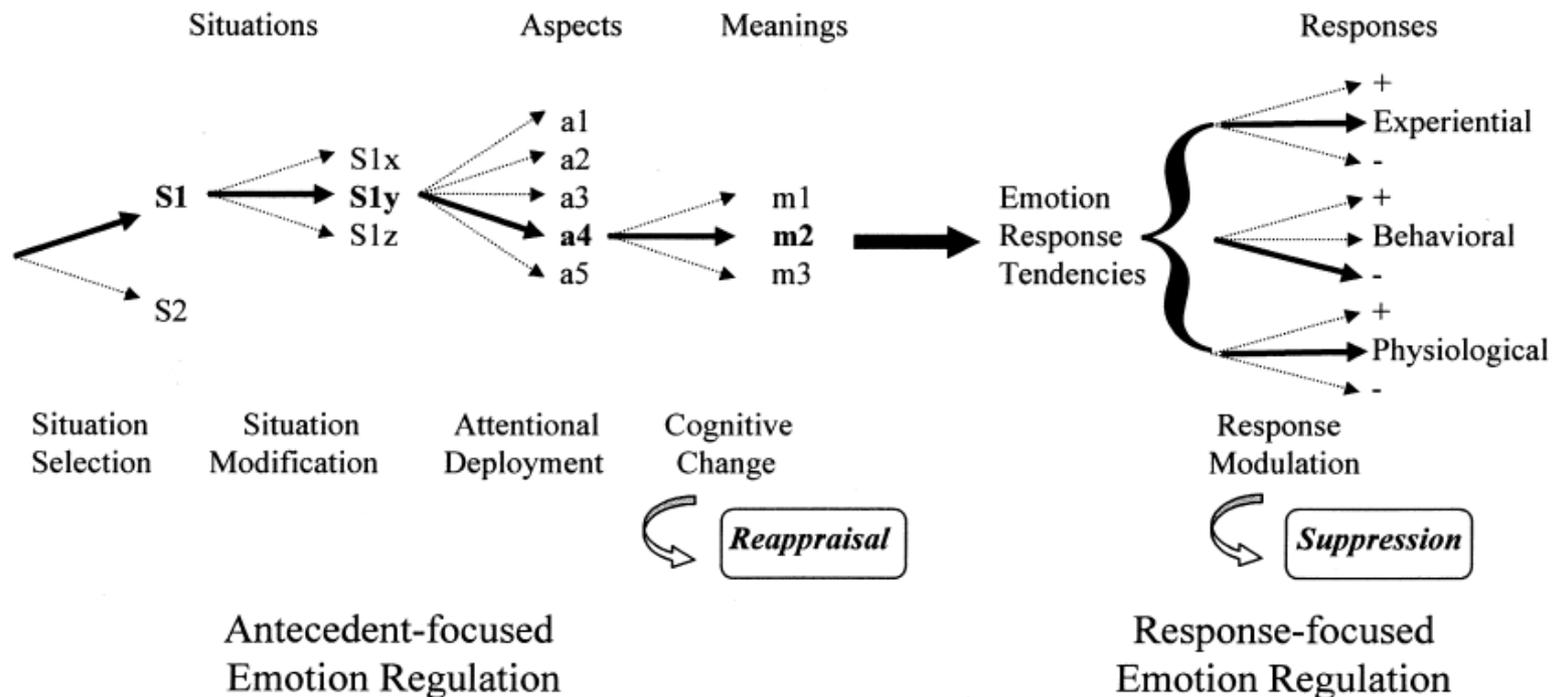
Gross considers five moments in the emotion generative process where somebody can influence his or her emotions, four of them are **antecedent-focused**, and one is **response-focused**.

# emotion regulation

In temporal order, the first four strategies comprise

- *situation selection,*
- *situation modification,*
- *attentional deployment,*
- *cognitive change,* and eventually
- *response modulation.*

Gross centers on a comparison of the effects of the last two: cognitive change by *reappraisal* versus response modulation by *suppression*.



**Figure 1.** A process model of emotion regulation. According to this model, emotion may be regulated at five points in the emotion generative process: (1) selection of the situation; (2) modification of the situation; (3) deployment of attention; (4) change of cognitions; and (5) modulation of experiential, behavioral, or physiological responses. The first four of these are antecedent focused, the fifth is response focused. The number of response options shown at each of these five points is arbitrary, and the heavy line indicates the particular option selected in the example given in the text. Two specific emotion regulation strategies—reappraisal and suppression—are the primary focus of this review. Adapted from Gross (2001).

# emotion regulation

While reappraisal can lead to a modification of the personal meaning that is assigned to a given situation and thereby change the whole emotional response (including experiential, behavioral, and physiological responses), suppression aims first and foremost at a decrease of expressive behavior.

Often, it does not affect experiential and physiological responses, which themselves are not accessible to direct voluntary modification.

# emotion regulation

Both *situation selection* and *situation modification* have an influence on the onset of emotions.

Thus, it makes a difference whether somebody chooses to meet an old friend instead of his study group the day before the math exam, and it makes a difference for the generative process of his emotions whether he chooses to talk about the last movie rather than about the exam.

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# extended emotions

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.

# extended emotions

In analogy to the debate about extended cognition, one may try to justify the constitution-claim either by an appeal

to a “parity principle” (PP),

according to which extrabodily processes are constituents proper because they play the same functional role as comparable internal processes

# extended emotions

or by appeal to the idea of

an “integration by complementarity,”

according to which extrabodily processes are constituents proper because they complement internal processes in a way leading to a new hybrid system with characteristics the individual alone, de-coupled from its environmental resource, could not have.

# integrationism

The problem is that the idea of integration by complementarity alone cannot justify the move from dependence- to constitution-claims, because not any resource that enables an individual to do something it could not do otherwise is *ipso facto* an extrabodily part of that individual's cognitive machinery:

On pain of committing just another coupling-constitution fallacy, the mere fact that we could not see without light should not make the light rays radiating from the sun constituents of our visual perception.

# the parity principle

“If, as we confront some task, a part of the world functions as a process which, *were it done in the head*, we would have no hesitation in recognizing as part of the cognitive process, then that part of the world *is* (so we claim) part of the cognitive process.” (Clark & Chalmers 1998)

# the parity principle

PP provides a viable route to extended emotions just in case the internal constituents of emotions have extrabodily functional equivalents.

However, since most accounts take emotions to have various aspects, much depends upon what internal constituent one is talking about.

# Scherer's component process model

Emotions are constituted by five highly interacting components:

- (1) a subjective feeling component (i.e., experiences),
- (2) cognitive components (i.e., appraisals),
- (3) a motivational component (i.e., action-tendencies),
- (4) a neurophysiological component (i.e., bodily symptoms), and
- (5) a motor expression component (i.e., mimics etc.).

**TABLE 1**  
**Relationships between organismic subsystems and the functions and components of emotion**

<b>Emotion function</b>	<b>Organismic subsystem and major substrata</b>	<b>Emotion component</b>
Evaluation of objects and events	Information processing (CNS)	Cognitive component (appraisal)
System regulation	Support (CNS, NES, ANS)	Neurophysiological component (bodily symptoms)
Preparation and direction of action	Executive (CNS)	Motivational component (action tendencies)
Communication of reaction and behavioral intention	Action (SNS)	Motor expression component (facial and vocal expression)
Monitoring of internal state and organism–environment interaction	Monitor (CNS)	Subjective feeling component (emotional experience)

*Note:* CNS = central nervous system; NES = neuro-endocrine system; ANS = autonomic nervous system; SNS = somatic nervous system.

# the parity principle

Barring any other constituent of emotions, one of these must have extrabodily functional equivalents, if PP is to support the idea of extended emotions.

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.

# the parity principle

Much depends upon whether a full-fledged equivalence is required or whether a coarse-grained equivalence along the lines of commonsense functionalism is.

# the parity principle

If one allows that extrabodily processes need not duplicate every fine-grained detail and may only be coarse-grained functional equivalents (see, e.g., Clark 2008, p. 88), then bodily connected devices that inform an agent about, say, radioactive pollution or about radar controls on highways may be candidates for extended appraisals. If one allows that extrabodily processes need not duplicate every fine-grained detail and may only be coarse-grained functional equivalents (see, e.g., Clark 2008, p. 88), then bodily connected devices that inform an agent about, say, radioactive pollution or about radar controls on highways may be candidates for extended appraisals.

# the parity principle

If Arnold were equipped with a headset camera connected to a computer running a program for decoding human emotional states, he could receive online-information in real time about the emotional states of his interaction partners and on this basis immediately interact with them more appropriately than without the device (e.g., el Kaliouby et al. 2009).

# the parity principle

The motivational component of emotions might have extrabodily functional equivalents in special cases, too: Arnold's device may not only inform him about the emotional state of his social environment, but, in addition, also suggest how to act (e.g., "you should apologize for interrupting the speaker").

# Hvala!

Stephan, A./Walter, S./Wilutzky, W. (2014): Emotions beyond brain and body. *Philosophical Psychology* 27, 65–81.