Alfonsina Scarinzi: How Enactive is the Dynamic Sensorimotor Account of Raw Feel?: Discussing Some Insights from Phenomenology and the Cognitive Sciences, In: J.M. Bishop and A.O. Martin (eds.), Contemporary Sensorimotor Theory, Studies in Applied Philosophy, Epistemology and Rational Ethics 15, 67 – 81
DOI: 10.1007/978-3-319-05107-9_5,

How Enactive is the Dynamic Sensorimotor Account of Raw Feel?: Discussing some Insights from Phenomenology and the Cognitive Sciences

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Abstract. This contribution deals with the question of how enactive O'Regan's dynamic sensorimotor account of phenomenal consciousness is. It answers this question by focusing on O'Regan's dynamic sensorimotor account of raw feel. It supports the view that O'Regan's sensorimotor approach is semi-enactive because it clings to environment-centric ecological Gibsonian overtones. It emphasizes the instrumental role of action in perception enactivism rejects and neglects the subjectivity of experience. This contribution makes the point that the role of the motor and cognitive-emotional aroused lived body and the subject's conscious access to it in experiencing the qualities of sensorimotor interactions and hence the subjectivity of experience need to be taken into account in order to overcome the ecological environment-centric overtones of O'Regan's approach.

Keywords: enactivism, ecological approach, sensorimotor approach, lived body, phenomenology, enactive approach to emotions, anti-dualism

1 Introduction

It has become a commonplace in research in cognitive science and philosophy of mind to use the term 'enact' or 'enactive' to refer to intrinsically active perception and to the understanding of cognition as based on knowing how and hence on understanding what enables us to move and to engage with the world we co-determine through our sensorimotor skills and abilities [10, 8]. As Hutto [10] remarks, 'enactive' means that we know how to tie our shoes, to ride a bike, to play table-tennis without following propositional rules based on inner representation of knowledge about the world. More precisely, 'enactive' refers to a framework within cognitive science called non-classical cognitive science or enactivism, whose theoretical tenets Steve Torrance [22] describes in the following way: "(a) Minds are the possessions of embodied biological organisms viewed as autonomous self-generating and self-maintaining agents. (b) In sufficiently complex organisms, these agents possess nervous systems working as organizationally closed networks, generating meaning, rather than processing information as inner representations of the external world.

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(c) Cognition, conceived fundamentally as meaning-generation, arises from the sensorimotor coupling between organism and environment. (d) The organism's world is 'enacted' or 'brought forth' by that organism's sensorimotor activity; with world and organism mutually codetermining one another, in ways that have been analyzed by investigators in the continental phenomenology tradition. (e) The organism's experiential awareness of its self and its world is a central feature of its lived embodiment in the world, and therefore of any science of the mind."

Enactivism conciliates phenomenology and cognitive science acknowledging that especially the phenomenological studies on the lived body[1] can clarify and guide scientific research on subjectivity and consciousness [19, 23].

In his last work with the title Why Red Doesn't Sound Like a Bell? Kevin O'Regan[2] wonders if he can be considered an enactivist, for in his sensorimotor account of phenomenal consciousness he acknowledges the central role of action in perception enactivists support, but also the usefulness of representations enactivists reject. How enactive is O'Regan's dynamic sensorimotor account of phenomenal consciousness?

The aim of this contribution is to answer this question by focusing on O'Regan's dynamic sensorimotor account of raw feel. According to O'Regan [16], "raw feel" is whatever people are referring to when they talk about the most basic aspects of their experience." (96). It corresponds to the "something it's like"– sensation. An example is the feel of red, this is what is at the core of what happens when I look at a red patch of color beyond cognitive states and bodily reactions. In O'Regan's work raw feel corresponds to qualia.

In this contribution I will make the point that O'Regan's sensorimotor approach in general and sensorimotor account of raw feel in particular are semi-enactive. I will argue that they cling to environment-centric ecological overtones emphasizing the instrumental role of action in perception enactivism rejects and are hence incomplete. In my view O'Regan's approach needs to take into account the role of the motor and cognitive-emotional aroused lived body and the subject's conscious access to it in experiencing the qualities of sensorimotor interactions in order to overcome its ecological overtones, which are not enactive.

In the following I will first analyze O'Regan's dynamic sensorimotor account of raw feel [16] in the light of enactivism taking into account what enactivism says about mental representation and embodiment in order to point to the main differences between the enactive approach and O'Regan's sensorimotor approach. I will then turn

[1] See footnote 5

[2] O'Regan [16] (p. 68 note 1); O'Regan together with Alva Noë developed the well-known sensorimotor account of consciousness bridging the explanatory gap consisting in the problem of explaining qualia in physical or biological terms. See [15]

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to O'Regan's [16] phenomenality plot – the graph indicating qualities of experience which are objectively quantifiable by physical and physiological measurements – and analyze his sensorimotor approach to emotions as an example of raw feel of experience in the light of the enactive research on the phenomenological lived body and its role in the embodied enactive approach to emotions. I will point to the fact that the main consequence of bringing enactivism and the sensorimotor approach to raw feel closer to each other consists in leading to the development of a method based on a combination of third-person and first-person approach for the investigation of the feels of experience.

2 The Dynamic Sensorimotor Account of Raw Feel as Semi-Enactive

The theoretical background of the dynamic sensorimotor account of raw feel is the sensorimotor contingency theory of perceptual experience or sensorimotor account of consciousness by O'Regan and Noë [15]. This is the view according to which perceptual experiences are ways of acting, constituted in part by the perceiver's skillful mastery of the relation between sensory experience and movement. The senses have different characteristic patterns of sensorimotor dependence and perceivers have an implicit, skillful mastery of these differences. For each modality of perceptual experience – seeing, hearing, touching, and so on – there is a corresponding pattern of sensorimotor interdependence that is constitutive of that modality. What it is to experience the world perceptually is to exercise one's bodily mastery or know-how of certain patterns of sensorimotor dependence between one's sensing and moving body and the environment [15] [16]. In the same way as perception in this approach is considered to be something we do, O'Regan [16] considers also feel and raw feel as something we do. Experiencing raw feel involves engaging with the world (67; 113). Sensory inputs feel like something because the so called attributes of sensorimotor interaction we have with the environment provide the quality of sensory phenomenality to sensory inputs. O'Regan [16] identifies four attributes of the sensorimotor interaction which are specific to what we call feel and occur together when we experience a raw feel. These are richness, bodiliness, (partial) insubordinateness and grabbiness. Richness refers to the variety of the qualities of real-world sensory interactions. Bodiliness expresses the dependence between body motion and sensory input in a sensory modality. It is a distinguishing feature of neural activity deriving from external-world stimulation. (Partial) insubordinateness refers to the fact that real-world interactions are subordinate to our voluntary body motions, but they can cause changes in sensory input without us moving. Grabbiness is the capacity of a sensory modality of grabbing our cognitive processing. It is the tendency of something to attract one's attention. These qualities of interaction determine the

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sensory presence and hence the raw feel of an experience. According to O'Regan [16] such qualities are the physical qualities of an interaction and are hence objective and measurable (176), which gives the sensorimotor approach its advantage over an approach based on the neural correlates of consciousness. Even if in this contribution I will not compare the sensorimotor approach with an approach based on the neural correlates of consciousness, I shall come back to what I consider to be a methodological incompleteness of the objective measurement of the qualities of experience, which neglects the first-personal subjective character of experiencing raw feel, later on.

Both Thompson [20] and Hutto [10] observe that the sensorimotor approach is not properly enactive or enactivist. Thompson observes that even if it allows to explain the enactive subject's sensorimotor coupling with the world in terms of skillful mastery of the relation between sensory experience and movement, it is incomplete because it lacks a notion of an experiencing agent and it lacks to take into account the pre-reflective nature of bodily self-consciousness. Hutto points to the fact that in spite of the central role of skill–based explanations, the sensorimotor approach is riddled with suppositions threatening to reduce it to a rules-and-representations approach, which is not in line with antirepresentationalism enactivism supports.

My aim in this section is not to show how the sensorimotor approach can be transformed into a properly enactive one. Rather, taking into account Thompson's and Hutto's observations as a starting-point, in this section I will answer the question of how enactive with respect to the role of mental representation and embodiment in enactivism the sensorimotor approach and the sensorimotor approach to raw feel are. My claim is that they are semi-enactive because they are essentially limited in scope. In order to be able to bring them closer to enactivism sensorimotor research needs to take into account the motor and cognitive-emotional role of the lived body and the subjective access to it in the investigation of the agent's or subject's experience of the qualities of interactions. In other words, developing an account of subjectivity would make them enactive.

2.1 The Role of Representation

What is the role of mental representations in O'Regan's sensorimotor approach and in his sensorimotor approach to raw feel? In the following I will argue that in O'Regan's approach their use is superfluous and their role weak and that the weak role of representation contributes to determining the ecological Gibsonian and semi-enactive nature of O'Regan's sensorimotor approach to raw feel.

O'Regan [16] rejects the copy view of experience and hence the strong view of representation. This is the idea that experience is somehow constituted by the formation of passive, internal representations of outer scenes and of a pre-given

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world. Rejecting this idea is in line with enactivism, which does not follow the idea of assuming that the world is pre-given, that its features can be specified prior to any cognitive activity hypothesizing the existence of mental representations inside the cognitive system to explain the relation between this cognitive activity and a pre-given world [23] [8]. The strong view of representation presupposes a dualistic discontinuity between the body and the mind [12] [9].

But the strong idea of the existence of mental representations about the outside world is considered to be implausible. As a matter of fact, empirical research in neuroscience, situated robotics, ecological psychology, developmental psychology, philosophy of mind suggests that there is no single center of thinking.

Kirchhoff [12] formulates the two main arguments coming from empirical evidences against representationalism in the following way: "The first of these arguments, the threat from nontrivial causal spread, occurs whenever the material vehicles of cognitive architecture are causally spread beyond the brain and nontrivially involved in the completion of cognitive tasks. The second of these arguments, the threat from continuous reciprocal causation, occurs whenever the causal contributions made by components of a system partially determines and is partially determined by causal contributions of other systemic components, thereby making it impossible to assign a specific subtask to an identifiable subsystem within a larger system."

In other words, in more philosophical terms we can say that thoughts, propositions, concepts and percepts can not be considered to be quasi-objects about an external pre-given world. Rather, they are in and of the world as patterns of experiential interactions of organism-environment couplings[3] that constitute experience [11]. This can be considered to be the antirepresentational basis of enactive cognitive science Varela et al. [23] formulate in their work The Embodied Mind, according to which a cognitive system is understood on the basis of its so called "operational closure" which means that the results of its processes are those processes themselves. This means that a cognitive system does not operate by representations. Rather, it enacts or brings forth a world as a domain of distinctions according to its bodily structure. In other words, a cognitive system creates a minimal distinction between an interior and an exterior, and guarantees the continuous dynamical generation of its stable "internal coherence" [17] in the relation of co-determination with the environment.

Even if O'Regan [16] rejects the copy view of experience and hence the strong notion of representation, he clings to the view that representation is useful depending on how it is used. O'Regan [16] seems to support the view that the use of representation should be restricted to indicate the patterns of a structure and not the copy of a pre-given world. This is also called the weak view of representation. This can be considered to be both in line with enactivism, with which the weak notion of

[3] See footnote 4

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representation is compatible, and in line with the use of representation in the landscape of naturalistic contemporary theories of cognition and perception [11]. Nevertheless, O'Regan [16] comes to the conclusion that it is better to avoid words like representation, which give rise to confusion. Hence, he considers the use of representation as superfluous and prefers focusing on better explaining what is meant by 'having a sensory experience'. He writes: "[...] what we really mean is just that we are currently involved in extracting information from the environment in a way which is peculiar to the visual modality." (64)

The important point here for my claim that O'Regan's approach remains semi-enactive despite the acknowledgment of the weak notion of representation is the expression "extracting information from the environment". In O'Regan's approach extracting information from the environment is possible thanks to action, to bodiliness and hence to movement and its sensory consequences. In spite of the central role of action and bodiliness, as extracting information from the environment is described as a perceptually guided action, the environment seems to be independent from the perceiver or perceiving subject. Information is there to be discovered and movement is the instrument to do this. As a matter of fact, with reference to the sensory modality of seeing, O'Regan [16] writes: "If I move (but I needn't actually do so), I (implicitly) know there will be a large change in my visual input." (67) The instrumental role of action in the sensorimotor approach to perception is explained in a clear manner also by O'Regan's co-author Alva Noë [14] in his work Action in Perception, where he points out that our sense of the perceptual presence of a cat, for example, requires that we take ourselves to have access to the whole cat and the ground of this accessibility is our possession of sensorimotor skills (63). It is necessary to remark here that the instrumental role of movement cannot be considered to be 'enactive' [13], because it implies that information cannot be brought forth by the perceiver in a relation of co-determination with the environment. It can just be picked up and hence extracted from the environment. Interaction through movement having an instrumental role is just a sort of direct detection, which reflects the Gibsonian ecological approach. The instrumental role action and movement have in O'Regan's approach leads me to believe that O'Regan's approach is closer to ecological Gibsonian approaches to perception than to enactivism. As Chemero [1] makes clear, according to the Gibsonian direct approach to the perceptual detection of information, the environment contains sufficient information to guide the subject's behavior and no information is added in the mind (106). Mental representation in the strong sense is hence not necessary, while representation in the weak sense is compatible with direct perception the sensorimotor approach supports. I would like to remark here that in spite of the acknowledgement of perception as a direct process, ecological approaches are not enactive. Despite the tendency in research to draw analogies between the ecological and the enactive approach, Varela et al. [23] consider their enactive approach not to be ecological at all (203). They briefly summarize that in their enactive approach the

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environment is not independent. Rather, it is enacted by histories of coupling[4]. This is the main relevant difference. Varela et al. [23] claim that the environment is sensorimotor enactment. They point out that they build up the theory of perception from the structural coupling of the animal by specifying the sensorimotor patterns that enable action to be perceptually guided. This means that movement has a constitutive role in the determination of the perceived environment and hence of what O'Regan refers to as information [13]. The enactive approach is a relation-centric approach, a middle-way between the environment and the perceiver [8]. From my point of view, the sensorimotor approach clearly conveys a semi-enactive idea, for it rejects the strong version of representation, integrates or considers to be possible a weak version of representation, but the instrumental role of perceptually guided action to extract information from the environment does not reject the view of an environment-centric sensorimotor approach to experience. In other words, with reference to the sensorimotor approach to raw feels, perceiving the raw feel of red is something we do by extracting information from the environment according to a process of direct perception in the ecological sense. I am making the point here that in the sensorimotor approach action and movement just give the quality of experience its sensory presence in the environment. More precisely, they allow the subject to gather it from the instrumental action-related changes in the sensory input. This is not enactive despite the antirepresentational overtones of the sensorimotor approach.

2.2 The Embodied Mind and the Sensorimotor Approach to Raw Feel

In order to be enactive the sensorimotor approach to raw feel needs to be based on the notion of embodied mind [23]. Does O'Regan [16] take the embodied mind into account? In the following I will claim that O'Regan's approach is compatible with the embodied mind thesis, but it does not take it into account because it remains an approach which does not aim at solving the problem of the Cartesian mind-body dualism. Rather, it focuses on providing a framework in which problems appear as non-problems [10], which is far away from being a specific alternative framework to dualistic approaches. In enactivism the embodied mind thesis is traced back to the work The Embodied Mind by Varela et al. [23]. It refers to the claim that perception, thinking, feelings and desires – that is the way we behave, experience and live the world – are contextualized by our being active agents with the particular kind of body we have. It rejects the Cartesian mind-body dualism according to which mind and

[4] In the enactive approach sensorimotor coupling refers to the type of interaction with the environment by which agents actively generate their identity by selecting from the environment their viable world called “cognitive domain” that is brought forth or enacted by that agent’s autonomous mode of coupling with the environment. See [18], [23]

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body are split into segregated, pure forms. Putting the mind into the body means that in the interaction with the environment the engaged human living body is inconceivable without a mind. According to the embodied mind thesis the body is a form of lived experience, references a biological standpoint [25] and as lived experience also a phenomenological or psychological person standpoint [6] [20]. As Fuchs [6] points out, the body is not simply the carrier of the brain (163). Rather, it is organized in such a way that it displays the suitable structures to produce the conscious manifestation of life. It is useful to remark here that the embodied mind is relational, distributed over body, brain and environment, does not reference merely physical structures, is not about a disengaged agent defined by its movements. As Thompson [19] remarks, in the embodied enactive approach to the mind the inner and the outer are not separate spheres but mutually specifying domains enacted by the structural coupling of the system and its environment. Cognition is embodied action. In other words, the lived body (the inner) is a dynamic condition and a performance of the living body in the interaction with the environment (the outer) in a relation of co-determination. As Fuchs [6] points out, subjectivity is necessarily embodied, so living body is necessarily subjective (163). Therefore, the embodied mind is not simply about a moving agent peeking at a preformed world and drawing meaning directly from that world. It is not simply direct perception determined by the instrumental action-related changes in the sensory input. In considering raw feels simply as qualities of experience constituted by skilled modes of interaction with the environment O'Regan [16] is mainly concerned with finding a way to avoid reducing the explanation of the qualities of experience to brain mechanisms and the role and existence of neural circuitry and special neurons and hence with overcoming or bridging the explanatory gap. Nothing more. He writes: "But the quality of the feel involved is not caused by the activity of the brain mechanism; it is constituted by the quality of the interaction that is taking place and that the brain mechanism has enabled" (114). In my view, also in stressing that the qualities are objective he focuses only on the fact that they are objectively measurable by a physicist. I believe that in rejecting the strong version of representation and following the direct approach to perception the sensorimotor approach rejects de facto the mind-body dualism, but in considering the objective instrumental action-related changes in the sensory input only without taking the subjectively lived body into account the sensorimotor approach to the qualities of experience remains partial. In other words, this partially embodied sensorimotor approach to raw feels lacks an explanation of how the experience of sensorial events relates one's subjectively lived body[5] to itself and hence how the subject makes sense of the objective qualities of his/her own experience. In my view, this is surprising because experience is always someone's

[5] The lived body is also called Leib in phenomenology. It is your own body as experienced by yourself.

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experience. O'Regan's approach completely neglects the subjectively lived body's unique status as a physical subject. I believe that what is missing in this approach is something immanent to the system, something that can shape its way of being in the world, its way of being coupled.

In order to be enactive, O'Regan's approach needs to take into account the realm of consciousness. This is the part of our cognition that we access from a subjective point of view [17]. The subject experiencing the qualities of interactions (the experiencing agent) does this from a subjective embodied point of view showing also certain bodily reactions to an external observer, which are objectively measurable markers. The careful examination of the subject's or agent's experience from the point of view of an external observer requires hence to take into account a first-person method of verbal explicitation of experience, like the report of the observation of one's own lived experience while experiencing the raw feel of the qualities of interaction.[6] Moreover, it also requires a combination of first-person and third-person methodologies from the point of view of an external observer. The reasons are described by Varela and Shear [24] as follows: "What we take to be objective is what can be turned from individual accounts into a body of regulated knowledge. This body of knowledge is inescapably in part subjective, since it depends on individual observation and experience, and partly objective, since it is constrained and regulated by the empirical, natural phenomena." [24]

Summing up, one can say that combining subjectivity and objectivity is not O'Regan's ambition. Hence, also from the point of view of embodiment O'Regan's approach is semi-enactive.

3 The Phenomenality Plot as Semi-enactive and the Case of 'Enactive' Emotions

In order to better illustrate the semi-enactive nature of the sensorimotor approach to raw feel and the relevant role of the lived body O'Regan [16] completely neglects, in this section I will put into focus the limits of O'Regan's phenomenality plot from an

[6] In their work with the title The Validity of First-Person Descriptions as Authenticity and Coherence, Journal of Consciousness Studies, 16, No. 10–12, pp. 363–404 (2009) Claire Petitmengin and Michel Bitbol analyze the reliability of first-person descriptions. They come to the conclusion that their validity can be measured in dynamic terms of performative consistency of the acts which produce first-person research. They write: "[…], researchers in the domain of lived experience cannot avoid making a detour by their own experience. Their expertise must not limit itself to the inventory of objective signs, but must extend to the exploration of their own subjectivity."

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enactive viewpoint and his way of applying the sensorimotor approach to raw feel to emotions. I will illustrate this point using the enactive approach to emotion by Colombetti [4] with the purpose of discussing how the notion of lived body can help better explain the constitutive role of body motion in the feel of experience. In his work O'Regan takes emotion into account because it is a special case, for its feel is not phenomenally present and not precisely localized. This remark by O'Regan will be my starting-point to claim that without the notion of the lived body the sensorimotor approach to raw feel remains incomplete. My claim is in line with Thompson's [20] remarks about the sensorimotor approach to consciousness mentioned above.

3.1 The Bodiliness and Grabbiness of an Emotion in the Phenomenality Plot

The fact that the feel of the experience of emotion is not phenomenally present and not precisely localized is a good condition to explore both the central and the partial and insufficient role of bodiliness and grabbiness in explaining the feel of experience. It is also a good starting-point to discuss why they are necessary but not sufficient conditions to explain the feel of experience, which has an objective but also a subjective complementary aspect.

O'Regan [16] considers richness, bodiliness, insubordinateness, and grabbiness as the basis for the "what it is like" of sensory feels. The critical factors remain bodiliness and grabbiness, which are diagnostic of the degree of sensory presence of the different experience, and which he plots on a graph he calls the phenomenality plot where he indicates the amount of bodiliness of a given type of mental or neural activity and the amount of grabbiness that activity has. In the paragraph about emotion in his work O'Regan focuses basically on the feeling of an emotion, which is considered to involve cognitively monitoring of the bodily reactions associated with an emotion. The only ambition O'Regan has is to show that the sensorimotor approach to the feel of emotion can explain the cognitively monitoring of the bodily reactions associated with an emotion. It can explain that the experienced feel of an emotion has to be searched in the ongoing interaction with the environment whose qualities constitute the experienced feel. What does this mean? And how enactive is it?

If we consider "fear" as a prototypical emotion, as O'Regan [16] in his work does, bodiliness and grabbiness are the two elements which we have to use to find out how the experienced feel of "fear" comes into being. According to O'Regan, a subject can recognize "fear" because a situation attracting her attention is interpreted as dangerous. It is hence a social interpretation of interaction also based on previous experiences. Bodiliness plays a secondary role, as moving the body does not change the subject's fear, unless movement is instrumental to moving the perceiving body out of the dangerous situation. In this case movement would change the conditions for interaction. In the sensorimotor approach the cognitively monitoring of the bodily

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reactions associated with an emotion tends to reduce the investigation of the feel of an emotion to the objective qualities of interaction an experiencing agent has with the environment and which are measurable from a third-person point of view. In other words, according to the sensorimotor approach, in order to have the required sensitivity for the arousing emotion the pre-condition the subject needs is the abilities such as skills to engage in emotion-laden interactions. From my point of view, in O'Regan's approach bodiliness and grabbiness can contribute to monitoring bodily reactions associated with an emotion in a quite weak way, for they are not able to explain the relation between the moving body in the environment and the evaluation of the situation the subject interacts with.[7] In other words, I believe that if one can not find a way to explain how it is possible that the experiencing agent or subject evaluates and hence recognizes the situation she interacts with as fear provoking or joy provoking or anxiety provoking, the sensorimotor approach remains partial from an enactive point of view, for it does not explain how the outer – the environment – and the inner – the subjectively lived body – determining embodied meaning and sense-making in interaction mutually specify each other in interpreting an emotionally charged situation. The case of the feel of emotion is a good example for the limits of the sensorimotor approach. In my view, O'Regan's approach remains environment-centric without being able to localize the feel of emotion and its sensory presence in the interaction with the environment. The neglected point is that the feel of emotion is someone's feel. What is needed is a way to take this subjectivity into account. The phenomenological notion of the lived body and the enactive cognitive-emotional access to it allow to take such a subjectivity into account without excluding the simultaneous role of bodiliness and grabbiness in the interaction with the environment. In other words, I believe that the sensorimotor approach to the feel of experience and hence also to the experienced feel of an emotion can be brought closer to enactivism if movement can be considered to be constitutive and not instrumental in the determination of the feel of the qualities of interaction and hence of experience. In the following I will consider the case of the enactive approach to emotion with the purpose of showing that the role of the lived body is essential to explain the co-determination of the inner and the outer, the subjectivity of the feel of experience and the constitutive role of motion in such a relation of co- determination.

[7] According to Fingerhut [5], the problem with the phenomenality plot is its rigidity, which leads to a weak explanation of the correlation between presence and bodily modulation (178)

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3.2 The Cognitive-Emotional Role of the Lived Body: Towards the 'Enactive' in the Sensorimotor Approach to the Feel of Experience

Giovanna Colombetti and Evan Thompson [3] summarize with the following words the main claims of enactive research in the field of emotion theory: "Cognition is a form of embodied action [...]. The enactive approach implies that we need to move beyond the head/body and subjective/objective dichotomies that characterize much of emotion theory. Appraisal is not a cognitive process of subjective evaluation "in the head" and arousal and behavior are not objective bodily concomitants of emotion. Rather, bodily events are constitutive of appraisal, both structurally and phenomenologically". (56–58)

Enactive research on cognition, emotion and the lived body has emphasized that emotion and cognition or also bodily sense-making[8] and emotions are embodied and interdependent. Thompson [19] in explaining the approach by Marc Lewis formulates this idea in the following way: "Cognitive and emotional processes modify each other continuously on a fast timescale, while simultaneously being constrained by the global form produced by their coupling in a process of circular causality. This emergent form, the emotional interpretation, is a global state of emotion-cognition coherence, comprising an appraisal of a situation, an affective tone, and an action plan." (371).

According to Colombetti's enactive approach to emotion and bodily sense-making [4] [18], bodily sense–making, which is central in the constitution of an emotion and hence of degrees of value in the evaluation of a situation, manifests itself in the experience of the aroused lived body and hence in experience through embodied emotions such as fear, anger, happiness, guilt, anguish. These are the way the subject evaluates bodily sense-making in the interaction with a situation. The mentioned embodied emotions are bodily mediated cognitive-emotional evaluations of the bodily sense-making of an adaptation to environmental factors the organism interacts with in the environment and of their viability. They allow to subjectively feel the cognitive-emotional qualitative dimension of the degree of value of our interaction with different environmental factors through the aroused lived body. In developing the idea of the cognitive-emotional embodied evaluation, which the aroused lived body is a vehicle of, Giovanna Colombetti [4] [2] points out that as there is no cognition

[8] In enactive research bodily sense-making refers to the process according to which the whole organism is a vehicle of meaning which is dynamically constructed by the subject having a perspective on the world. In the interaction with and adaptation to the environment bodily sense-making is the evaluation of an adaptation and takes place in the organism's coupling with the environment. It has both the function to contribute to maintaining the organismic integrity of the subject (regulation) and to expand the subject's cognitive domain through the active selection of viable environmental factors to be integrated into the subject's cognitive domain. [23] [18].

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DOI: 10.1007/978-3-319-05107-9_5, © Springer International Publishing Switzerland 2014

without emotion and emotion is embodied, arousal needs no appraisal to be interpreted by the subject.[9] The aroused body is immediately available as such to the subject's experience through the evaluation of the bodily aspects of emotion as part of the subject's evaluation of the experienced world. Bodily arousal subsumes the whole subject's organism capacity to make sense of her world and is possible thanks to the lived body. In other words, as Todres and Galvin [21] following Eugène Gendlin point out, the conscious experience of the subjectively lived body is the subject's access to the pre-reflective dimension of experience. It is the access to one's own multisensorial pattern of feeling that is the basis for different felt qualities or felt sense of a situation and for the emergence of thought and understanding.

Colombetti points out that in the same way as the pre-reflective lived body allows the experience of becoming aware of my body as that through which, for example, the experience of typing on the computer is possible, it allows to be similarly aware of the bodily arousal as that through which I am living the situation of an interview as anxiety provoking. As also Mark Johnson [11] points out, motor intentionality and the subjective experience of the feeling of qualities of an experienced situation enable to account for meaning as grounded in bodily experience.

Against this background, we can say that in the process of the cognitive-emotional evaluation of and of adaptation to the environment, the central role of the lived body is twofold:

(a) it is the pre-reflective backdrop against which the perceptual and motor experience is constituted, which is its classical role, traditionally studied in phenomenology; the role of the lived body as a backdrop against which actions and experiences in the world take place becomes vividly apparent in the pre-reflective bodily self-consciousness: one's body shows itself to be a material thing animated from within by sensation and motility. Evan Thompson [19] gives the well-known example of a cup of hot tea. When I pick up a cup of hot tea, I feel the hot smooth surface of the porcelain and the heat penetrating my finger, and these sensations linger for a time after I have put the cup back down on the table. Such bodily experience is twofold: it is the experience of physical events that relate one's body to things and it is the experience of sensorial events that relate one's subjectively lived body to itself. Following Husserl the lived body manifests itself in perceptual experience as an implicit I can of movement and motor intentionality. Bodily subjectivity is "an I can and do move in such and such a way" (249).

[9] According to traditional non-enactive dualistic emotion theories the notion of emotion is constituted simultaneously by a mental and a bodily event. The mental side of an emotion is called appraisal and the bodily side is called arousal. Without a cognitive activity there can be no emotion, there can be just bodily arousal. See [3].

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(b) it is the pre-reflective backdrop against which the cognitive-emotional evaluation of the experienced world takes place, which is its role in the enactive approach to emotion.

With reference to the subjectively felt qualitative dimension of experience, this means that this takes place against the backdrop of both a pre-reflective motor and cognitive-emotional lived body. Nevertheless, the cognitive-emotional evaluative pre-reflective dimension of the aroused lived body is the distinctive backdrop against which a viable evaluation and hence the cognitive-emotional qualitative dimension of the degrees of value of different environmental factors are subjectively felt in the experience and perception of the world, which are subordinate to motion.

What does this overview on the state-of-the-art in enactive research on emotion and cognition mean for my concern here? As I argued above, the role of the lived body is essential to explain the co-determination of the inner and the outer and the subjectivity of the feel of experience and that O'Regan's sensorimotor approach to the feel of experience and hence also to the experienced feel of an emotion can be brought closer to enactivism if movement can be considered to be constitutive and not instrumental in the determination of the feel of the qualities of interaction and hence of experience. Combining the double role of the lived body as the pre-reflective backdrop of perceptual and motor experience and as the pre-reflective backdrop of the subjective cognitive-emotional evaluation of the experienced world with the sensorimotor role of bodiliness and grabbiness in interaction in the experience of the feel of an emotion and hence the inner with the outer can contribute to reaching this aim.

With these changed premises I would like to consider here again the experienced feel of "fear" and bodiliness and grabbiness. Bodiliness and grabbiness can be considered to be convincing markers of phenomenality in the enactive sense, where cognitive science and phenomenology are brought together to investigate consciousness, only against the backdrop of the motor lived body (I consider bodiliness as grounded in the motor lived body, in an implicit "I can and do move in this and that way") and of the cognitive-emotional lived body (I consider grabbiness as grounded in the cognitive-emotional lived body, in the subjective experience of the evaluation of the aroused subjective cognitive-emotional lived body) the subject interacting with the environment or with a situation has access to in the process of sensorimotor coupling. I would like to make the point here that with these changed premises the feel of the emotion "fear" emerges from the sensorimotor coupling of the subject with the environment determined by bodiliness and grabbiness grounded in the motor and cognitive-emotional lived body, which as a backdrop of the actions of the subject's living body in the environment co-determines the subject's sense-making of the situation she interacts with. In this case movement is not instrumental, but constitutive of the feel of an emotion, for every cognitive-emotional evaluation of a

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situation and the felt sense of an emotion are subordinated to movement in the environment and hence to motion.

It is important to remark here that they are subordinated to movement because every emotional evaluation of a situation according to enactivism can take place only if the subject actively explores the environment and actively brings forth – instead of picking up – his or her own cognitive domain. Grounding bodiliness in the lived body movement becomes constitutive in the determination of the feel of an emotion, for it becomes an implicit "I can and do move in this and that way", which the subject has access to according to the situation she interacts with. From my point of view, in considering bodiliness only as a way to move the body out of the dangerous situation in interpreting the feel of fear O'Regan [16] reiterates once more the instrumental non- enactive role of action and movement.

Against this background, I consider the sensorimotor approach to the feel of experience and emotion as semi-enactive because it focuses only on the bodily abilities to engage in interaction and hence only on the objectivity of experience, on the experiencing agent's bodily markers an external observer can objectivize.

4 Conclusion

The aim of this contribution has been to answer the question of how enactive O'Regan's dynamic sensorimotor account of phenomenal consciousness is by focusing on his sensorimotor approach to raw feel. I have argued that O'Regan's approach is semi-enactive, for movement and action are just instruments to extract the raw feel of something from the environment we interact with and for the anti- dualistic embodied mind thesis is not taken into account neglecting in this way the question of the realm of consciousness, this is the part of our cognition we access from a subjective point of view.

In illustrating how O'Regan applies his sensorimotor approach to the feel of emotion I have argued that without integrating or taking into account the phenomenological notion of the lived body the sensorimotor approach to raw feel remains incomplete and partial. Taking into account the subjective lived body leads to considering the relation of co-determination of the inner – the embodied backdrop of human experience – and the outer – the environment and the moving living body – and hence the fact that the feel of experience is someone's feel. This requires the development of a method based on a combination of third-person and first-person approach. More precisely, it requires the measure of the relation between objective qualities of interaction and subjective felt qualities of interaction lived through by the agent or subject experiencing the qualities of interaction subjectively. In my view, the investigation and measure of raw feel can be but relational.

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