Epistemological Odyssey
Introduction to Special Issue on the Diversity of Enactivism and Neurophenomenology

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Introduction

1 In the past two decades, the field of cognitive science has undergone tumultuous changes. It is safe to say that the spectra of enactivism and embodiment, whose non-cognitivist theories started haunting the halls of cognitive science in the early 1990s, has now established firm roots in the community: "Far from being at the gates, the barbarians are, it seems, now occupying cafes in the heart of the city" (Hutto & Myin 2013: 3). Many have jumped on the enactivist bandwagon (Froese 2014: 1), and many more are joining their ranks. The field is abuzz with E-acronyms: under the banner of the revolutionary avant-garde, researchers are competing to provide the most "radical" version of the mind extended, embedded, embodied, and/or enacted.

2 This so-called 4E approach1 to the mind and cognition has infiltrated numerous disciplines – from neuroscience (Kiverstein & Miller 2015) through robotics and AI (Pfeifer & Bongard 2007; Froese & Ziemke 2009), archaeology (Malafouris 2013), psychology (Ratcliffe 2007), to philosophy of mind and phenomenology (Clark 1997, 2001; Gallagher 2005; Thompson 2007; Wheeler 2005) – and represents a serious challenge to received views on various subjects: emotion (Colombetti & Thompson 2008; Colombetti 2014; Krueger 2014), varieties of extended emotions, empathy (Thompson 2001), technology (Clark 2003; De Preester 2011), social interaction and intersubjectivity (Fuchs & De Jaegher 2009; Froese & Fuchs 2012), consciousness (Varela 1996; Bibo 2008), as well as schizophrenia (de Haan & Fuchs 2010; Fuchs & Schlimme 2009), autism (De Jaegher 2013; Gallagher 2004), and a variety of other clinical conditions (Kyselo & Di Paolo 2015; de Haan, Rietveld & Denys 2015; Krueger & Henriksen 2016), among other topics.

1 Sometimes also referred to as the 4EA approach, it "affective" is added to the list (Ward & Stapleton 2012). In general, it would seem that the acronym keeps growing: while Julian Kiverstein and Andy Clark (2009) speak only of three Es (see the quotation in §3), there have now been suggestions that perhaps "ecological" and "experiential" (i.e., "phenomenological") should be included in the list (thus leading to a "6E[A]") designation.)
But amidst this vigorous activity, questions have started to emerge as to whether, and to what degree, these different proposals actually cohere with one another (Kiverstein & Clark 2009; Menary 2010; Rowlands 2010; Shapiro 2011).

"[T]o what extent [is] the study of mind 'embodied, embedded, and enacted' [...] already a unified church with agreed central tenets, or remains more of a motley, with some serious disagreements hidden beneath that colorful umbrella with the three large Es emblazoned on its surface?" (Kiverstein & Clark 2009: 6)

The same question could be raised about the relationship of these E approaches to other contemporary and more or less complementary approaches, such as ecological psychology, situated cognition, radical constructivism, and interactionism, as well as the dynamical approach to development and cognition.

Several points of conflict have been identified, points that threaten to undermine the purported unity behind the "large and sheltering [E-]slogan" (ibid: 2): the problem of (anti)representationalism, i.e., whether any (however minimal) representations should be allowed into the model of mind and cognition (Clark 1997, 2001; Chemero 2009; Hutto & Myin 2013; Pechtl & Riegler 1999; Wheeler 2005, 2008, 2009); the role of self-organization and self-maintenance (autonomy) of life in the constitution of cognition (Di Paolo 2009; Froese & Ziemke 2009; Thompson 2007); the exact nature of embodiment and its role in the brain-body-world dynamics (Clark 2008a, 2008b; Riegler 2002; Thompson & Stapleton 2009), etc. There is little doubt that all these questions are important, but we will not try to tackle them in this paper. Instead, we will focus on what seems to be a frequently neglected problem, which threatens to have serious implications specifically for the enactivist movement.

To get a clearer picture of the issue at hand, we need to go back to the now classical account of enactivism2 - glorious to some, notorious to others – as propounded by Francisco Varela, Evan Thompson and Eleanor Rosch in The Embodied Mind (1991; referred to as "TEM" hereafter). There, as the familiar story goes, the foundations of an alternative conception of the mind were laid, one that called for a "radical break with formalisms of information-processing and symbolic representations prevalent in cognitive science" (Stewart, Gapenne & Di Paolo 2010: viii). Of course, the field has seen significant development since the appearance of its "text", and some of the original formulations have been extended, revised, or even discarded, but the main contours remain more or less the same. Thus, from the enactivist perspective, cognition is not to be construed as information-processing, i.e., the use and manipulation of symbolic (brain-instantiated) representations of the external world, but rather as embodied action, i.e., dynamic interplay between the sensorimotor capacities of the organism and its environment. Similarly, as pointed out by Susan Hurley (1998), the mind is no longer conceived as the "classic sandwich," consisting of perception (input), cognition (information processing) and agency (output), but rather as something more akin to a "Escher Spaghetti" (Clark 1999: 4, 8), encompassing complex circular interactions between the brain, body, and environment. In short, due to theoretical and practical inadequacies of the classical view, a novel conception of mind and cognition has been put forward, one that breaks down the old conceptual barriers and greatly modifies or even completely reshapes the edifice of cognitive science.

In what follows, we will discuss the metaphysical, epistemological, and practical implications of TEM, and sketch the present situation.

The razor’s edge: Between realism and idealism

This construal of what TEM was trying to accomplish, in a (literally) ground-breaking book (see §13 below), is generally correct, but ultimately incomplete. For while their goal was to provide an alternative conception of mind and cognition, their reasons for doing so – and this is the point that is usually brushed over – had profound philosophical motives. Specifically, the main goal was to find a way to crack the old chestnut of realism and idealism, and thereby appease the existential and epistemological pangs of so-called "Cartesian anxiety" (TEM: ch. 7).

The idea itself precedes the publication of TEM and can already be found in The Tree of Knowledge (1987), where Maturana and Varela argue that, in order to avoid the pitfalls of classical epistemology and metaphysics, one needs to undertake an "epistemologic(al) Odyssey" and learn to "take the middle road, right on the razor’s edge," i.e., sail "between the Scylla monster of representation(al)ism and the Charybdis whirlpool of solipsism" (ibid: 133f). In his "Afterword" to the 1992 edition, Varela emphasizes a deep continuity between his ideas from that period and his later work conducted under the aegis of "enaction" (ibid: 255). This is clearly borne out by a similar, though somewhat more nuanced formulation, put forward in TEM (published one year earlier), where the authors point out that it is their goal to try and negotiate "a middle path between the Scylla of cognition as the recovery of a pregiven outer world (realism) and the Charybdis of cognition as the projection of a pregiven inner world (idealism)" (TEM: 172).

Moreover, it is suggested that, despite their seeming differences, the two extremes stem from the same root, namely representation: "[I]n the first case representation is used to recover what is outer; in the second case it is used to project what is inner" (ibid.: 172). What in The Tree of

Note that "continuity" does not imply "identity": closer inspection reveals that there are important differences between Varela’s earlier work on autopoiesis and his later work on enaction (Froese & Stewart 2010; Froese 2011b).
Knowledge was but one of the two traps on the “epistemological Odyssey” (representationalism) has now become a subterranean current that provides sustenance to both alternatives. The authors compare the age-old metaphysical dilemma to the proverbial dispute about what came first, the chicken (“the world out there has pregiven properties”) or the egg (“the cognitive system projects its own world”). In other words, if one accepts the inner as an epistemological starting point, then the mind’s relationship to the outer can only be conceived in terms of the former either representing or constructing the latter. But both of these options can be said to suffer from problems related to their one-sidedness, so a fruitful way to proceed in such cases could be to break through the old patterns of thinking and perceiving, and to reformulate the problem – or more precisely, recalibrate one’s attitude towards it – in such a way that the old impasse never arises.

The alternative approach put forward in TEM can be roughly sketched in terms of three interrelated steps (see Figure 1 further below).

The first step is to acknowledge the ineradicable reflexivity underlying all our epistemic practices (Stewart, Gippenreith & Di Paolo 2010: xvi), the impossibility of “stepping behind one’s own back” and attaining the infamous “view from nowhere” (Nagel 1986). The cognitive scientist reflecting on human cognition is herself a human cognizer engaged in cognizing.4 There is, in the last analysis, no “Archimedean point” that would enable us to take on a “neutral perspective”: every viewpoint already presupposes a certain standpoint (Vörös 2014). According to Varela et al., the best way to approach this inescapable “hermeneutical circle” is to posit the fundamental circulation between “lived experience” and “scientific understanding” (TEM: 9–14), i.e., to enable a continual back-and-forth exchange between first-person (phenomenological) and third-person (scientific) approaches to mind and consciousness. It is only by taking this inescapable circularity seriously that we may hope to arrive at an “entre-deux” between a “disembodied eye looking objectively at the play of phenomena” and “subjectivism in which the mind on its own ‘constructs’ the world” (ibid: 4), between the realist attitude of disembodied naturalism and the idealist attitude of “dis-worlded” transcendentalism. This, as we will see shortly, is also the main reason why Varela proposed neurophenomenology to be the flagship methodology of enactivism.

In the second step, the authors outline what they feel may be the closest conceptual approximation of this inescapable circularity, namely the idea of co-determination or mutual specification of the cognizing organism and its world (ibid: 150, 172, 202). In the words of the phenomenologist Maurice Merleau-Ponty:

“4 | The similarities with Heinz von Foerster’s second-order cybernetics cannot be overlooked. As early as 1972, he emphasized the need for a “theory of the observer” who is “a living being, which means that in his theory he has not only to account for himself, but also for his writing this theory” (Foerster 1984: 258). Historically there has been a vivid exchange between Varela and von Foerster, see for example Varela’s (1984) introduction to the collection of von Foerster’s paper.

“11 | The world is inseparable from the subject, but from a subject which is nothing but a project of the world, and the subject is inseparable from the world, but from a world which the subject itself projects.” (Merleau-Ponty 1962: 430)

Put differently, the cognizer does not detect or recover information from a pregiven world nor does it invent or construct a world at whim; instead, the cognitive agent and the world are “two sides of the same coin, knower and known are mutually specified” (Varela in Maturana & Varela 1992: 253, emphasis added; see also TEM: 103).

“14 | The third step follows directly from the first one and tries to flesh out this skeletal notion of co-determination, which it does by laying down the foundations for a concrete anti-representationalist, “co-determinist” model of cognition that would avoid the old philosophical traps. The central vehicle in this undertaking is the notion of en-action construed as, to use Thompson’s later formulation, “the exercise of skilful know-how in situated and embodied action” (Thompson 2007: 11; see also TEM: 173). Instead of detection/creation or internalization/externalization of the features of a discrete world by a discrete subject, the subject and the world co-emerge from, and are co-determined through, these recurrent sensorimotor patterns.” The embodied cog-nizing agent can thus be said to both shape, and at the same time be shaped by, the environ-ment (TEM: 174).

“15 | Note, however, that it would be false to conceive of the enactive model as a conceptual or theoretical solution to the puzzle of reflexivity. According to Varela et al., concepts such as enaction, embodiment, etc. are useful tools that help us think the fundamental circularity between lived experience and rational understanding, but they are, in the last analysis, “concepts and as such always historical” (ibid: 228).

The deep interconnection of the three steps means that no conceptual framework can ever hope to transcend it: there is no immutable ground where one could rest one’s epistemological feet. Thus, instead of trying to escape the reflexivity, Varela et al. urge us to embrace it by exposing and eliminating the epistemological and existential roots that urge us to transcend it. In other words, one can only hope to solve the dilemma of realism and idealism by dis-solving its conditions of possibility (Bibol 2012; Vörös 2014), which gave rise to it in the first place. And since “representationalism” in both its realist and idealist guises stems from what Varela et al. refer to as the “Cartesian anxiety”, a relentless craving or grasping for an (absolute) ground (ibid: 141), the antidote consists in trying to find a way to appease this craving and embrace the fundamental groundlessness (non-substantiability) of all phenomena. However, since Cartesian angst is not solely a rational but also (or even primarily) an existential problem, the radical

5 | This original construal might have had a negative impact on the development of the field, as it unwarrantedly reduces skillful knowhow to sensorimotor skills, thereby ignoring a whole spectrum of other skills, such as imagination, reflection, discovery/creativity, making explicit judgments, etc. (see, e.g., Rietveld & Kiverstein 2014). But such an extension to higher-level cog-nition is compatible with our view because we conceive of “enaction” in a pragmatic/instrumental sense, i.e., as a provisional (working) conceptual tool that can be altered and/or expanded in light of new empirical and theoretical developments (see also §13f).
change must take place both on the level of conceptuality as well as on the level of lived experience. In other words, groundlessness must not only be thought, but also, and even more so, en-acted (en-lived), which brings us full circle back to the beginning: the inescapability of reflexivity (Froese 2011).

Varela et al. are well aware that “[a] ny conceptual position can become a ground (a resting point, a nest)” and that this also applies to “the view of cognition as embodied action (enaction),” for “although it stresses the interdependence of mind and world,” it “tends to treat the relationship between those (the interaction, the action, the enaction) as though it had some form of independent actual existence,” and as such, the concept of “enaction” can become a new conceptual anchor, a new “real and solid” some-thing (ibid: 228). However, to take this route is to miss the point completely: “enaction” should not be taken as a description of what the mind is like, but more like a useful heuristic: it enables us to portray the inescapable reflexivity conceptually, yet at the same time “point[s] beyond itself” to a truer understanding of groundlessness” (ibid; emphasis added). Its instrumental and performative aspects are much more important than its descriptive aspects, as they intend to “free” the mind from its reifying (grasping) tendencies.

The mind-body problem

A similar line of thought can be found in the later methodological expansion of the enactivist framework, namely neurophenomenology (Varela 1996). Here, too, philosophical motivations are at the forefront: the goal is not only to lay down the foundations for a novel approach to studying experience but to tackle pragmatically one of the most notorious philosophi-

6] Presenting one’s theory as a heuristic rather than the “true picture” is what Varela shares with von Glasersfeld, who emphasized: “I would be contradicting one of the basic principles of my own theory if I were to claim that the constructivist approach proved a true description of an objective state of affairs. As I see it, Radical Constructivism merely provides a different way of thinking and its values will depend mainly on its usefulness in our experiential world” (Glasersfeld 1991: 13).

61 Varela accepts Chalmers’s exposition of the problem within the prevailing theoretical context, especially his conclusion that “you cannot explain conscious experience on the cheap” (Varela 1996: 208; italics in the original). However, he disagrees with the proposed solution: the problem cannot be solved by a “theoretical fix” or “extra ingredient,” but needs to be addressed on a more fundamental level by changing “the entire framework within which the issue is discussed” (ibid: 330, 331). Thus, instead of trying to find a conceptual solution to the problem, Varela suggests that the problem requires “a rigorous method and an explicit pragmatics for exploration and analysis” (ibid: 330; italics in the original). Specifically, what is needed is “a systematic exploration of the only link between mind and consciousness […] the structure of human experience itself” (ibid, italics in the original).

19 This can be achieved by combining rigorous first-person methodology as developed by phenomenology and contemplative traditions with precise third-person tools of contemporary neuroscience. The basic idea is that if we omit the first-person accounts of experience, we are basically omitting one of the central if not the central aspect of experience. However, these first-person accounts cannot be just a matter of naïve (i.e., unsystematic, unreflective) introspection?

7] Or in the words of Varela & Shear: “[A] simple introspective approach is not the solution; the ‘just-take-a-look’ or ‘seeing inside’ attitude must be overcome. Neurophenomenology implies […] that researchers themselves, as they are specialists in neuroscience for instance, become specialists in the phenomenology of conscious experience” (Varela & Shear 1999: 2; see also Vörös 2014).
answer should be fairly clear: its solution entails dis-solving it in the disciplined cultivation of lived experience. As already mentioned, there is no need for an additional theoretical fix; quite the contrary, what is called for is a rigorous first-person methodology, which will bring to a halt the mind’s endless meanderings through metaphysical nooks and crannies and help us “live away” the mind/body problem (for a more in-depth exposition see Bitbol 2012; Froese 2011; Vörös 2014). The principle of “mutual constraints” is not a solution per se – it is merely a conceptual heuristic that helps us get the “pragmatic ball rolling,” so to speak – and therefore should not be interpreted as such (just as enaction should not be construed as “what cognition really is”). The proper (dis)solution lies within the realm of praxis. More specifically, the proposed first-person techniques are not only means of investigation (on par with, say, a microscope), but also embodied ways of alleviating the roots of the Cartesian angst. Through phenomenological and contemplative practice, one’s way of being and experiencing undergoes profound changes in which “the basic subject-object duality” is eroded and the practitioner opens up to “a field of phenomena where it becomes less and less obvious how to distinguish between subject and object” (Varela 1996: 339). Put differently, the proposed research program does not tackle the conceptual puzzle head on (by, say, trying to find a solution to Chalmers’s question), but pragmatically undermines it by cutting out its existential and experiential roots. This is not to say that it is intended to substitute for scientific endeavour, but rather as its complement, for it enables the scientist to not only think, but to perceive and experience the age-old dualities (realism-idealism, mind-body, etc.) differently.

Having completed our exposition of enaction as Varela and his colleagues had originally envisioned it, we now turn to an assessment of more recent trends that have gained ground in (some parts of) the scientific community, so let us now examine how later developments agree with these early proposals. Our brief overview makes no pretence to being exhaustive, but aims to shed light on the rich diversity within the field.

Let us begin with the notion of enaction. Of the three interrelated steps (§§10–12, Figure 1), it is the last one – cognition construed as enaction (embodied action) – that has gained the most widespread acceptance. This is not surprising given the fact that such (re)conceptualizations, although extensive, do not necessitate substantial revisions in one’s philosophical commitments. Most of the debates currently revolve around how to conceive of enaction and embodiment appropriately, what they entail (e.g., is complete abandonment of representationalism necessary), and how they are related to similar concepts (e.g., embeddedness, extension, situatedness, affec-

![Figure 1](http://constructivist.info/11/2/189.editorial)
From the perspective of the original Varelian approach, this would mean that, in their quest to unearth the right model of the embodied/enacted/etc. mind, such (re)constructions risk not only missing the forest for the trees, but forget that what they are focusing on may not necessarily be a tree at all. That is to say, they tend to ignore the qualification about the provisional status of terms such enaction and (more importantly) about their operational/performance dimensions, whose main goal is to call one’s attentions to deeper philosophical concerns.9

26 However, this does not mean that such discussions are completely without merit, but merely that they may, perhaps unwittingly, lose sight of some of the problems that were the original wellspring of enactivism. There are, to be sure, some exceptions to the rule: a small, but vocal group, centred mostly around Varela’s former collaborators and sympathizers (Thompson, John Stewart, Michel Bitbol, Ezequiel Di Paolo, to name but very few) is critical of attempts that try to reduce the “enactive turn” to catchy slogans à la cognition is “embodied,” “embedded,” “sensorimotor coupling,” etc., emphasizing that, to paraphrase Chalmers’ (1995) phrase, “one cannot have enaction on the cheap,” i.e., one cannot incorporate enactive views of the mind into cognitive science without changing the epistemological and metaphysical framework in which it is embedded.27

27 These discrepancies become more pronounced when we take into account the second step of the Varelian tripartite scheme – the question of how to construe the fundamental subject-world relation in light of enaction and embodiment. The original proposal – co-determination or mutual specification – seems nowadays to be accepted by only a few researchers. Donn Welton was probably the most persistent in giving the subject-world relationship an explicitly symmetrical reading, supplementing the original Varelian terminology of “enaction” (“bringing forth”) with a reciprocal term [affective] entrainment. “The organism enacts an environment as the environment entrains the organism. Both are necessary and neither, by itself, is sufficient for the process of sense-making” (Welton 2011: 110; emphasis added). Thompson, a long-term colleague of Varela and one of the co-authors of TEM, has also defended the original view of “co-determination” (Thompson 2007: 79, 204), but with an important proviso: he agrees that the relation between subject and the world are reciprocal, yet goes on to claim that they are also a-symmetrical:

“Although the physical and energetic coupling between a living being and the physicochemical environment is symmetrical, with each partner exerting more influence on the other at different times, the living being modulates the parameters of this coupling in a way the environment typically does not. Living beings, precisely because they are autopoietic and adaptive, can ‘surf’ environmental events and modulate them to their own ends, like a bird gliding on the wind.” (Thompson 2011: 121)

28 Thompson refers to the organism’s capability of regulating its interactions with the environment as “interactional asymmetry” (ibid.), and believes it to be a necessary consequence of the fundamental “biologic” of the living. Similar views have been endorsed by Di Paolo (2005, 2009), Stewart (2010), Froese & Stewart (2010), and Froese (2011). The emphasis on the relative priority of the “interiority” of the organism seems to push Thompson and his colleagues towards constructivism (Stewart 2010) or (as Welton 2011: 105f puts it) a kind of bio-idealism. Relatedly, it might be perhaps claimed that enactivism’s reliance on the concept of autopoiesis, understood as the self-production of a bounded self-maintaining system, appears to commit enactivism to an internalism that is incompatible with the hypothesis of extended cognition (Wheeler 2010; but see Di Paolo 2009 and Virgo, Egbert & Froese 2011 for contrasting views). Although the exact epistemological and metaphysical commitments of such an “asymmetrical” account have not been spelled out in sufficient detail yet, it would seem that they entail a (slight!) shift from the “symmetricicism” embraced by TEM towards the more constructivist-inspired conceptions found in the earlier work on autopoiesis (Maturana & Varela 1987; but cf. Froese & Stewart 2010). But if this turns out to be the case, it will be necessary to examine how it bears on Varela’s original goal of uncovering the middle ground between the extremes of realism and idealism (especially in relation to the puzzle of reflexivity).

29 Even more surprising, perhaps, is the fact that the enactive community, except for a few exceptions that try to “bracket” such questions altogether (e.g., Hutto & Myin 2013; but see Froese 2014 for a critique), seems to be undergoing a gradual shift towards realism.

30 To begin with, the last decade has witnessed a resurgence of the oft derided direct realism, which in the heyday of representationalism was generally considered naive and obsolete (but see Gibson 1979). For instance, Alva Noé, one of the most prominent advocates of so-called “sensorimotor enactivism” (O’Regan & Noé 2001; Noé 2004, 2009, 2012; see also Torrance 2005), defends what in Noé (2012: 65) he refers to as the “actionist (or enactive) direct realism”:

“[P]erception, according to the enactive approach, is direct and noninferential. […] In actively encountering the way in which how things look varies with movement, we directly encounter how things are.” (Noé 2004: 85)

31 Similar ideas can also be found in Michael Beaton (2013). These approaches would readily agree that the organism and the world are involved in intricate interrelations and that they therefore co-determine each other, but would normally construe the overall process in less radical terms: the subject and the world, although entangled in a meshwork of intricate interactions, do not coconstitute each other, but are pregiven discrete entities.

32 Even more astoundingly, representational realism, that archenemy of the Varelian enactivism, also has its vocal adherents. This becomes increasingly obvious if we extend our inquiry to approaches that are sometimes terminologically conflated

8 This, of course, is not to say that Varela’s project was just philosophical. What made his work especially valuable is that he was also engaged in high-quality empirical work, and to this end, it was actually important that his enactive approach could give guidance to various empirical projects and to the researchers involved in them. We would like to thank Erik Rietveld for making this point.

9 To our knowledge, the notion of “interactional asymmetry” was first introduced and discussed in Barandiaran, Di Paolo & Rohde (2009).
with enactivism in the Varelian sense but stem from different metaphysical and epistemological assumptions. Here, again, the idea of enacted and/or embodied cognition is usually simply projected onto a traditional scaffolding of subject-object dichotomy and construed as (spatially) extended so as to include the agent’s bodily processes and actions. In other words, representationalist approaches (uncritically) accept realist presuppositions and argue that we need to broaden the “constitutive base” (however broadly construed) of what we normally conceive of as cognition. Functionalist renderings of embodiment that are usually an integral part of such approaches, and can be found in, e.g., Clark (1997, 2001), Michael Wheeler (2005, 2008, 2009), and Mark Rowlands (2009, 2010), presuppose the existence of pregiven information-bearing structures that can be exploited, manipulated, and transformed by the cognitive agent, and the overall process is said to involve some type of representations (e.g., Clark’s action-oriented representations).

Moreover, some realist accounts do not fit easily into either the direct or the indirect category. Anthony Chemero (1998), for instance, who once argued for an “anti-realist” reading of enactivism, is now opting for a modified version of Hacking’s “entity realism,” which cannot be rendered as either of the two yet arguably has more affinities with direct realism. On the one hand, it is indirect in that the existence of theoretical entities (in this case “affordances” that constitute the “objective pole” in sensorimotor patterns) is secured by our ability to manipulate them experimentally (2009: 192ff); but on the other hand, it is direct in that no representations are involved in the process (see also Karim Zahidi 2014 for a “pluralist realist” rendering of Chemero’s proposal). While interesting, it remains to be seen whether Chemero’s proposal takes root in the enactivist community, and what theoretical and/or empirical consequences it might entail.

Overall, it would seem that, unlike “enaction” and “embodiment,” the idea of “co-determination” or “mutual specification” promulgated in TEM as a useful guide on the epistemological Odyssey has not caught on or has been extremely difficult to defend. If we stick with the original metaphor, it might be said that, with few exceptions (Welton), most authors seem to have been enchanted by the songs of the Sirens and have let their philosophical ships wander off either towards the turbulent seas of idealism near the island of Charybdis or towards the seven-headed monster of realism lurking at the island of Scylla. The main issue, it would seem, revolves around how much constitutive force we should ascribe to the agent in her relation to the world or, put differently, how seriously we should take Varela’s talk of the agent’s bringing forth her world. On the one hand, for some (Thompson, Di Paolo, etc.), the world-constituting (“sense-making”) activity of a self-organizing agent is of central importance; on the other hand, many have tried to downplay its significance and opt for some type of realism instead, be it of a direct (Noë, Kevin O’Regan, etc.), representationalist (Clark, Wheeler, etc.), or other variety (Chemero, Zahidi).

The present situation II: Reflexivity and naturalizing phenomenology

Finally, it is time we hone in on the initial and arguably the most important step in the Varelian framework, namely reflexivity. It will be remembered that, in order to avoid succumbing to old dualisms, a constant back-and-forth exchange between lived experience and scientific endeavour was put forward. Now, we can put more flesh on our initial exposition: first-person (phenomenological) investigations prevent science from falling prey to the lures of the (unreflected) naturalism, while third-person (scientific) investigations prevent phenomenology from dissipating into the mists of transcendental idealism. In this way, it was believed, the posited circularity would ensure equal (non-reductive) treatment of the phenomenological and scientific approaches to the study of mind, cognition, and consciousness.

What was needed, however, was the development of a rigorous phenomenological methodology that could inform and be informed by systematic scientific explorations. As already mentioned, Varela and others (Varela & Shear 1999; Depraz, Varela & Vermersch 2003) have contributed significantly to this endeavour by helping to refine, systematize, and standardize various first-person methodologies. But a question soon presented itself, namely how, if at all, phenomenology could be embedded into the edifice of natural science (so-called problem of naturalizing phenomenology; cf. De Preester 2002; Gallagher 1997; Zahavi 2004, 2007, 2010). The greatest worry was that, in the fervent attempts to “naturalize” phenomenology, the transcendental dimension of phenomenological analysis would be lost, which in turn would mean a significant breakaway from the motivations and conceptions of the early phenomenological movement (e.g., Edmund Husserl, Martin Heidegger, Merleau-Ponty).

The group inspired by Varela’s early work on enaction typically embraces, or is at least sympathetic to, the idea of this fundamental circularity, and insists on the need to develop phenomenological tools and analyses, and integrate them into contemporary scientific practices. It emphasizes the inescapability of reflexivity, which is why phenomenology is used not only as a source of inspiration whose insights need to be translated into naturally viable terms, but as actually constraining and reshaping scientific endeavour. In other words, since it is paramount to preserve the back-and-forth exchange between first- and third-person approaches, it is argued that the naturalization of phenomenology must necessarily be accompanied by a complementary process of the phenomenologization of nature (Varela 2001; Gallagher 2012; Petitot et al. 1999; Thompson 2004; Vörös 2014; Zahavi 2010).

To this end, various methodological (pragmatic) frameworks have been put forward, of which probably the two most prominent ones are the already mentioned neurophenomenology (see §36f below) and Gallagher’s front-loaded phenomenology (Gallagher 2003). But it is dubious, at least in light of current happenings in the field, whether it is possible to sustain this bi-directional attitude in practice. It will be remembered that, originally, reflexivity served as a wellspring for the idea of co-determination between the agent and the world, so

10 | See also von Glasersfeld’s emphasis on “cognition serves the subject’s organization of the experiential world” (Glasersfeld 1995: 18).
it remains to be seen how the asymmetrical rendering of the Varelian co-determinationist conceptions projects onto the idea of fundamental circularity. Does the asymmetry in the subject-world relation (Thompson's view as delineated in §24) also translate into a similar asymmetry in the relation between lived experience and scientific endeavour? If so, what exactly does this entail? Does it perhaps necessitate a drift towards transcendental idealism (in the vein of Husserl from Ideas I)? We believe that these questions merit further investigation.

« 39 » Things are different on the other (realist) end of the spectrum. While some advocates of representationalist realism (e.g., Clark) remain steadfast to their functionalist origins and thus show comparatively little interest in phenomenology, others (e.g., Wheeler) are more welcoming of its contributions. However, this positive disposition seems to be limited to finding ways of incorporating certain phenomenological concepts (say, Heidegger's difference between present-at-hand and ready-at-hand) into the naturalist framework, and normally does not involve attempts to develop and use first-person methodologies or reflect on the potentially far-reaching implications of their inclusion into the edifice of natural sciences.

« 40 » The situation is similar in the direct realist camp, where references to phenomenology are quite frequent and are often used as a supporting evidence for direct realism. Such is the case, for example, with Heidegger's being-in-the-world, where the human being's fundamental relation with, and access to, the world seems to be portrayed as straightforward and unmediated. But note that, as with representationalist approaches, this route becomes a viable option only if the fundamental circularity is broken, i.e., if the transcendental aspect of phenomenological research is discarded and experientiality thereby naturalized. The talk of “world” in the transcendental attitude of phenomenology can only be conflated with the talk of “world” in the natural(ist) attitude if the former is reduced to the latter. However, from a phenomenological perspective, to equate the two uses of “world” is to make a category mistake, where the same term is used in two radically different contexts and therefore carries different meanings. As Heidegger notes, a human being is “in” its world in a wholly different sense from that of water being in a glass, which is how naturalism commonly construes their relationship (in Thompson & Stapleton: 26; Rietveld & Kiverstein 2014; see also Overgaard 2004: 119–121).

« 41 » Similar developments to those occurring in enactivism can also be traced in the domain of neurophenomenology. It will be remembered that the latter was originally put forward by Varela as a methodological remedy for Chalmers's hard problem of consciousness, yet curiously enough, despite Varela's continual admonitions that his proposal is pragmatic and not theoretical, interpreters have constantly tried to entangle it in Procrustean theorizing. The background idea seems to be that either it does, in the last analysis, provide some theoretical solution to the hard problem or it is simply dodging the bullet: tertium non datur. We have seen, however, that it was precisely this type of either-or thinking that Varela was trying to supersede: although one may show (in the Wittgensteinian sense) a way out of metaphysical and epistemological predicaments by employing terms such as “enaction” and “co-determination,” these predicaments can be dispelled only at the level of practice and lived experience. In this sense, dualist (Bayne 2004; see also the contribution by Michael Kirchhoff & Daniel Hutto) and biological (Rudrauf et al. 2003) renditions of neurophenomenology simply miss the mark (Bitbol 2012). Similarly, when Beaton notes that there is residual internalism (bio-idealism) in Varela's approach (Beaton 2013), he is conflating methodology with metaphysics: his criticism may be sound from a methodological perspective (in the sense that we should extend the scope of the third-person research beyond the confines of neural processes), but it is wrong in ascribing to the neurophenomenological programme a fixed metaphysical position (see also Pascal & O'Regan 2008). Instead, as correctly pointed out by Bitbol, the main goal of neurophenomenology is precisely to sidestep all foundationalist extremes, wherefore it assumes...

** « 42 » Mind embodied, mind bodified: Reasons for diversity

« 43 » Similarly, in a recent article, Gallagher lashes out against "the invasion of the body snatchers" – approaches to embodied cognition that leave the body out of the picture (Gallagher 2015; but see Riegler 2002).

« 44 » Although none of the approaches we have covered in the previous section fall squarely into the latter category, many of them have contributed to the blunting of the Varelian razor. If a brief historical analogy be permitted, it might be claimed that the majority of contemporary “radical” approaches to enactivism are “radical” in the same sense that this applied to the liberal parties of the 18th and 19th century.11 That is to say, just as the latter were willing to fight for the more equal redistribution of political power, but not for the modification of the background (social, economic, etc.) conditions that gave rise to inequalities in the first place, so the former are willing to experiment with novel conceptual approaches to the mind and cognition, but do not genuinely seem interested in reflecting upon, and possibly altering, their metaphysical and epistemological

11 | Note that the analogy is not completely misplaced, as there seems to be a tendency among contemporary advocates of enactivism to present their views in a “progressivist”/“revolutionary” vocabulary, denouncing the views of their opponents as “reactionary” or “conservative” (Gallagher 2015; Hutto & Myin 2013; Zahidi 2014).
presuppositions. However, taking this route means to forgo the very wellspring of origi-
nal enactivism, for – to reiterate – enaction and embodiment were originally intended not as mere reconceptualizations but as potent tools that would bring us closer to deeper questions of reflexivity and ground-
lessness.

« 45 » Are there other reasons respon-
sible for this diversification and dilution coming into being, and for the gradual shift from “embodiment” to “bodification”? Let us first look at two reasons pointed out by Di Paolo, Rohde & De Jaegher (2010). To begin with, although the situation has improved significantly in the past couple of years, there still seem to be few genuinely enactive proposals aimed at addressing open questions in cognitive science. The reasoning goes that, no matter how intriguing the philosophizing, if it is not coupled with equally intriguing empirical work it simply will not do as a scientific enterprise (see, however, the contribution by Elizaveta Solomonova & Sha Xin Wei).

« 46 » The second reason is much more interesting for our purposes, as it suggests that, soon after its appearance, enactivism was associated with, and sometimes even sublimated into, other frameworks, two of which bear special mentioning: ecological approaches (Gibson 1979; Turvey & Carello 1981) and extended mind theories (Clark & Chalmers 1998; Clark 1997, 2008b; Wheeler 2005). In their opposition to cerebrocentrist currents in cognitive science, enactivist, ecological, and extended mind theories were often depicted as a unified, if heterogeneous, front. However, although the ecological and extended mind approaches can be said to bear some resemblance to enactivism, they are often epistemologically and metaphysi-
cally at odds with the latter (see, e.g., the contribution of Martin Fultot, Lin Nie & Claudia Carello). For instance, it was already mentioned that ecological approaches lean to-
wards direct realism, while extended mind theorists generally accept weaker versions of representationalism.

« 47 » But the differences do not end here. There seem to be at least two further factors involved in the proliferation and attenuation of views on enaction and em-
bodying. The first of these relates to the disparities that are inherent in the original exposition of enactivism. TEM drew its in-
spiration from various sources (phenomenology, theory of autopoiesis, dynamics theory, Buddhist philosophy, etc.), all of which are extremely variegated and thus lend themselves to different interpretations. Take, for instance, phenomenology. Already a cursory glance (e.g., Moran 2000) reveals great diversity within the field; in fact, the heterogeneity is so pronounced that some critics feel that speaking of the “phenome-
nological tradition” is a misnomer (Dennett 1991). There are, to be sure, not only great discrepancies between different authors, but also within a single author.

« 48 » Husserl is a prime example of this. His voluminous oeuvre displays a whole array of (seemingly?) different, even mutually opposing views on a variety of top-
ics. This, coupled with the fact that Husserl is not always as clear in his expression as one would want him to be, has resulted in very different portrayals of Husserl’s philosophy, ranging from direct realism (early works), to full-blown idealism (middle period), to the idea of reciprocal co-dependency of the subject and the world, which is said to transcended the realism–idealism impasse (later and unpublished work; see, e.g., Zahavi 2003 for a critical overview). In addition, his phil-
osophical views differ in many important respects from those of, say, Heidegger or Jean-Paul Sartre. Hence, one can, by focusing on this or that aspect of Husserl’s work, find support for a whole array of different metaphysical and epistemological positions. This helps to explain why Husserl was ini-
tially avoided by TEM, but has since then become an important source of inspiration for enactivism (see appendix in Thompson 2007). Of course, not all interpretations are equally plausible, but even within the con-
finies of the permissible, there seems to be plenty of room for disagreement (see for instance different accounts of Husserl’s take on embodiment: Carman 1999; Moran 2010).

« 49 » Similar disparity can be found, to take another example, in the tradition of autopoietic theory. Early formulations of the theory (e.g., Maturana & Varela 1980) leaned more on the side of (bio)idealism in that they emphasized the concept of struc-
tural determination: an organism selectively senses and responds to environmental pertur-
bations as defined by its internal struc-
ture. However, this emphasis is in tension with the relational notion of cognition as structural coupling, and it also makes it dif-
ficult to account for the constitutive role of the heteronomous processes that are char-
acteristic of our sociocultural environment (see the contribution by Matthew Harvey, Ras-
mus Gahrn-Andersen & Sune York Steffensen).

Then, after Maturana and Varela stopped collaborating, their construals of autopoiesis also came to diverge, with Maturana stick-
ing to the cybernetic tradition, while Varela, at least in his later work, embraced a Kan-
tian and Jonasian philosophy of the organ-
ism involving strong notions of self-organi-
zation, purpose, and the lived body, which ultimately led him to experiment with the concept of co-determination as a means of transcending the realism/idealism divide altogether (Froese & Stewart 2010; Froese 2011). Debates continue today as to what extent, and how, the early simplified claims that autopoiesis is life and that life is cogni-
tion should be modified (e.g., Bourgine & Stewart 2004; Bibol & Luisi 2004; Thomp-
son 2011), and to what extent a role for a phenomenological-existential reading of the biological record is permissible (see Mario Villalobos and Dave Ward’s contribution).

« 50 » This brings us to the last con-
tributing factor. Although open to various renditions, enaction and embodiment have been, at least traditionally, closely associ-
ated with anti-realism. That is to say, from the perspective of the prevalent “either-or” way of approaching the realism-antirealism debate, the enactivist talk of entre-deux has been usually taken simply as an anti-realist hyperbole. This way of approaching the mat-
ter is very telling, as it prospectively confers special status on “realism,” treating all alter-
natives as its negation and thus barring all possibilities for stepping out of the debate (but see Beaton’s contributions, as an attempt at an enactivist re-appropriation of realism in non-representationalist terms based on direct sensorimotor coupling).

« 51 » There are probably several mo-
tivations for the preferential treatment of realism, but one of them is the fear that ev-
everything anti- or non-realist “runs the risk of obscuring the scientific value of an em-
bodied, embedded approach by linking it to the problematic idea that objects are not independent of mind” (Clark 1997: 173).
It would seem, then, that the main bone of contention lies in the fact that a move away from realism threatens to undermine the currently predominant views of, and attitudes within, the scientific community at large. This applies in particular to neurophenomenology, which, unlike enactivism, has never actually gained widespread acceptance and to date is still limited to only a handful of studies (Froese, Gould & Barrett 2011; but see a recent special issue on the topic in Hasenkamp & Thompson 2013). With its exclusive focus on the practical enactment of the fundamental circularity, it was probably seen as too vague or as too extreme to be wholeheartedly embraced by the majority of scientists. In this sense, Thompson’s words, written in a 2004 tribute paper to Varela, still apply. There, Thompson claims that the “central theme [of TEM] has yet to be fully absorbed,” namely “the need for back-and-forth circulation between scientific research on the mind and disciplined phenomenologies of lived experience.” For

“[i]t’s one thing to have a scientific representation of the mind as ‘enactive’ – as embodied, emergent, dynamic, and relational; as not homuncular and skull-bound; and thus in a sense insubstantial. But it’s another thing to have a corresponding direct experience of this nature of the mind in one’s own first-person case.”

(Thompson 2004: 382)

« 52 » It is precisely this type of experiential and existential transformation that the Varelian enactivism and neurophenomenology try to undertake, both on personal and professional levels (Bitbol 2012: 165). But to someone who is unwilling to leave the confines of the established theoretical and pragmatic framework, the proposed (dis)solution is not an actual (dis)solution, but rather a full-blown cop-out. Thus, it might be said that Varelian enactivism was cherry-picked for those aspects that may prove empirically florid but are theoretically tame. However, whether such “domesticated enactivism” can still be called enactive or embodied, and how, if at all, it differs from the more classical approaches, is an open question. The contributions by Kirchhoff & Hutto and Urban Kordeš can be read as attempts to provide an antidote to this tendency, reminding us of neurophenomenology’s revolutionary ambitions that yet remain to be fully realized in the fields of philosophy and methodology, respectively.
A way forward: Towards a unified paradigm or a plurality of approaches?

« 53 » What, then, can be said of the future of embodied approaches in general and enactivism in particular? Often, speculations of this nature tend to be couched in Kuhnian terms – will the newly emerging field be able to make a successful transition from the chaos of pre-paradigmatic era to the calm of normal (paradigmatic) science – giving the impression that philosophy of science reached its unsurpassable climax with The Structure of Scientific Revolutions. Après Kuhn le déluge! In our view, this is a rather unfortunate trend, as it not only throws an overly simplistic light on the nature of scientific development, but it also instigates unwarranted disputes as to which theoretical model might be the most suitable candidate for a new paradigm and precludes enactivism from engaging fruitfully with some of the more recent trends in philosophy of science. Specifically, it severs potentially productive links to approaches that question the idea that the ultimate goal of scientific inquiry is a complete account of the phenomena couched in the framework of a unified paradigm and that instead argue for a more open and pluralistic image of science (Cartwright 1999; Kellert, Longino & Waters 2006; Mitchell 2003).

« 54 » We can see some of these productive links emerging from the diversity of positions expressed by the target articles in this special issue. For example, there is a fascinating debate about the proper domain of intrinsic teleology (see Figure 2). The most inclusive approach seems to be advocated by the ecological approach (Fultot, Nie & Carello), which grounds goal-directedness in far-from-equilibrium thermodynamics. The approaches of enaction and interactivity are more conservative, restricting goal-directedness to living systems and their sociocultural manifestations (Harvey, Gahrn-Andersen & Steffensen), while the biology of cognition is most conservative, restricting the validity of explanations that appeal to teleology to language users alone (Villalobos & Ward).

« 55 » Another example of productive links stems from the debate about the relative contributions of the inner and the outer. Varela’s enactive approach is characterized by promoting a middle way of co-determinism, which leads to the idea of sense-making as an intertwinement of perception and imagination whose relative contributions can shift depending on our state of consciousness: perception is a case of sense-making in which the world plays a significant constitutive role (Beaton), while dreaming is a case of sense-making where the contribution of the outer is minimal compared to the contribution of the inner (Solomonova & Sha). Intermediate states are possible, for example the human capacity of seeing-as. This spectrum is bordered at the inner extreme by radical constructivism – meaning is projected by the agent – and at the outer extreme by the ecological approach – meaning is pregiven in the world (see Figure 3).

« 56 » The contributions about neurophenomenology can also be situated with respect to each other. Kirchhoff & Hutto argue that Varela’s proposal of the mutual irreducibility of the mental and the physical still

Figure 2 • Domains of goal-directedness. Enaction and interactivity, which relate normative behavior to life, mind, and sociality, sit in the middle of a more restrictive position advocated by biology of cognition and a more inclusive position developed by the ecological approach.

Figure 3 • The relative contributions of the inner and the outer mark out a spectrum of non-representationalist epistemologies. The enactive approach to sense-making consists of a middle way between the premise that meaning is pregiven in the external world in an observer-independent way (the ecological approach) and the premise that meaning is constructed by the observer without direct access to the external world (radical constructivism). Sense-making implies that meaning is always co-constituted by inner and outer, although phenomena can involve different relative contributions.
implicitly assumes a dualist ontology that motivates the hard problem of consciousness. In a complementary way, Kordes promotes constructivism as a more suitable epistemological framework for empirical phenomenological research, in which any question about the metaphysical status of mental and physical phenomena is bracketed. And Solomono√a & Sha promote precisely such bracketing when analysing dream experiences.

“57” All in all, it can be seen that the diversity of enactivism and neurophenomenology can lead to novel and more wide-ranging perspectives. In this respect, we want to repeat the “constructivist challenge” expressed in the editorial of the inaugural issue of this journal, which underlined the “plurality of constructivism” (Riegler 2005: 2) and that “constructivism asks for an open and more flexible approach to science in order to generate the plasticity that is needed to cope with the scientific frontier” (ibid: 5). This is in line with a view also found in TEM:

“58” [C]ognitive science is not a monolithic field, though it does have, as does any social activity, poles of domination so that some of its participating voices acquire more force than others at various periods of time. […] Nevertheless, our bias will be to emphasize diversity.” (TEM: 6; emphasis added)

And it can be found in von Foerster as well: “Only those questions which are in principle undecidable we can decide” (Foerster 1991: 64). In his view, solving the big questions cannot be delegated to a monolithic objective arbiter.

“58” Perhaps the most crucial dividing line between different approaches in the field will turn out to be between those that try to keep the research field diverse and open, and those that try to narrow it down to a single (unified) explanatory strategy. The Varelian notion of enaction, with its emphasis on groundless reflexivity and its pragmatic take on scientific modelling, leans heavily towards the first option. Instead of setting out on a quest to find the one “true model of how things are,” it emphasizes the inescapable multilayeredness and contextuality of scientific knowledge, which could make it an important interlocutor in contemporary debates on the (im)plausibility of the value-free ideal of science (Douglas 2009; Kitcher 2001), the nature of objectivity (Reiss & Spenger 2014), the role of observer and reflexivity (Riegler & Müller 2014), and sociality in scientific knowledge (Longino 1990, 2002). We feel that the inherent openness and plurality of enactivist construals of science open up new avenues worth exploring, and might serve as a good starting point for future debates in the field. In this regard, the diversity and heterogeneity of contributions and open peer commentaries that constitute this special issue are by no means a weakness or flaw, but rather indicative of the creative and productive strength of the newly emerging field, and as such, something not to be shunned, but wholeheartedly endorsed.

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References


