

# Enactive appraisal

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Published online: 29 September 2007  
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**Abstract** Emotion theorists tend to separate “arousal” and other bodily events such as “actions” from the evaluative component of emotion known as “appraisal.” This separation, I argue, implies phenomenologically implausible accounts of emotion elicitation and personhood. As an alternative, I attempt a reconceptualization of the notion of appraisal within the so-called “enactive approach.” I argue that appraisal is constituted by arousal and action, and I show how this view relates to an embodied and affective notion of personhood.

**Keywords** Emotion · Appraisal · Embodiment · Enaction · Personhood

the first impression of the world is a physiognomic impression  
Jan Patočka<sup>1</sup>

In developing a theory of emotion, we should not feel compelled to supplement embodied states with meaningful thoughts: we should instead put meaning into our bodies and let perceptions of the heart reveal our situation in the world  
Jesse Prinz<sup>2</sup>

## Introduction: the need to “embody” emotion theory

Emotions should be privileged tools in the attempt to reintegrate the mind-body divide. They appear as simultaneously mental and bodily, and their dual nature has

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<sup>1</sup> Patočka (1998, p. 134).

<sup>2</sup> Prinz (2004a, p. 58).

raised several hypotheses about how mind and body “make contact.” Nevertheless, emotion theory has hardly been sensitive to the “embodied view” of the mind articulated by several cognitive scientists (e.g. Beer 2003; Clark 1997; Kelso 1995; Noë 2004; Thelen and Smith 1994; Thelen et al. 2001; Thompson 2007; Thompson and Varela 2001; Varela et al. 1991). These authors have characterized processes such as perception, memory, categorization and consciousness as importantly related to the body. Many of them have used the conceptual and mathematical tools of dynamical systems theory to model the reciprocal influences of the brain, the body and the environment. To be sure, there have been attempts to use the tools of dynamical systems theory to model and understand emotions (see Fogel et al. 1992; Scherer 1984; the papers in Lewis and Granic 2000). Yet, these attempts have mainly focused on modeling “heady” aspects of emotion, leaving the body aside. On the other hand, most cognitive scientists calling for an embodied view of the mind have remained silent about emotions.

In this paper I attempt to bring emotion theory and the embodied view of the mind closer to each other. I first show in which sense emotion theory is still disembodied; in particular, I point to the separation between “appraisal” on the one hand, and bodily events such as “arousal” and “action” on the other. Despite different characterizations, appraisal is in general assumed to take place in someone’s head; arousal and actions, on the other hand, are characterized as “mere” bodily processes. If one were to draw a caricature of the spirit of several appraisal theories of emotion, one could draw appraisal as a homunculus in the head that evaluates the environment and the state of the body, and that accordingly decides the emotion of the individual in question.<sup>3</sup> This is a caricature because, to be fair, appraisal is not always conceived by such theories to be a homunculus and is not always taken to be deliberate; it is often seen as distributed over component systems, as nonconscious, quick and even influenced by arousal. Nevertheless, appraisal is generally understood as separate from the body, which prevents a thorough embodiment of the mind (what exactly “separate” means depends on individual theories and will become clearer as the arguments proceed).

I argue that this appraisal-body separation has induced accounts of emotion elicitation that are highly implausible when considered through a first-person phenomenological analysis. The main target of my criticisms is what I call *corporeal impersonalism*, namely the tendency to see bodily events as an objective index of emotion, rather than as the processes of a *lived body*. The notion of the “lived body” comes from the phenomenological tradition and refers to the body as *experienced*, versus the body as an object of third-person investigations. Corporeal impersonalism, as I illustrate it, characterizes older and newer theories of emotion, including some recent dynamical models. It influences the way in which all these theories understand appraisal and its relation to the body, and renders them phenomenologically implausible.

I eventually turn to the account of emotion and appraisal recently proposed by Marc Lewis (2005) and I use his arguments as a springboard toward a thoroughly

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<sup>3</sup> One exception is Jesse Prinz’s recent account, according to which all emotions are embodied appraisals (Prinz 2004a, 2004b). See Colombetti and Thompson (2007), for something more about Prinz’s view and the embodied–enactive approach.

embodied view of appraisal, which I characterize as “enactive.” This view, as we shall see, involves seeing appraisal as *constituted* by bodily events such as arousal and actions. As I discuss toward the end, the move towards “enacting” appraisal has important implications for emotion modeling, for understanding emotional experience and, ultimately, for a phenomenologically plausible notion of personhood.

## The enactive approach

The embodied view of the mind, as mentioned, has several supporters. It has been articulated in different ways, and here I draw on the “enactive approach” (Noë 2004; Thompson 2007; Thompson and Varela 2001; Varela et al. 1991), which itself includes several ideas. In this section I briefly mention and illustrate those ideas that relate most closely to my present concerns, namely: (1) the centrality of experience in any investigation of the mind; (2) the deep integration of action and perception (also called “sensorimotor integration”); (3) the self-regulatory processes of the organism; and (4) the phenomenological distinction between *Leib* and *Körper* – that is, between the subjectively lived body, and the body as the object of third-person observations. I also pay special attention to two ideas that will prove helpful to characterize the notion of enactive appraisal; these are Susan Hurley’s (1998) notion of “constitutive interdependence,” and Jan Patočka’s (1998) account of dynamic and embodied personhood.

Since its inception, the enactive approach has conceived of the mind as the mind of an experiencing and corporeal subject in relation to the environment. Varela et al. (1991) drew connections between cognitive science and the Buddhist mental discipline of mindfulness awareness. More recently, Petitot et al. (1999) and Thompson (2007) have turned to the western phenomenological tradition; as Thompson discusses in detail, the scientific study of mind and phenomenology should be complementary and mutually informing. This stance is appealing when it comes to emotion, because emotions are, in an important sense, experiences (at least in part), and especially rich ones. In particular, the body has always occupied a central place in the description of emotion and emotion experience (see Colombetti and Thompson 2007). In contemporary emotion science, neuroscientist Antonio Damasio (1999) for example views distinct emotions as different patterns of bodily changes, including visceral, somatic and musculoskeletal activity; psychologists such as Frijda (1986) and Lambie and Marcel (2002) describe emotion and emotion experience as constituted by action tendencies and experiences thereof.

The enactive approach also emphasizes the deep integration of perception and action. As first defined by Varela, Thompson, and Rosch, “the enactive approach consists of two points: (1) perception consists in perceptually guided action and (2) cognitive structures emerge from the recurrent sensorimotor patterns that enable action to be perceptually guided” (Varela et al. 1991, p. 173). Since then, several theorists have argued that perception is as much a motor process as a sensory one (Churchland et al. 1994; Clark 1997; Hurley 1998; O’Regan and Noë 2001). As Noë (2004) succinctly puts it, perception is enactive in the sense that it is a kind of action. Varela et al. (1991) call this “the sensorimotor dimension” of the enactive approach,

and Torrance (2005) sees it as a particularly focused set of views that plays a central role in the enactive approach. Enaction thus characterized is a form of embodiment. It states that our capacity to perceive presupposes the ability to orient in the environment i.e. an ability strictly dependent on having a body. Sensorimotor activity is the capacity to master the way in which perception varies as a function of action; it is thus a skill of the whole organism, for a disembodied brain would not be able to acquire any such skill.

This theme represents one of the most evident “phenomenological connections” (Thompson 2007) of the enactive approach. The idea that perception is a practical and embodied skill is central to Merleau-Ponty’s (1962) work, but appears in other authors as well (for a clear and succinct overview, see Thompson and Zahavi 2007). In short, we can say that for both the enactive approach and several works in phenomenological philosophy, mental activity is deeply linked to the subject’s embodied presence and performances, and cognition is grounded in embodied presence and experience.

The terminology that Hurley (1998) employs in her analysis of action-perception relations will be particularly useful in the following sections.<sup>4</sup> First, she distinguishes the *personal* and the *subpersonal* levels of description of a cognitive agent (see also Dennett 1969). The personal level is the one at which the cognitive agent is said to be perceiving, believing, desiring, acting for reasons, etc. The subpersonal level is the one of the physical mechanisms on which the personal level depends. Hurley then illustrates how perception and action depend on overlapping subpersonal systems and processes. She notices that output from motor systems influences perception even if input to sensory systems remains constant (and vice versa, see Hurley 1998, pp. 363–364; see O’Regan and Noë 2001 for supporting experimental evidence). In her terminology, this translates into the idea that perception and action are *constitutively interdependent*. The crux of this view is that action and perception are not simply *instrumentally related* – that is, action does not simply serve perception as a means to an end (as in the claim that one needs to move around in order to perceive), and vice versa. Rather, action *constitutes* perception and perception is thus a kind of action. The complex, dynamical relations characterizing the subpersonal processes underlying action and perception yield this special kind of interdependence. These processes interact in a complex and dynamical way, and the mechanisms for action and perception can be thus seen as integrated into one complex system; for this reason, it is not possible to separate and isolate them so that action and perception map onto them in a one-to-one way. As Hurley puts it, action and perception are not *vertically modular*; they do not correspond to dedicated underlying mechanisms that interact in a linear way (action and perception would otherwise be merely instrumentally related).

In addition to sensorimotor integration, Thompson and Varela (2001) mention another dimension of embodiment, namely the organismic processes of self-regulation essential to being alive and sentient. This dimension of embodiment is evident in conditions such as being awake and asleep, alert or fatigued, hungry or

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<sup>4</sup> Note however that Hurley does not characterize herself as an “enactive” theorist.

satiated. It is also evident in emotion and feeling, in Damasio's (1999) sense of distinctive patterns of brain–body activity (emotions) and the felt experience of such patterns (feelings). Both the sensorimotor and the self-regulating dimensions are indeed important for the discussion that will follow. Emotion theorists usually distinguish arousal from motor activity (behavior, actions). With the term “arousal” they refer to the activity of the autonomic nervous system, as well as to endocrine and somatic processes. Motor activity refers to changes in the musculoskeletal system, as well as to facial expressions. It could be argued that there is no principled clear-cut distinction between visceral (autonomic and endocrine) and somatic (musculoskeletal) processes; Damasio (1994), for example, calls all of them “somatic,” where “somatic” is a synonym of “bodily.” Here I shall use either “arousal” or “actions” (or “behavior”) when discussing specific emotion theories that make this distinction. I shall otherwise use the term “body” or “bodily events” when I do not think it is important to distinguish arousal from actions.

Finally, the enactive approach has recently turned to the phenomenological distinction between the body as a physical object of third-person observation and scientific investigation (*Körper*), and the body as the so-called *lived body* (*Leib*) (Thompson and Zahavi 2007; Thompson 2007). The lived body is my body as I experience it “pre-reflectively” i.e. in the background of all my experiences (it is sometimes called “the zero-point” of my experiences). For example, as I am typing these words, my awareness is mainly focused on the characters that appear on the screen, and on their meaning. Yet at the same time we can say that I am pre-reflectively aware of my fingers as that part of my body through which the typing occurs, and in general of my body as that through which various experiences are made possible. Every perceptual experience is thus in part also an experience of my body.

The reflections of the Czech philosopher Jan Patočka (1907–1977) on the lived body are, I think, particularly relevant for an embodied-enactive theory of emotion and appraisal. Patočka (1998) traces his philosophy of the body and of the person back to the French thinker Maine de Biran (1766–1824). According to Patočka, neither Descartes nor the British empiricists nor Kant provided an appropriate account of personal experience as corporeal and situated. Descartes' method of introspection pointed to the active and self-reflective character of subjective experience; however, it lost the body by conceiving it as an accident, as a non-necessary accompaniment of experience.<sup>5</sup> The British empiricists were interested in the body only as an object of scientific investigation. Kant, on his part, understood the I in an abstract way, as a condition of experience; his account made the I a logical necessity rather than an experiencing subject. Maine de Biran, on the contrary, conceived the I as experiencing, active and thoroughly corporeal. Likewise, for Patočka (1998) what characterizes the I is “the primordial phenomenon of effort” (p. 25). My awareness of having certain possibilities of movement cannot be reduced, Patočka argues, to sensory impressions, and it does not depend on external objects. Rather, it is something that points directly to my experience of being a

<sup>5</sup> Patočka refers to the *Meditations* (Descartes 1988a). Descartes' (1988b) *Passions of the Soul*, however, can be seen as an embodied account of emotions and their phenomenology.

striving and active I, a source of movement and a locus of effort. For Patočka this “conative” experience cannot exist without a body; it characterizes the I as necessarily corporeal: “the I is possible *only as corporeal* – the I is a willing, striving I and, *consequently*, a corporeal one” (*ibid.*).

So for Patočka, as for Merleau-Ponty (1962), a person is an embodied agent that is aware of her possibilities of doing something on her own, i.e. the I is an “I can.” Moreover – and this is Patočka’s most original contribution – this embodied and practical I is also a feeling, affective I: “[h]ow we are includes an entire scale of feelings and emotions” (Patočka 1998, p. 78). We can thus say that in Patočka the sensorimotor dimension of embodiment is also an affective dimension; the person perceives and acts in her world through a corporeity that is always already affectively nuanced. This pervasive affectivity also appears in Patočka’s discussion of “moods,” which he characterizes as “a bodily existence in its entire context” (p. 42). Moods pervade all our activities, and manifest themselves in our corporeity: “our attitude betrays our mood” (p. 79).

All these ideas will come together in the embodied and enactive view of appraisal developed below. Before attempting such a view, however, I will show in which sense emotion theory and different views of appraisal are “disembodied,” and why I think they are implausible.

### Corporeal impersonalism in emotion theory

Patočka’s conative, corporeal and affective conception of personhood is very different from the one offered by emotion theorists, in particular by appraisal theorists. To illustrate this difference I will distinguish three different accounts of the appraisal-body relation; I will discuss the first two here, and the third one in the next section.

According to the first account, in order to give rise to a specific emotional experience the body needs to be somehow “interpreted”; the body thus participates in emotion *indirectly*. This stance is best represented by Schachter and Singer (1962), who maintain that arousal is “a general pattern of excitation of the sympathetic nervous system” (p. 379). Arousal is undifferentiated and affectively neutral – namely, it does not support any specific emotion. In order to acquire affective specificity at the personal level, arousal has to be labeled through a process of interpretation of the environment. Similarly, “attribution theories” (e.g. Ross et al. 1969; London and Nisbett 1974) claim that arousal has to be attributed to a specific cause in order to acquire affective specificity.

According to a second account of the appraisal-body relation, bodily events are *byproducts* of appraisal – they are effects of appraisal and do not have any causal power on it. This view is illustrated, for example, by Lyons’s (1980) “causal-evaluative theory” of emotion. According to it, a sequence of causally related processes (including appraisal or, in his words, evaluation) leads in various steps to physiological and behavioral changes. First, the perception of a certain object causes a set of beliefs about a situation. These beliefs “are the basis of an evaluation of the situation in relation to himself or herself. Such evaluation in turn causes the wants or desires which lead to behaviour, while the evaluations and wants together cause

abnormal physiological changes and their subjective registering, feelings” (Lyons 1980, p. 57).<sup>6</sup> Figure 1 represents this sequence.

Lyons acknowledges that both evaluations and physiological changes are necessary conditions for emotion, and that neither is separately sufficient. In this sense, his theory is a step away from previous philosophical accounts of emotion that denied that bodily states are constitutive of emotional states (Kenny 1963; Solomon 1976). At a closer look, however, the function Lyons assigns to the body is still very limited, because he treats arousal and behavior as effects of previous mental processes (i.e. beliefs and evaluations) that do not play any role in emotion elicitation and in the characterization of emotional experience.

Lazarus’s view is a hybrid between these two accounts. Although it does not have the same linear character as Lyons’s, it still separates appraisal from arousal and behavior, leaving appraisal alone in eliciting and characterizing emotions. According to Lazarus (1966, 1991), appraisal is a cognitive process and it is a necessary and sufficient condition of emotion.<sup>7</sup> Arousal and behavior, in his view, are the effects of appraisal and contribute neither to the elicitation of emotion nor to its experience. In addition, Lazarus believes that emotion depends on an ongoing process of “primary” and “secondary” appraisal. This ongoing process constantly evaluates whether there is anything in the environment that threatens or favors one’s goals, core beliefs and values (primary appraisal), and what can be done about a threatening or challenging situation (secondary appraisal or reappraisal). For Lazarus, what determines an emotion is thus always only a process of appraisal. In a sense, appraisal does everything *alone*: it appraises the situation a person is in, it brings about bodily changes, it reappraises the subsequent person–environment relation, and so on. All explanatory emphasis is on the appraisal process; bodily processes play a role in the unfolding of emotional episodes only indirectly, by being appraised and reappraised.

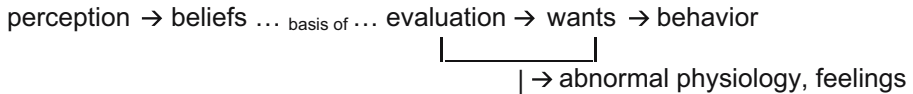
All these accounts are characterized by what I shall call *corporeal impersonalism*. They attribute evaluative functions to an abstract cognitive appraisal and they identify “personhood” with such a faculty; at the same time, they regard the body as an object (*Körper*) that plays at best an indirect role in the subject’s understanding of the environment. This stance can be traced back to the origin of the notion of appraisal. Both Arnold (1960) and Lazarus (1966) developed the notion *in opposition* to previous physiological and behavioral accounts of emotion.<sup>8</sup> Their main criticism was that such accounts had understood emotions as “mere” physiological and/or behavioral states, and/or as feelings thereof; they had not paid

<sup>6</sup> Lyons is aware of the problems of positing a mental state (an evaluation) as the cause of a bodily state. Following Ryle (1949), he thus attempts to account for the process of evaluation in dispositional terms. However, this attempt is problematic in many respects. It is not clear, for example, how the dispositional account fits together with the linear one; whether the dispositional account applies to evaluations or to emotions (or both); and whether or not Lyons believes that evaluation is an identifiable process. In any case, his dispositional account never explicitly acknowledges that the body plays a role in evaluation.

<sup>7</sup> Lazarus has recently turned to the term “appraising,” which he understands as “a set of cognitive actions” (e.g. Lazarus 2001, p. 42).

<sup>8</sup> The James–Lange theory had defined emotion as the awareness of the physiological changes induced by the perception of an emotional stimulus. Activation theories had identified emotions with states of increased energy in the body. Behavioral theories had described emotions in terms of possible behaviors.





**Fig. 1** The process of emotion elicitation according to Lyons (1980). Arrows represent causal relations

sufficient attention to how emotions are elicited and to the fact that emotions also have to do with how individuals interpret the surrounding environment. Both Arnold and Lazarus wanted to emphasize that emotions are *personal* responses to the environment and that as such they must involve a subjective process of interpretation (appraisal). The idea that appraisal characterizes the personal aspect of emotion is still one of the hallmarks of appraisal theory. For example, Lazarus (2001) claims that appraisal has to do with “personal meaning,” and he writes that “an *appraisal* connotes evaluation of the personal significance of what is happening in an encounter with the world” (p. 40). Roseman and Smith (2001) state that “[*d*] *ifferences in appraisal can account for individual and temporal differences in emotional response. ... Because appraisal intervenes between situation and emotions, different individuals who appraise the same situation in significantly different ways will feel different emotions ...*” (p. 6; italics in original). Because of the emphasis these theorists put on the personal character of appraisal, and because of their criticism of physiological and behavioral accounts, one is induced to conclude that behavioral and physiological processes have nothing to do with the personal character of appraisal. This, however, is an instance of corporeal impersonalism and need not follow.

Let us consider the accounts of the appraisal-body relation illustrated above in relation to lived human experience. Consider first the account according to which the body only indirectly determines affective specificity. It seems highly unlikely that affectivity entirely depends on one’s capacity to label, or find the cause for, one’s arousal. One can be in a state of arousal for which one has no immediate explanation, yet this does not imply that this state is affectively neutral. For example, a few days ago I felt groggy and without energy, I inclined toward depression and sadness. Puzzled by my state for a while, I came to think it might depend on having abruptly stopped drinking coffee. Perhaps I was right, but I was not sure; in any case, not knowing the cause of my state did not make my bodily state feel affectively neutral. The same could be said if, eventually, I had come to attribute my state to an “emotional source,” for example to an argument with my friend; before the attribution, I already felt groggy and depressed.<sup>9</sup> Indeed, some studies have shown that arousal experienced as unexplained generates a negatively toned affective state (Marshall and Zimbardo 1979; Maslach 1979). In addition, Damasio (2003, pp. 67–79) has illustrated some interesting cases of emotional states induced in the first place through arousal, with no evident attribution. In one example, a woman started to show facial expressions of sadness, and then to cry and sob, as soon as an

<sup>9</sup> Someone might observe that in some cases arousal has an affective tone because, *unconsciously*, the subject knows the source of her own state. However, this explanation could be made only a posteriori. Also, it would not apply in those cases where an affective state is there, but there is no “emotional cause” (like in the case of mild depression caused by coffee abstinence).



electrode stimulated a specific part of her brainstem. She reported feeling worthless, scared and hopeless (and she had not suffered from depression or any other psychiatric condition before). Once the electrode contact was removed, the sobbing stopped together with the feeling of sadness, and the subject reported she did not know why she had felt so awful. In another example, following brain surgery a patient would suddenly burst into crying or laughter without apparent cause (see Parvizi et al. 2001). Sometimes these bursts took place in quick succession, leaving the patient “barely time enough to take a breath and say that he was not in control, that neither laughter nor crying were really meant as such, that no thoughts in his mind justified this strange behavior” (Damasio 2003, p. 78).

Also, one of Schachter and Singer’s (1962) conclusions was that when one knows the cause of one’s state of arousal, no necessity for labeling it ensues; accordingly, in these cases arousal is not accompanied by affective experience. First person phenomenological analysis suggests that this is not always the case. Knowing that my euphoria at the party is caused by alcohol does not reduce it. Frijda (1986) indeed observes that some subjects knowingly receiving adrenaline can still experience emotion (e.g. anxiety), especially if they are predisposed to it. Reisenzein (1983, pp. 249–250) mentions several studies showing that subjects who clearly know the source of their arousal report genuine emotions. Also, attempts to make subjects believe in the wrong cause of their arousal (so called “misattribution manipulation” studies) can fail for subjects particularly prone to certain emotions (see Reisenzein 1983 for further references).

The second account – the one according to which bodily events are a byproduct of appraisal – is also phenomenologically implausible. Consider for instance Lyons’s (1980) account of how we come to realize that we are in love. Bruce – one of Lyons’s examples goes – sees Moira and blushes; according to Lyons, “Bruce will link his own blushing with the emotion love only if he believes that his blushing is a result of his now seeing Moira with whom he believes he is very much in love” (p. 123). This scenario implies that Bruce already loves Moira (he believes so, at least). Yet, according to Lyons’s theory (see Fig. 1 above), he has to go through non-emotional processes to attribute his bodily arousal to love. First there is a moment in which Bruce “merely blushes” without knowing why; then there is a moment in which Bruce considers that he loves Moira; finally, he relates his love to his blushing. However, if Bruce already “believes he is very much in love with Moira,” it seems more plausible to think that his blushing constitutes and manifests his love, and that he knows this *while blushing*. There does not seem to be any moment in which he has to think about his love for Moira to explain his blushing; rather, he will immediately recognize his blushing as a sign of love.

Lyons’s account also overlooks the fact that one can blush, tremble or strive for another person, and attribute these phenomena to love, even when one does not evaluate the person’s characteristics as loveable. Bruce could blush when he sees Moira and attribute his blushing to love even if he did not already believe he loved Moira; he could indeed start believing it because of his blushing.

On its part, Lazarus’s idea of an ongoing monitoring of one’s possibilities of action in the environment is at odds with the claim that appraisal is a necessary and sufficient condition of emotion. Appraising and reappraising alone cannot do anything; there must be a body and a body-environment interaction to provide

content to the appraising processes and to bring about changes in emotion. In order to appraise one's relation to the environment, one must appraise one's bodily condition and situatedness; in other words, one must be aware of one's environment *through one's body*. It is interesting that Lazarus's (1966) first illustration of appraisal and reappraisal was influenced by accounts of stress and stress-management skills of flight crews during air battles in World War II; it seems that fighting an air battle would require a strong sense of one's location and possibilities of action in relation to the environment. Once again, phenomenological considerations suggest that the role of the body in understanding one's environment is not the one of an unspecific state of physiological upset appraised by a non-bodily, abstract evaluation.

### **More corporeal impersonalism: a componential-dynamic model of appraisal and emotion**

According to a third account of the appraisal-body relation, appraisal and body *interact* (appraisal influences bodily processes, and vice versa), but are still merely instrumentally related. In other words, to use Hurley's terminology, appraisal, arousal and behavior are vertically modular; although they interact, they are subsumed by distinct and separate subpersonal mechanisms.

One example is Scherer's "component process model" (Scherer 1984, 2000). According to it, emotion is a system constituted by five continuously interacting subsystems:

- (1) The "cognitive" subsystem with appraising functions, which continuously monitors the environment and internal feedback signals to determine their significance for the organism. This system is in turn constituted by five stimulus-check components (checking for novelty, pleasantness, goal significance, coping potential, and norm compatibility);
- (2) The "autonomic nervous system" responsible for internally regulating the organism and generating energy resources for action;
- (3) The "motor" subsystem involved in the expression of emotion;
- (4) The "motivation" subsystem governing the preparation and execution of actions;
- (5) The "monitoring" subsystem controlling the states of the other subsystems, and supporting feeling states.

Unlike the accounts illustrated in the previous section, Scherer explicitly acknowledges that arousal can affect evaluations: "feedback of increasing arousal from the physiological system or changes in the motivational system can affect attention deployment or change perception and judgment thresholds" (Scherer 2000, p. 76). Yet, he typically implements the functions of appraisal, arousal and behavior in distinct subsystems. Appraisal, although distributed over different stimulus-check components, and although influenced by the "arousal" and "motor" systems, is still in charge of interpreting, monitoring and controlling the body.

Scherer defines his approach "componential-dynamic" and opposes it to what he calls "structural-modular" ones. According to the latter, cognition, emotion and

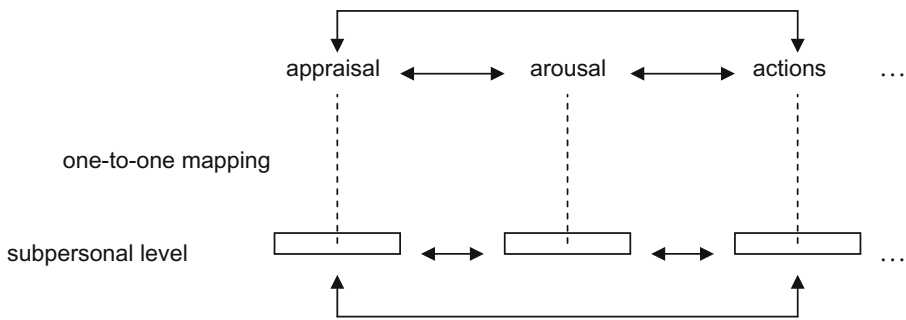
motivation are separate and independent (as in Zajonc 1980). According to the former, emotion consists of “continuously changing configurations of component states *including* cognitive and motivational processes” (Scherer 2000, p. 71); in particular Scherer suggests that component processes interact through “covariation” and “synchronization.”

This, however, is not enough to make his approach “dynamical” in the way endorsed by several supporters of the dynamical systems approach in cognitive science. An important feature of this approach is to present psychological capacities as *emergent* upon complex interactions of microcomponents that, taken separately, do not have any specific psychological function. Erlhagen and Schöner’s (2002) model of movement and movement preparation, for example, describes behavior as the unfolding of one single dynamic field that evolves according to the position of the organism, the stimulus, and the memory of previous actions. As Thelen et al. (2001) argue, this model can account for the development of cognitive capacities *without positing a separate cognitive faculty inside the organism*. Rather, cognitive capacities “emerge” from the mutual influences of environmental stimuli, memory and intrinsic dynamics of the organism. Similarly, Beer (2003) has shown that it is possible to use dynamical systems theory to describe the development of categorical perception<sup>10</sup> in a simulated embodied agent with no preprogrammed instructions coding for stimulus features. He has shown that such an embodied agent comes to discriminate diamond-shaped and circular objects through its continuous interaction with them; its capacity to discriminate shapes thus “emerges” over time from agent-environment interactions and is not preprogrammed into the system.

Scherer’s partition of the emotional agent into five component subsystems is more reminiscent of traditional cognitivist models than of these embodied and emergentist dynamical accounts. In cognitivist models, psychological functions are individuated as components of the system, not as emergent from it. The consequence of the componential aspect of Scherer’s model is that there is no possibility of overlap among functions (including overlap among appraisal, arousal and behavior). Although Scherer opposes his approach to what he calls “modular” ones, his own model is, in a sense, still very much so. He does not claim, like Zajonc, that emotion and cognition are distinct and independent; yet the component systems of his model are psychological functions identified as such from the beginning. They do not emerge from the complex interactions and temporal unfolding of several micro-components, but are *engrained* within the system; in other words, they are vertical modules. In this framework, the evaluative function belongs uniquely to the cognitive system, and is distinct and entirely separate from the arousal and motor systems. These functions are only instrumentally related (see Fig. 2).

The problem with this componential approach is, once again, phenomenological implausibility and corporeal impersonalism. Unlike other theorists, Scherer allows arousal to be affectively specific and to influence appraisal; nevertheless, appraisal remains an abstract non-bodily faculty whose function is to “register” events in the body and in the environment. Appraisal is disembodied, in the sense that it does not involve bodily events and corporeal experience. It detects bodily events and corporeal

<sup>10</sup> Categorical perception is the capacity to divide the world into objects with distinctive properties (e.g. the stream of words into phonemes, or the spectrum of light into colours).



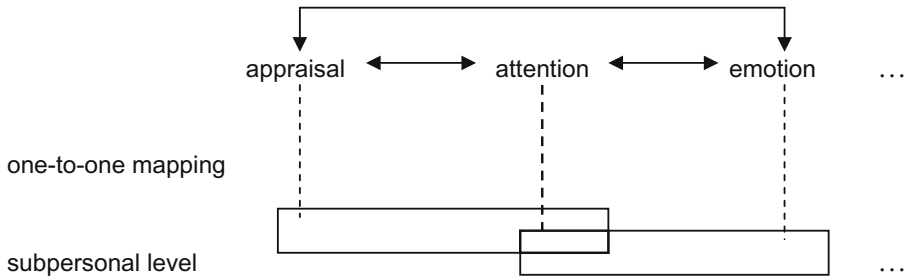
**Fig. 2** Schema illustrating vertical modularity in Scherer's (2000) "component process model"

experience, and it acts accordingly; yet bodily events and corporeal experience are separate from the subject's mechanisms responsible for understanding the world. To the extent that emotion theory keeps characterizing appraisal as the faculty that provides "personal meaning" and, at the same time, keeps separating appraisal from bodily processes, the body will have no chance of constituting personal significance.

### Enacting appraisal

I will now move on to an alternative framework in which appraisal is integrated with bodily processes. As I interpret it, in this alternative framework appraisal, emotion and their components finally lose vertical modularity; accordingly, appraisal can become thoroughly "embodied" and "enactive." This alternative framework has been provided by Marc Lewis in his recent discussion of the neural and psychological structure of appraisal, emotion and their interaction (Lewis 2005). Lewis's account begins in a style similar to Scherer's, namely as a componential-dynamic model. According to Lewis, for heuristic purposes emotion and appraisal can both be divided into "constituents." Appraisal constituents are perception, evaluation, memory, attention and planning; emotion constituents are bodily arousal, feeling, action and attentional orientation. Whereas Scherer sees appraisal as internal to emotion, Lewis sees it as partially overlapping with emotion. In particular, appraisal and emotion share attentional mechanisms. At the psychological (i.e. personal) level, this means that both orient the organism toward "what is important"; at the neural (i.e. subpersonal) level, they include the same brain processes such as activation of the anterior cingulate and orbitofrontal cortex, the amygdala and the hippocampus. Despite this overlap, appraisal and emotion are distinct faculties; Lewis characterizes appraisal as a cognitive interpretation that provides the "what" of a situation, and emotion as a response that provides the "what to do about it." Like Scherer's framework, this characterization still separates appraisal and body along traditional lines: bodily arousal is seen as a constituent of emotion, and not of appraisal; similarly for action orientation (see Fig. 3).

Lewis, however, does not stop at this componential-dynamic analysis. He argues further that, in daily interactions with the world, the mechanisms underpinning appraisal and emotion constituents can become so deeply integrated that, in fact, it is not possible



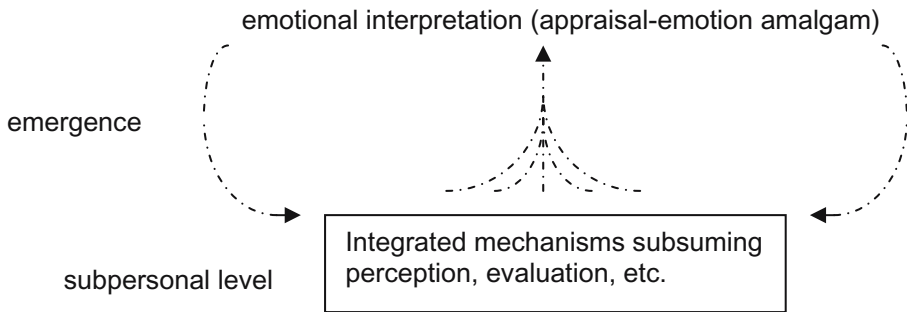
**Fig. 3** Schema illustrating Lewis's (2005) model of the relation between appraisal and emotion. There is overlap of subpersonal processes, yet this model still entails vertical modularity i.e. psychological functions are in a relation of one-to-one mapping with subpersonal systems. (Although the figure does not show it, the processes subsuming appraisal and emotion are further divided into subsystems for component functions, such as evaluation, perception, arousal, etc. See main text)

precisely to map emotion and appraisal onto distinct systems.<sup>11</sup> In Lewis's terms, appraisal and emotion converge into an *emotional interpretation*, or an "appraisal-emotion amalgam," where it is not possible neatly to separate individual constituents anymore – neither anatomically, nor functionally. In other words, emotion and appraisal become functions of the same complex and deeply integrated system. In the language of dynamical systems, emotional interpretations are seen as "emergent" from the continuous interactions of multiple subpersonal processes.

Lewis's arguments for the integration of appraisal and emotion can be read as being logically equivalent to Hurley's (1998) arguments for the constitutive interdependence of perception and action. Lewis strongly emphasizes the existence of various phenomena of positive and negative feedback between emotion and appraisal, i.e. he argues that emotion and appraisal interact in both directions, and that they are mutually constraining. Moreover Lewis argues that, within an emotional interpretation, the physical processes traditionally seen as subserving the separate functions of appraisal and emotion are inextricably interconnected; during an emotional interpretation there is no simple one-to-one mapping between appraisal, emotion and their subpersonal processes. In other words, appraisal and emotion lose vertical modularity and are best understood as constitutively interdependent (see Fig. 4).

We can extend this interpretation to the psychological faculties that Lewis identifies as appraisal and emotion "constituents." The physical systems that underpin perception, arousal, action orientation, etc. are themselves also described by Lewis as largely overlapping and strongly integrated through (various forms of) reciprocal influences. Moreover, different systems appear to play different functions according to the context i.e. to how they relate to other systems. The amygdala, for example, plays a dual role in evaluation and arousal; the anterior cingulate cortex is involved in planning, attentional orientation and emotion experience; bodily arousal (ANS and endocrine activity) maintains the homeostatic equilibrium of the organism, contributes to emotion experience, enhances attention, and prepares for action. In other words, the subpersonal processes underpinning psychological faculties like perception, feeling, evaluation, etc.

<sup>11</sup> He distinguishes five mechanisms of integration in the brain: (1) positive and negative feedback among constituents (horizontal integration); (2) vertical integration across the neuraxis; (3) neuromodulation; (4) action orientation; (5) learning.



**Fig. 4** Illustration of Lewis's (2005) notion of "emotional interpretation." In an emotional interpretation, appraisal and emotion are merged together, and they are best seen as emergent on a complex subpersonal system where mechanisms subsuming the constituent functions of appraisal and emotion (perception, evaluation, arousal, etc.) are inextricably integrated. Vertical modularity is lost

are organized into a complex network of reciprocal influences, in which different forms of integration affect the functionality of individual parts. There is no neat one-to-one mapping between these psychological faculties and underlying physical processes; in the subpersonal emotion-appraisal amalgam described by Lewis, the boundaries among appraisal and emotion "constituents" themselves are blurred, so that they also appear to be best conceptualized as constitutively interdependent. In other words, what Lewis calls "perception" is not simply a means to an end for "action orientation" (and vice versa); similarly, "evaluation" is not simply a means to an end for "arousal" (and vice versa), etc.

To be sure, it is not clear how much conceptual change Lewis thinks his view of a deeply integrated and dynamic brain implies for the psychological taxonomy with which he began. It is not clear whether Lewis thinks that emotion, appraisal and their constituents are *always* entangled together within emotional interpretations, or whether they also function separately; also, he does not seem willing to abandon the notion of emotion and appraisal "constituents" altogether (see also Colombetti & Thompson 2005, and Lewis's 2005 reply). Some aspects of his framework are also more traditional than others. In particular Lewis talks of "action plans" that are formed within the brain and that are then "selected" according to the situation and the related emotional interpretation. Lewis here tends to overlook the embodied agent's real actions, and rather focuses on what we could term mere "intentions" to act. His analysis thus privileges a discussion of neural mechanisms (such as pons, medulla, amygdala, etc.) supposedly involved in "action orientation," rather than actual bodily processes subsuming real actions. Compare this approach with the more radical one of dynamical system theorists like e.g. Thelen et al. (2001) and Beer (2003), who conceptualize actions as emergent from the ongoing reciprocal interactions (or, better, "couplings") of embodied agents and their environment. In this framework, actions are neither selected nor guided by any plan; the embodied agent is rather *led into* a certain form of behavior as a result of the structure of its relation to the environment. In contrast with what the notion of action plan suggests, these dynamical models avoid positing any internal, abstract and disembodied mechanism that specifies which action should be performed and how.

We can, however, set aside Lewis's more traditional talk of emotion and appraisal "constituents" and of "action plans," and rather focus on the enactive features of his

account (note that Lewis does not himself use the term “enactive” to characterize his position). By emphasizing brain integration at various levels, Lewis’s framework blurs the boundaries between physical processes supposedly underpinning psychological faculties, and importantly acknowledges the entanglement of action and perception, as well as its interconnectedness with attentional processes and mechanisms of organismic self-regulation. In addition, Lewis explicitly conceives of “arousal” as a bodily (as opposed to merely neural) event; as he explains it (see pp. 180–181), the action of neuropeptides and neuromodulators on limbic and cortical structures is mediated by activity in the bodily endocrine system (as well as vice versa), and emotion is “mediated by neural and endocrine processes within the individual’s body” (p. 228).

Taken together, these enactive features characterize appraisal as itself “enactive.” Appraisal appears in fact distributed over a complex network of brain and bodily processes, none of which individually supports an “appraising function.” This distribution implies that appraisal is literally constituted by those physical processes that, on traditional accounts, are merely its consequents (or, at best, its antecedents) – most notably, bodily processes such as arousal and action. In other words, appraisal is not a vertical module anymore, it is not merely instrumentally related to the body and its activity in the world.

A consequence of “enacting” appraisal along these lines is that appraisal comes to permeate the various psychological faculties with which it is constitutively interdependent, namely perception, attention, feelings, etc. Lack of vertical modularity in fact implies that, specifically, perception and action are in a relation of constitutive interdependence with typically affective elements such as evaluation, arousal and feelings. In short, we can say that in the complex amalgam depicted by Lewis sensorimotor integration is all “hot” i.e. entangled all the way down to the subpersonal level with processes implicated in emotion and evaluation.

This way of looking at appraisal brings emotion theory and the enactive approach closer to each other. On the one hand, it goes beyond the mind-body divide apparent in the appraisal-arousal and appraisal-behavior dichotomies assumed by most psychological and philosophical accounts of emotion. On the other hand, it acknowledges the affective and evaluating character of the enactive mind. In the next section I will discuss some of the implications of this view, including its phenomenological connections.

### **Implications: valuing corporeity**

To some theorists, the suggestion that bodily events such as arousal and action are constitutive of appraisal may sound like a category mistake. Appraisal and body, as mentioned earlier, have been divided since the appearance of the notion of appraisal in the psychology of emotion; accordingly, the history of emotion theory is often portrayed as a conflict among “physiological,” “behavioral” and/or “cognitive” accounts. In this tradition, what happens in the body during an emotion is a very different thing from what goes on in the head when one interprets one’s surroundings. Thus although it is a commonplace observation that arousal influences appraisal and that different states of arousal usually make one see the world in



different ways, emotion theory has reduced this influence to an abstract process of “monitoring the body.”

“Enacting” appraisal implies recognizing that the body has a more important and active role in appraisal, namely a constitutive function. This means that it is misleading to understand the process of emotion elicitation in terms of separate psychological events that follow one another in a linear causal sequence and that are merely instrumentally related. The challenge for emotion theorists is to propose models of emotion elicitation that do not map psychological functions onto subpersonal mechanisms in a one-to-one way. Dynamical systems theory is a good tool for such an attempt, provided that dynamical models of emotion avoid componential analyses and vertical modularity, and embrace the embodied–enactive view that goes together with several dynamical approaches in cognitive science.

At the phenomenological level of description, the notion of an enactive appraisal resonates with Patočka’s considerations on the corporeal, striving and affective nature of personhood. We saw that for Patočka the person perceives and evaluates her world through a corporeity that is always already affectively nuanced. The experience of appraising the meaning of a situation is thus not an isolated act of intellectual appreciation, but a form of understanding mediated by one’s corporeity and “colored” by the body’s current condition and activity.

Patočka’s notion of personhood can help delineate an account of emotion experience and of its relation to evaluation and understanding that, I think, is phenomenologically more plausible than most existing psychological models of appraisal. Such an account differs from traditional models because it does not characterize the appraisal-body relation as an “indirect” one. On several traditional views, as we saw, appraisal monitors the environment and the state of the body, and accordingly decides what emotional state the subject is in. At the phenomenological level, the notion of an enactive appraisal rather implies that the I has a *direct* experience of its corporeity: the aroused state of the body, as well as its place and activity in the environment, are immediately available to one’s experience, i.e. they are not mediated by some kind of extrinsic appraising experience. An enactive appraisal is one in which the phenomenological relation between appraisal and body is thus reversed when compared to traditional psychological accounts, i.e. the appraising experience is seen as constituted by the experience of one’s bodily condition and environment. What traditional appraisal theorists see as a process of interpretation of the body and/or the world that causes bodily changes, is here reinterpreted as one’s understanding of one’s affective condition and of the surrounding world *through* the experience of one’s body. This is how I interpret Patočka’s opening quote that “the first impression of the world is a physiognomic impression,” as well as Prinz’s claim that meaning should be placed within the body directly, rather than via the intermediary of supplementary meaning-carrying thoughts.

The same point can be restated once more by saying that the structure of an appraising experience includes the pre-reflective experience of the lived body. In phenomenological philosophy the notion of the lived body has mainly been discussed in the context of perceptual experience. Yet on the enactive account of appraisal proposed here, the appraising experience itself is pre-reflectively lived as corporeal. The bodily condition that characterizes an emotion episode is not

objectified as merely *körperlich*, but is lived through in the very process of evaluating the meaning of one's environment.

This account of the appraising experience could be enriched by considering the relation between appraisal and the perception of possibilities of interaction with the environment (so-called "affordances" in ecological psychology). For example, one's evaluation of, say, a bear as either "cute" or "scary" seem to be constituted in part by the experience of different action tendencies. Frijda (1986) already suggested that the experience of action tendencies is part of the emotional experience (see also Lambie and Marcel 2002). A phenomenological analysis along these lines would help portray arousal and action as neither a byproduct of, nor as merely instrumentally related to, appraisal. The idea could also be addressed empirically. It would be interesting to consider whether a subject's state of arousal affects her perception of her possibility to interact with her environment (i.e. her perception of what the environment affords), as well as her evaluations. Hormones, for example, are known to influence one's behavioral dispositions; a high amount of testosterone for instance makes people prone to aggressive actions. It would be interesting to know whether this proneness also modifies people's evaluations, in particular whether it promotes appraisals of aspects of the environment as e.g. odious and obstructive.

The notion of an enactive appraisal ultimately implies that arousal specificity is required for the capacity of a rich range of evaluations. The hypothesis here is that an organism whose arousal were a uniform and undifferentiated pattern of heightened visceral activity would not be capable of a variety of actions and action tendencies. Not only, then, "the first impression of the world is a physiognomic impression"; it is also our varied physiognomy that allows us different impressions of the world. A case in point here seems to be Antonio Damasio's patient S, who is described as in general very positively oriented towards various life situations, and even excessively open and forthcoming in social contexts (Damasio 1999, pp. 62–66). S's "fear system," the amygdala, is almost entirely calcified, which means that almost all of its neurons have lost their functions. Lesions to both amygdalae typically reduce or even eliminate arousal fear responses, as detected for example by measures of skin conductance. In the laboratory, S differs from healthy subjects in her evaluations of the trustworthy character of human faces; specifically, she judges as approachable also those faces that healthy subjects view as untrustworthy. This case supports an embodied view of appraisal in that it suggests that damage to the arousal system carries with it abnormality in appraisal; specifically, that damage to the fear arousal system comes together with a reduced appreciation of risk.

## Summary and conclusion

The aim of this paper has been to bring the enactive approach and emotion theory closer to each other by arguing that appraisal is "enactive." This idea has been developed at two levels of description. At the subpersonal level, I have argued that appraisal is best conceived of as distributed over a complex network of brain and bodily processes. In order to make this point, I have used Hurley's useful notion of "constitutive interdependence" to interpret Lewis's arguments for his own notion of an appraisal-emotion amalgam or emotional interpretation. The upshot of this

discussion has been that appraisal is constituted by those bodily events that, on traditional emotion theories, are rather seen as separate from it, namely as its consequents or antecedents. At the phenomenological level, I have argued that the experience of evaluating one's environment is already affective and corporeal. Traditional psychological and philosophical accounts of appraisal understand the body merely as a *Körper*, and this objectification of the body has led to accounts of the appraisal-body relation that are implausible from the perspective of lived experience. On these accounts, in fact, the body is seen as an object that needs to be evaluated by an extrinsic, heady process of appraisal in order to be experienced as an emotion. Such a view suffers from what I have called "corporeal impersonalism," i.e. it overlooks the lived character of the body, the fact that the body is also a *Leib*. Drawing on Patočka's characterization of personhood as affective and corporeal, I have proposed to view the experience of appraisal as thoroughly corporeal; the emotionally aroused body, I have suggested, is immediately available as such to the subject's experience, namely, it does not need the mediation of a separate non-corporeal appraising experience. The emotionally aroused body is rather that *through* which the subject evaluates her world. Finally, I have suggested possible ways in which the view of an enactive appraisal could be developed and/or supported empirically.

I am aware that, because we do not know how experience is generated, we do not know how the subpersonal and the phenomenological levels of description relate to one another, and thus to what extent considerations at one level can be used to understand the other. This paper has shown however that considerations at these two levels turn out to converge toward an integrated account of appraisal that differs from traditional psychological ones. It thus seems reasonable to draw on such converging considerations to reject dualistic accounts of appraisal and emotion that would otherwise leave us "lost in thought," forever detached from our flesh. By enacting the appraising mind we can, I believe, do justice to the dual nature of emotion, and at the same time exploit this duality to shed light on the relation of mind and body.

**Acknowledgements** This work was supported by a Postdoctoral Fellowship in the form of funds from the Social Sciences and Humanities Research Council (SSHRC) of Canada through a Canada Research Chair in "Cognitive Science and the Embodied Mind" to Evan Thompson. I am indebted to Evan Thompson and to an anonymous referee for their charitable and helpful comments to earlier drafts of this paper. Many thanks also to Steve Torrance for his suggestions and editorial assistance.

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