Neurophenomenology Revisited: From Naturalism to Dialectics

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ABSTRACT

In this paper, I examine the prospect of naturalizing phenomenology within the framework of Francisco Varela's neurophenomenology. In doing so, I follow two main objectives. The first is exegetical. Namely, there is a pronounced discrepancy between Varela's earlier works on neurophenomenology and his later works on naturalizing phenomenology, with the former receiving considerable scholarly attention and the latter remaining comparatively unknown. This discrepancy is further exacerbated by the fact that, due to his untimely death, Varela failed to produce a comprehensive view of naturalization, leaving us with a plethora of suggestive fragments scattered throughout his later works (some of them published posthumously). Thus, briefly recapitulating the original neurophenomenological program in Section I, I bring some of these fragments together in Section II and make an attempt at elucidating Varela's position on the topic. My second objective is critical. Section III thus opens with a question of whether the idea of naturalizing phenomenology in the context of neurophenomenology makes sense. I argue that it does not and should therefore be discarded. The reason for this is twofold. First, a strong case could be made that the idea of naturalization is ultimately at odds with the spirit of neurophenomenology; secondly, and relatedly, Varela's lax use of the term naturalization not only puts it at odds with the more ordinary interpretations of naturalism but also risks emptying it of any substantive content.

Murmurs in the Cathedral: Science meets Phenomenology

It has now been more than 25 years since the publication of Varela's groundbreaking paper on neurophenomenology (Varela 1996a), a novel research program whose central goal was to dispel the so-called "riddle of experience" (Ibid. 330). The said riddle, also known as the "hard problem of consciousness"

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(Chalmers 1995), is a late 20th-century offshoot of the infamous mind/body problem and pertains to the thorny question of how two seemingly disparate, perhaps even incommensurable, domains - the domain of (neuro)cognitive processes and the domain of (lived) experience - can be brought to bear on each other in a meaningful manner. A great deal of ink has been spilled over the subject, but apart from enriching our imaginary bestiaries with such oddities as "philosophical zombies" and "inverted visual spectra", most solutions, be they of the dualist, physicalist or idealist stripe, have proved woefully inadequate. For the most part, they have found themselves forced to choose between two equally unpalatable alternatives: to either mutilate one of the domains so as to subsume it under the other; or to maintain the integrity of the two domains by postulating an unbridgeable chasm between them.

Varela's remedy for this Procrustean dilemma - hailed as ingenious by some, denounced as fallacious, even heretical, by others - is that, if we are ever to bridge the chasm that seems to be separating (neuro)cognitive processes from experience, we have to radically change the way we conceive of, and engage with, both mind and experience until we realize that there is no chasm to be bridged in the first place. In other words, Varela does not want to *solve* the riddle of experience, as that would mean accepting its background presuppositions and thus, in effect, rendering it unsolvable. Instead, he wants to *dissolve* it by insisting that, if we change the framework in which it is set and its background conditions of legitimacy, the puzzle will disappear on its own. And he proposes, rather infamously, that we instigate this process of dissolution by "marry[ing] modern cognitive science and a *disciplined approach* to human experience" (Varela 1996a: 330), or - more generally - by synthesizing science and phenomenology, a school of thought devoted precisely to the study of consciousness and experience.

However, aware of the rampantly heterodox nature of his proposal, Varela anticipated that there would be "murmurs in the cathedral" (Varela 2001: 210). On the one hand, there would be murmurs in the *cathedral of science*, whose identity has been traditionally based on opposition to the evidential force of our everyday, lived experience. To appease these concerns, Varela suggested that, if phenomenology was to become an active participant in scientific inquiry, it had to be *naturalized*, i.e., integrated, somehow, into the edifice of natural sciences. On the other hand, there would be murmurs in the *cathedral of phenomenology*, which has traditionally seen naturalism as nothing short of a mortal sin - "the sin against the Holy Ghost of philosophy", as Husserl famously

put it (2008: 176). Although devoting less energy, at least superficially, to placating the phenomenological side, Varela also insisted, especially in his later texts, that natural sciences have to be *phenomenalized*, i.e., integrated, somehow, into the edifice of phenomenology.

What are we to make of these claims? How, if at all, can they be reconciled? The aim of this paper is to shed some light on these questions, with special emphasis on the issue of the feasibility of naturalizing phenomenology. More specifically, the paper has two main objectives. The first is *exegetical*. There is a pronounced discrepancy between Varela's early and later works on neurophenomenology and naturalization of phenomenology: while the former have received considerable attention, the latter remain relatively unknown. The paper seeks to remedy this gap and provide the reader with a hopefully useful overview of Varela's later attempts to expand on his former, and better-known ideas. The second objective is *critical*. Here, the central focus is on the question of whether the idea of naturalizing phenomenology, as posed in the context of neurophenomenology, makes sense. I will claim that it does not, and will try to provide reasons for why I think this to be the case.

Structurally, the paper consists of three parts. In the first part, I provide a brief recapitulation of the neurophenomenological program, as expounded in Varela's seminal (1996a) paper. Since many of the readers of the present issue are, no doubt, familiar with the said paper, this initial step might seem redundant. However, Varela insisted that his views on naturalization are closely aligned to his work on neurophenomenology, so a proper understanding of the former requires a proper understanding of the latter. In the second part, I try to flesh out what Varela means by naturalization, especially how, by his lights, naturalization fits into the neurophenomenological framework. Finally, in the last part, I provide a critical assessment of Varela's naturalization project. By returning to his earlier work (esp. Varela 1976), I elucidate two reasons for why I think that the talk of naturalization, unless hyper-qualified, is bound to prove problematic and should therefore be dispensed with. First, a strong case could be made that the idea of naturalization is ultimately at odds with the spirit of neurophenomenology; secondly, and relatedly, Varela's lax use of the term naturalization not only puts it at odds with the more ordinary interpretations of naturalism but also risks emptying it of any substantive content. While I don't provide a fully fleshed-out alternative, I do suggest that, by drawing on dialectical resources in Varela (and beyond), a philosophically more robust and pregnant ground for the proposed fusion could be laid.

1. The Spook of Experience: Neurophenomenology

Varela's views on the naturalization of phenomenology often tend to be mentioned in the same breath as his work on neurophenomenology. However, if we turn to his original paper for more clarity on the subject, we are met with a resounding absence. For not only does Varela not address the topic directly - the main focus of the paper is elsewhere - but the terms "naturalization" and "naturalizing" never even make an appearance in the text.[1] In fact, the way in which the original neurophenomenological proposal is framed can be said to cast doubts as to whether neurophenomenology should even be considered a naturalist project. To get a better sense of what I mean by that, let us take a brief stroll through Varela's groundbreaking paper (1996a) and revisit some of its main tenets.

We have noted that neurophenomenology, or "experiential neuroscience", as it is sometimes called (Varela 2001: 208), is a research project aimed at dis-solving the riddle of experience. Its main contention is that, in order to avoid the traditional pitfalls that bedevil the said puzzle, we have to move beyond the search for some "theoretical fix", "conceptual 'extra ingredient'" or "abstract, theoretical model" (Varela 1996a: 330, 340, 332), and focus instead on "changing the entire network within which the issue is discussed" (Ibid. 331). But what exactly is this radical re-contextualization supposed to entail?

By Varela's lights, it should entail at least three things (Ibid. 347). The first is acknowledging *the primacy* or *irreducibility of experience*. What Varela principally means by this is that experience cannot be simply waved away - or taken "on the cheap", as Chalmers (1995) puts it - but has to be *taken seriously*. For Varela, experience is "where we start from and where we all must link back to, like a guiding thread" (Varela 1996a: 334); it is, in the famous words of Merleau-Ponty, that

> which precedes knowledge, of which knowledge always speaks, and in relation to which every scientific schematization is an abstract and derivative sign-language, as is geography in relation to the country-side in which we have learnt beforehand what a forest, a prairie or a river is (Merleau-Ponty 2002: ix-x).

[1] Admittedly, while not appearing in the body of the text, the word "naturalization" does make a brief entrance in the bibliographical section (Varela 1996a: 349) in reference to Petitot et al (1999). The terms "naturalism" (Varela 1996a: 344) and "naturalistic" (Ibid.: 332 fn. 2, 344) both appear twice in the paper, every time in reference not to Varela's own work but to the work of other thinkers (e.g., Searle).

However, because philosophers and scientists have, for the most part, *not* been taking experience seriously, they have simply labeled it as an ineffable qualitative "oomph" accompanying quantitative neurophysiological processes, and have consequnetly failed to investigate it properly, and by this Varela means rigorously and systematically. This is why, in his attempt to (re)vitalize the study of experience, Varela turns to phenomenology:[2] in Husserl and his followers (Heidegger, Stein, Fink, but, above all, Merleau-Ponty), he finds natural allies, who refuse to equate experience with a mere "spook of subjectivity" (Ibid. 335), and instead see it not only as an "irreducible field of phenomena" (Ibid. 330) but as our "basic ground", as that which, in a crucial sense, is *ungobehindable* (Ger. *unhintergehbar*) (Thompson 2004: 394).

From the phenomenological perspective, the anaemic view of experience that has been handed down to us by the founding fathers of modern science must give way to a more full-blooded view capable of capturing and expressing the thick, rich texture of our concrete existence. This is why Varela often qualifies the term "experience" with the adjective "direct" or "lived": for, unlike experience *simpliciter* (Ger. *Erfahrung*), which stands for a heavily truncated, atomized type of experience, construed as a bundle of sensations or a mosaic of qualia, *lived* experience (Ger. *Erlebnis*) designates a dynamic, unified field of interpenetrating phenomena as they unfold in our ongoing engagements with the world and others.

This brings us to the second aspect of Varela's reconceptualizing venture: the need for *rigorous explication of experience*. For, unlike some other schools of thought (e.g., *Lebensphilosophie*), phenomenologists do *not* equate primacy with indescribability and unintelligibility. That is, lived experience is not seen as a primordial sphere of pristine, mute intimations, forever eluding our expressive and interpretative grasp. Quite the contrary: according to Varela, the "Archimedean point of phenomenology" lies precisely in its claim that it *is* possible to "return to the world as it is experienced in its felt immediacy" and systematically, rigorously explore its rich phenomenal texture (Ibid. 336).

For Varela, phenomenology should not be seen as "Husserlian scholasticism", but rather as "a *style of thinking*", whose goal is to lay the foundations

[2] In addition to phenomenology, Varela also mentions as potential allies. William James, Kyoto school, and gestalt psychology (Varela 1996a: 335; Varela 1999a: 143). To this we might add at least more potentially interesting interlocutors: German idealism (Hegel, Schelling), and philosophical anthropology (Buytendijk, Gehlen, Plessner, and Scheler).

for a "true science of experience" (Ibid. 335, 336). Thus, while drawing copiously on the phenomenological corpus, he insists that he does not subscribe to "any particular school or sublineage", but instead tries to develop his own synthesis of phenomenology and cognitive science, which would contribute to that endeavor (Ibid.). In doing so, he is, as he puts it in one of his later essays, taking his cues from Husserl himself, who famously described his philosophical style as that of "an eternal beginner, always willing to start anew" (1999c: 266). In this vein, both drawing on Husserl's investigations and drawing out the "unrealized implications of his writings" (Ibid.), Varela proposes a provisional method for investigating experience in experimental settings, which, in subsequent years, he has substantially extended and elaborated upon (see e.g., Varela & Shear 1999, Depraz et al. 2003).

The details of Varela's proposal needn't concern us here; what is important for our purposes, however, is his insistence on the *centrality of pragmatics*. This includes both his dissatisfaction with the "relative poverty of pragmatical elaboration" in the existing studies of experience (Varela 1996a: 341) and his emphasis on the need to develop "proper, rigorous method and pragmatics" designed to "fill up this gaping hole" (Ibid. 347, 341). This fundamental conviction - "the pragmatic imperative", as he later calls it (Varela 2001: 232) - namely that elucidating the structure and dynamics of experience is ultimately "a question of pragmatics and learning a method, not of a priori argumentation or theoretical completeness" (Ibid. 344), reverberates throughout all of Varela's later texts on the topic and is, as I will try to show, closely related to how he understands naturalization.

This brings us to the third, and arguably the most controversial, aspect of Varela's transformative project, namely the call for *the articulation of mutual constraints*. For, even if we are willing to cede that, when it comes to matters of mind and consciousness, a rigorous phenomenological inquiry into lived experience is indeed important, perhaps even ineluctable, we are still faced with a thorny problem: How, exactly, are we to square phenomenological inquiry with scientific methodology? The resistance to such an amalgam is, as noted, strong on both sides of the fence: the scientist's distrust of ordinary experience is proverbial; but so is the phenomenologist's distrust of science - or, more accurately, of their tacit presuppositions about what experience is (not).

Varela's way out of what seems like a death struggle between two non-overlapping magisteria could perhaps be best characterized as a version of Wittgensteinian quietism. Namely, just as, according to the early Wittgenstein

(2001), one should not *talk* about the mystical but allow it to *manifest* itself (6.522), so, according to Varela, one should not *theorize* about the impossibility of synthesizing science and phenomenology but give it room to *actualize* itself - *through practice*. In a nutshell, Varela's response, at least in his foundational paper, is a *non*-response: less abstraction, more action.[3]

Thus, the main goal of the original neurophenomenological programme is to open up a space for methodological experimentation, a *new pragmatic playfield* that would bring together "cutting edge techniques and analyses from the scientific side" and "very consistent development of phenomenological investigation" from the experience side. This overarching orientation can be distilled into a simple working hypothesis:

> [O]nly a balanced and disciplined account of both the external and experiential side of an issue can make us move one step closer to bridging the biological mind-experiential mind gap. (Varela 1996a: 343)

The crucial point about the proposed back-and-forth between science and phenomenology, however, is that, unlike in, say, the classical reductionist (identity-theory) proposals, neither of the two domains is allowed to have the "upper hand" (Ibid. 344). Or as Varela puts it: the two domains have to be interrelated through "mutual" or "reciprocal constraints" (Ibid. 330, 343, 345). That is, the "structural invariants" acquired by rigorous phenomenological and neurobiological investigations are meant to serve as "resonant passages" (Ibid. 346) or "meaningful bridges between two *irreducible* phenomenal domains" (Ibid. 341; my emphasis).

However, when it comes to spelling out what exactly is meant by these passages or bridges things get rather murky. According to Varela, they are

> not of the 'looks like' kind but [...] are built by mutual constraint and validated from both phenomenal domains where the phenomenal terms stand as explicit terms directly linked to experience by a rigorous examination (e.g., reduction, invariance and intersubjective communication) (Ibid. 345)

[3] For more recent interpretations of neurophenomenology along these lines see Bitbol (2012) and Vörös & Bitbol (2017). Also, it should be noted that I am using the Wittgensteinian parallel here rather loosely – it is meant to be illustrative, not exegetical. The main point is that, instead of theorizing about what cannot be solved conceptually, we should seek to resolve the issue by allowing the (dis)solution to manifest, show itself (in this concrete example – but not in the early Wittgenstein, of course – through *doing, action*).

This clarification is unfortunately all but clear. For, aside from (re)asserting that the two domains have to, *somehow*, mutually constrain and validate each other, it doesn't really provide an answer, as to *how* they are supposed to do that - which, of course, is precisely the point in question.[4]

However, one would do well here to recall the decidedly pragmatic orientation of Varela's original programme. That is, one of the reasons why Varela doesn't seem to be too inconvenienced by such ambiguities is because, for him, conceptual problems are of secondary importance and because, even more boldly, a certain amount of conceptual ambiguity is probably indispensable. As noted, Varela, at least in his early conception of neurophenomenology, seems to believe that, as long as we allow science, fused with phenomenological reflection, *to do its own thing* - with the emphasis, again, on practice - it will, as has happened often in the past, transmute into a radically different enterprise (more on this below). This process of transmutation is likely to be a messy affair, whose end results cannot be foreseen in advance, so it makes little sense to forestall a methodological-practical synthesis of phenomenology and science on strictly conceptual-theoretical grounds. Like the owl of Minerva, which spreads its wings only with the onset of the dark, so conceptual articulation will have to wait for the dust of pragmatic toil to settle - and *only then* proceed to do its bidding.

This does not mean, however, that no conceptual steps can be taken to facilitate such an integration. For instance, Varela notes that neurophenomenology draws on his previous work, in which he, together with Evan Thompson and Eleanor Rosch (Varela et al. 1991), developed the now well-known "alternative orientation" called "embodied, situated [and] enactive cognitive science". This alternative approach, which sees "mind and world as mutually overlapping" (Varela 1996a: 346), differs from the prevailing computationalist and even the somewhat renegade connectionist approaches by insisting that a proper understanding of the mind requires not only a proper understanding of the workings of its neuronal substrate, but also of its organismal embodiment and its embeddedness into the natural environment (I will return to this in the next section).

Clearly, then, theoretical and conceptual work *does* have its place in neurophenomenology; however, for Varela, the main obstacle lies in *scientific*

[4] This aspect of the neurophenomenological program has been widely criticized as either leading to some version of reductionism or remaining hopelessly obscure (see, e.g., Bayne 2004 and Kirchhoff & Hutto 2016).

practice, in how science is, and should be, done. By his lights, what will break or make neurophenomenology are not theoretical speculations, but whether it can appropriately modify the habits, practices, and norms of the scientific community. Such a modification would be no small affair, for it would encompass not only "a re-learning and a mastery of the skill of phenomenological description", but also a transformation of "the style and values of the research community itself" (Ibid. 346). While keenly aware of the momentousness of the challenge, he is adamant that it is the only way to truly dissolve the framework underpinning the riddle of experience.

To sum up: the three pillars of neurophenomenology consist in: (a) the recognition of the primacy of experience; (b) the revitalization of phenomenological tradition with the purpose of developing and utilizing rigorous methods for investigating experience; and finally, (c) the articulation of reciprocal constraints and resonant passages between scientific and phenomenological investigations. The emphasis, again, is not on theory, but on practice: it is only by doing actual research - on both sides of the fence - that we can hope to soften the hardness of the hard problem; everything else, for Varela, amounts to idle spinning in conceptual circles.

Before moving to the next section, one final point. We have noted that, in the original paper, there is no explicit mention of naturalization, i.e., of how phenomenology ought to be modified so as to fit into the scientific framework. Indeed, a more pressing issue seems to be whether, and how, the scientific framework ought to be modified to make room for phenomenology. Thus, despite the ongoing emphasis on the reciprocity between science and phenomenology, more 'transformational pressure' seems to be placed on the former than on the latter. In other words, in the potentially transformative confrontation between science and phenomenology, phenomenology seems to pose a bigger challenge to science than vice versa.

One of the reasons for this, as we will see in Section III, is that, in this unique amalgam called neurophenomenology, it is phenomenology, with its emphasis on the primacy of lived experience, that seems to offer a way out of the riddle of experience. For it is, according to Varela, only when we start taking lived experience seriously that a *reflective space* opens up, which allows us to unearth and investigate many fundamental, if often tacit, presuppositions guiding our scientific inquiries, the most important among which is the subject-object divide.

Traditionally, experience has been seen as a dependent realm of *phenomena,* which - unlike the primary realm of *things* existing "out there", in the world - is somehow situated "in here", in the interiority of our skulls. From this perspective, the gap between subjective/internal and objective/external underpins all our epistemic endeavors. From the phenomenological perspective, however, we start from our lived experience, which, if taken in the broader sense delineated above, straddles the subjective-objective divide and calls for its close scrutiny. That is, instead of tacitly endorsing the said divide, phenomenology insists that we have to explore why, and how, such "derived notions as objective and subjective" emerge in the first place, indicating that "[t]here is life beyond the objective/subjective duality" (Ibid. 339). And it is precisely this *in-between, non-dual region* that, as we will see shortly, Varela wants to explore with neurophenomenology; only in the seminal paper, the emphasis is on praxis and enaction, not so much on reflection and articulation.

2. The Three Braids: Phenomenology Naturalized?

In the previous section, we have seen that Varela originally conceived of neurophenomenology in pragmatic-quietist terms: the dis-solution of the hard problem requires that we change the overall context in which it is posed, and this, in turn, requires that we change the range of epistemically and socially acceptable manners of exploring psychophysical phenomena. There is, unfortunately, one major problem with radically pragmatic-quietist (dis)solutions - they don't seem to last. Sooner or later, unresolved issues resurface and demand their pound of flesh. Just as Wittgenstein, faced with the limitations and deficiencies bedeviling *Tractatus*, ended up jumping back into the philosophical fray, so Varela, faced with the unresolved issues plaguing his original proposal, found himself going back to its loose ends.

Among the latter, the question of how the proffered fusion of science and philosophy was supposed to work - i.e., how exactly one was to cash in on the idea of reciprocal constraints and resonant passages (point (c) above) - took center stage. For the most part, Varela attempted to broach the issue under the general heading of *naturalized phenomenology*.[5] However, after having (re)acquainted ourselves with the main tenets of neurophenomenology, the idea of

[5] Unfortunately, due to his untimely passing, Varela failed to produce a single, unified account of naturalization, so all we are left with is a multitude of suggestive fragments scattered throughout

naturalized phenomenology should give the reader some pause. For if Varela's intention was indeed to *marry* (cognitive) science and phenomenology and if he attempted to do so in a way that would be grounded in *reciprocal*, i.e., *bi*-lateral, constraints, then why opt for such a *uni*-lateral designation? In other words: If this marriage was to be equal in more than name only, then the talk of naturalized phenomenology, which seems to imply that one partner - namely, science - wields most, if not all, of the power, can be highly problematic.

However, things become even more perplexing, if we consider some of Varela's claims that seem to be pointing in a different interpretative direction. For instance, he would sometimes say that his aim was "just as much to naturalize phenomenology as it is to phenomenalize cognitive science" (Varela 1999c: 577; cf. Varela & Depraz 2003: 226), and that, perhaps even more surprisingly, the naturalization of phenomenology ultimately leads to "the *transcendence* of nature" (1999a; cf. 2001: 234; my emphasis). How are we to understand these seemingly paradoxical statements? How exactly is the term "naturalization" understood in these contexts? And finally, how, if we lift the pragmatic-quietist veil, is the proposed bilateral relationship - *naturalizing* phenomenology while simultaneously *phenomenalizing* science - supposed to work?

Perhaps the best way to proceed is to consider how Varela does *not* want us to think of naturalization. He is, for instance, adamant that, for him, naturalizing phenomenology does not mean simply "absorb[ing] phenomenological basis into a 'merely' naturalized account" (Varela 2001: 212). This needs some unpacking. The term "naturalization" is usually associated with the term "naturalism": a *naturalized* X usually stands for an X *embedded into a naturalist framework*. While it is notoriously difficult to provide an unequivocal elucidation of what naturalism is - a point I will return to in the next section - we can say that, in the broadest terms, naturalism can be characterized by at least two commitments: first, that reality is exhausted by natural phenomena (there is, as Papineau puts it, "no place for 'supernatural' or other 'spooky' kinds of entity"; Papineau 2007); and secondly, that all domains of reality are amenable to methods developed to study natural phenomena, i.e., methods employed by natural sciences.

Naturalism, then, is "a two-part view" (Aikin 2007: 318; cf. also Zahavi 2010). First, there is "naturalism as a view of what is so, or the way things are,

his later papers (some of them published posthumously). In what follows, I try to put some of these pieces together and (re)construct a coherent position.

or what there is in the world" (Stroud 1996: 44). This *ontological dimension* of naturalism has to do with what constitutes reality, and can be tentatively summarized as the idea that there exists only one kind of phenomena, namely natural phenomena. Note, however, that this does not usually mean natural phenomena construed in any way whatsoever, but rather as causally interrelated material things with quantifiable properties. Secondly, there is "naturalism as a way of studying or investigating what is so in the world" (Ibid.). This *methodological dimension* of naturalism has to do with how we go about studying reality, and can be tentatively summed up by the idea that the appropriate methods and criteria of experimentation, justification, etc., are those utilized by natural sciences. For our purposes, two such methods are particularly important: *mathematization* (quantification and formalization of phenomena and their mutual relationships) and *mechanization* (elucidating phenomena in terms of causal relationships among their constituent elements).

Clearly, then, when talking about naturalizing phenomenology, Varela has something more nuanced in mind than merely "explaining [it] away" or "giving [it] substance", as if we needed science to tell us what phenomenology truly was (Varela 1999c: 577). He is, above all, not endorsing any type of strong ontological naturalism, and insists that, for him, naturalization is not a "one-directional or hierarchical term", but instead refers to "an explicit, non-dual relationship, i.e., a mutual determination that avoids the extremes of both neuro-reductionism and ineffability" (Varela 2004: 189, 207). To explain what he means by this, Varela returns to the notion of resonant passages - only this time, he calls them "generative passages" (Varela 2001) - and contrasts them with two other naturalist approaches: analytic and phenomenological isomorphism.

Analytic isomorphism stands for various strands of (neuro)reductionism and can be summarized as follows. First, we collect all the relevant phenomenological data related to our subject of inquiry (decision-making, mind-wandering, etc.). Then, we identify its neural correlates, i.e., how this data is represented neurally. Finally, we subject this neural representation to a more detailed analysis, until we find the appropriate neuronal mechanism - the so-called "bridge locus" - which serves as an isomorphic link between "neural activity and how things seem to the subject" (Ibid. 222). Note that, on this view, the explanatory mechanism itself is *not constrained* by phenomenal data, i.e., the underlying bridge locus can turn out to be very different from how things seem to us.

The second approach, referred to by Varela as *phenomenal isomorphism*, is willing to give more credence to phenomenological evidence. That is,

instead of looking for isomorphic links on the *neuronal* level (in the form of bridge loci), it tries to locate them at "the *structural* level at which the empirical and phenomenal interplay" (Ibid. 222; my emphasis). In other words, phenomenological evidence here is used not just as a starting point of investigation but rather as a means to "identify properly the right explanatory mechanism on the neural and subpersonal levels", i.e., as *a constraint* on what kind of neurobiological phenomena can count as relevant candidates for explanatory mechanisms. Thus, phenomenal isomorphism does not look for "bridge loci", which are, as noted, structurally unrelated to phenomenal data, but focuses instead on "an entire [neurobiological] process or mechanism" that is significant from the empirical perspective (Ibid. 223).

However, phenomenal isomorphism shares an important commonality with analytic isomorphism in that, as Varela puts it, there is "no *a priori* reason why the phenomenological description should somehow give direct insight into the nature of the causal process that underlies that phenomenological appearance" (Ibid. 223). Thus, if, from this perspective, science and phenomenology can be said to join hands on the level of description, they part ways on the level of explanation - in the latter, neuroscience still reigns supreme. Dissatisfied with this traditional division of labor, Varela argues for a more radical approach. The goal, in his view, should be to find *generative passages*, i.e., links or bridges, "in which the mutual constraints not only share logical and epistemic accountability [as they do in phenomenal isomorphism], but in which they are further required to be *operationally generative*" (Ibid. 224; my emphasis). In this way, a "mutual circulation" between neurobiological and phenomenological accounts could be established, whereby one would serve as the bridge to the other and neither would be "intelligible without the insight provided by the other" (Ibid.).

Perhaps the best way to illustrate the contrast between phenomenal isomorphism and generative passages is by way of an example. Varela (1999a, c) and van Gelder (1999) came up with astonishingly similar accounts of lived (experienced) temporality. Both accounts draw on Husserl's phenomenological analyses (1964), which portray time consciousness as a uniform structure consisting of three interwoven aspects (retention-primordial impression-protention), and then try to combine Husserl's insights with recent neurobiological models grounded in dynamics systems theory. However, despite the overwhelming overlap between the two accounts, there is one point in which they diverge substantially.

Van Gelder sees phenomenological evidence as indispensable in delineating the appropriate structural framework in which cognitive science should look for explanatory mechanisms - it is, for instance, on account of phenomenological data that we can conclude that dynamical models are better suited for the job than the computationalist ones. At the same time, however, he maintains that "cognitive science can tell us what retention and protention *actually are*, and in that sense deepen our understanding of them and of time consciousness in general". In other words: "When we understand how dynamical models [...] work, we are (without realizing it) already understanding *what retention and protention are*." (Ibid. 259–60; my emphasis). This, for Varela, is a step too far. He agrees that cognitive science can, and does, provide important insights into the "organic" or "natural roots" of time consciousness (Varela 2001: 215); however, he firmly opposes the idea that this translates into science telling us what time consciousness *really is* (Varela 2004: 191). In his view, while we definitely should be looking for neurobiological accounts that are "in alignment with" phenomenal descriptions (Varela 1999a: 151), this "alignment" should be such that both accounts end up "mutually enriched" and perceived as "co-emerging" (Varela 1999a: 151).

In other words, what the analytic and the phenomenal isomorphism seem to have in common is that they both accept a *unilateral* understanding of naturalization, according to which, to quote the famous Wilfrid Sellars' adage, "science is the measure of all things" (1956). On this view, what *really exists* are natural phenomena - phenomena that can be elucidated in mechanical and mathematical terms. Experience, on the other hand, is that which can *not* be mechanized and mathematized - a shadowy residue awkwardly dangling from the naturalistic image of the world. Thus, the only way to bridge the mysterious gap between neurobiological and phenomenal data is to subsume the latter under the former, for the only alternative - to subsume the former under the latter - would lead to an unwanted subjectivization of reality.

For Varela, any naturalization project framed in unilateral terms is bound to fail: it is rooted in the dualist style of thinking and thus destined to succumb to the riddle of experience. If we want to break through this vicious cycle, we must, in line with the main dictum of neurophenomenology, "*avoid* the instrumentalization of one discipline over the other" (Varela 2004: 190), and insist, adamantly, on the *reciprocal* logical and epistemic accountability between science and phenomenology. This in turn means that, instead of landing on the subjective (mental) or objective (neural) pole, we need to situate ourselves in the

"unexamined 'no-man's land", the mysterious and oft overlooked "in-between", "non-dual" region stretching out between them (Varela 2001: 221). In his later essays, Varela thus relaxes his early pragmatic-quietist attitude and emphasizes the importance of recognizing the "implicit and necessary locus of circulation", which lies at the heart of neurophenomenology, as an "inescapable ontological region" (Ibid. 221, 231).

We now have a better handle on how, barring sheer practical (diss)olution, neurophenomenological insistence on mutual reciprocity could be said to undermine the neural/phenomenal duality. The main goal is to help each domain, by confronting it with the structurally compelling findings from the other side, *break through* its traditional boundaries and find its way into this in-between, non-dual region: "[A] lifeworld ontology guides the sciences, which in turn provide clues for the constitutive-phenomenological undertaking" (Varela & Depraz 2005: 72). The crucial point, however, is *not to overshoot the mark*: when we break through the bounds of traditional science, for instance, we must be careful not to land on the opposite extreme of transcendentalism (and *vice versa*). Thus, the only way to achieve "mutual reciprocity without residue" - i.e., without a surplus that would tilt us into one extreme or the other - is to look for, and explore, generative passages capable of landing us in "the very constitutive basis for the mutual reciprocity that makes the mental and the physical hang together" (Ibid.).

Having outlined the general backdrop against which he wants us to think about naturalization *via* generative passages, Varela moves on to more concrete suggestions about how this "distinct region of ontological reciprocity" (Ibid. 231) could be successfully explored. To this end, he refers to "three poles" or "three main threads" that "need to be woven together on an equal footing to provide a braidless braid of continuity between the material and the experiential, the natural and the transcendental" (Varela 2001: 232–3). Let us briefly explore each of these poles in turn.

(1) *Formal-mathematical pole*. The emphasis here is on the need to develop and utilize tools that would allow us to formalize both neural and phenomenal levels of investigation. The idea, in short, is to make generative passages between eidetic structures attained by phenomenological analysis and neurobiological structures attained by dynamical analysis expressible in mathematical

terms, which - on account of their content-neutrality - could effectively serve as their common ground (Ibid. 227).[6]

(2) *Mechanical-neurobiological pole*. The central point here is to find the right level on which to model neurobiological mechanisms, i.e., the level that would assure, conceptually, the significance of, and circulation between, scientific and phenomenological accounts. In Varela's view, the best candidate for this role is the enactive approach to cognition, mentioned in the previous section. Why so? To begin with, this approach sees cognition not as something abstract and symbolic, but rather as something "based on situated, embodied agents" (Ibid. 215). This in turn means that it is not relegated to the head, but has to do with how a cognizing agent engages with, and thus (re)fashions, its environment. More technically: enactive cognition refers to an ongoing circulation between endogenous neurobiological activity and sensorimotor coupling with the environment, whereby (i) *endogenous activity* stands for perpetual interactions between functionally distinct and topographically dispersed regions of the brain, while (ii) *sensorimotor coupling* stands for permanent synchronization between the cognitive agent and its environment *via* (semi)stabile sensorimotor loops (Varela 1999c: 272; 2001: 215). This circular relation between (i) and (ii), says Varela, can be conceptualized as the *process of emergence*, in which the two levels are reciprocally imbricated: the large-scale integrative scale (i.e., (ii)), which has been brought forth by a plethora of local processes (i.e., (i)), recursively shapes and modulates these very same processes. Not only are "[n]o extra ontological ingredients required for this reciprocal, effective causation", but we are here dealing with "a double passage between two levels", which - as we have said - is precisely what is needed for a successful neurophenomenological exchange (Ibid. 218).

(3) *Pragmatical-philosophical pole*. This, for Varela, is the most important aspect, since "it, and it alone, can have a situated bivalence that excludes neither [phenomenology nor science] and provides the relevant basis for data for the preceding threads" (Varela 1999a: 151-2; cf. Varela 2001: 233). It is here that the non-dual region can be said to disclose itself in its full opulence. However, even though Varela, in the early neurophenomenological spirit, still insists on characterizing it as predominantly pragmatic (1999a: 151; 2001: 224, 232), he now also tries to *flesh* it out - literally, as it turns out - in conceptual

[6] For Varela, naturalization of phenomenology is not primarily or exclusively about mathematization, as the oft referenced Roy et al. (1999) might suggest; instead, mathematization – as this section suggests – is but one segment in a much larger practical and theoretical framework.

terms. To this end, he refers to the Husserlian notion of *Körperleib* (1999a: 151), a conceptual amphibian meant to express an inherent *dual-aspectivity of vital corporeality*: the fact that I both *am* and *have* a body. In other words, the term "body" designates both the body as a corporeal tissue *of* my experiential field (*lived*-body; Ger. *Leib*), and the body as an animate thing *in* my experiential field (*object*-body; Ger. *Körper*).[7] The body, then, is open to both neurobiological and phenomenological investigations; it is, in other words, an eminent example of what Bruno Latour calls a *quasi* or *mixed* object, in which, like in an alloy, "the notion of 'ridges' becomes irrelevant":

> There is only one phenomenon, and one can traverse it from one to another of its qualities, from experiential or organic without rest or jump. There is no gap to bridge, only traces to follow. (Varela & Depraz 2003: 225-6)

The body, for Varela, is the conceptual-practical generative passage *par excellence*, "in which lived experience and the [...] material interpenetrate" (Varela 2001: 224). And it is through systematic explorations, manipulations and modifications of its various dimensions - of its various 'qualities' or 'modes of givenness' - that we can hope to discover generative passages that weave the three braids together. This is why the last braid is, as noted, the most important of the three. For it is only through a careful thematization and investigation of vital corporeality that we can establish a firm practical and conceptual ground, wherein mathematical models and neurobiological mechanisms can be constructed and explored.

> Once the constitution of natural objects is adequately thematized in the phenomenological realm, pure experiences also can be considered to belong to a psychological consciousness, and hence to an organism. In this precise sense, data rooted in lived, first-hand experiences are intrinsically open to a non-reductive naturalization. This is the central thesis that animates the neurophenomenological research project, which is only possible if the central issues of embodiment are put at the center of concern, both in cognitive science (as in the enactive approach), and also in phenomenology (as in the later work of Husserl and its continuation in Merleau-Ponty). (Ibid. 220)

[7] For later work exploring the dual nature of vital corporeality as a means to solve the mind-body problem by transmuting it into a body-body or a mind-body-body problem see (Thompson 2007, 235ff; Hanna & Thompson 2003).

Varela's "strategy of naturalization as mutual constraints" does not, then, square nicely with the usual conceptions of naturalism. If we revert to our bipartite classification above, we could say that, from the Varelian perspective, not only does the methodological dimension of naturalism carry much more weight than the ontological one, but that, even more importantly, both dimensions have to be perceived through the socio-historical lens.

Drawing inspiration from "the French school" of history and philosophy of science (Varela 1996b: 409), Varela sees science as a unique and immensely valuable *socio-historical praxis*. This means, first, that science *is* what science *does*, and not what - or at least not entirely - its official cannons say it is or should be doing. Secondly, science has been, and will continue to be, subject to *ongoing epistemic mutations*: it is "a living body", which "moves and transforms itself with an ever-receding horizon" (Varela 2004: 191). As such, science is characterized by "constitutive incompleteness", and is led, through its own practice, to constantly refashion itself (Ibid.). Naturalization, then, is not about finding "the 'ground' of a foundational truth", but about dynamically expanding and manipulating "phenomena disclosed by the social practice of science" (Ibid.). In fact, at one point, Varela even goes so far as to say that he is using the term naturalization merely "[f]or reasons of historical tradition and brevity", and not as a way of pledging allegiance to a fixed set of ontological, or even methodological, commitments (Varela 1999c: 577).

In light of these reflections, it is important to keep in mind the *context* in which Varela developed his ideas about naturalization. They were aimed primarily at his fellow scientists, many of whom were likely to eye a proposal to wed science and phenomenology with suspicion, especially since, in its original form, it seemed to put more weight on the phenomenological side. It was therefore crucial for him to show that phenomenology could, indeed, be naturalized in the "minimal sense of not being committed to a strictly dualistic ontology" and thus "open to explanatory accounts" that "make clear how phenomenological data can [...] *link* productively to accounts of brain and body [...] *without the recourse to an ontological leap in midcourse*" (Varela 2001: 211; my emphasis). Naturalization, on this reading, operates as an *epistemic brake* needed to keep the overtly transcendentalist tendencies of phenomenology in check by

skillfully and effectively confronting them with the protean dynamism of "science in action".[8]

3. Epistemological Earthquake: From Naturalism to Dialectics

In this last section, I turn to the question of whether, in virtue of everything that has been said so far, naturalization talk is, in fact, conducive to the neurophenomenological project. I will argue that, despite Varela's best intentions, it is not, and should therefore be either severely restricted or even completely discarded. This conclusion rests on two argumentative pillars. First, and in line with what I have been intimating throughout the paper, I believe that the emphasis on naturalization is ultimately at odds with the spirit of neurophenomenology. Second, even if we disregard the first (and crucial) point and continue to talk of naturalization, the term has so little in common with the more ordinary ways of understanding naturalism that it is bound to generate more confusion than clarity.

Let me start with the first point, the idea that naturalization is contrary to the spirit of neurophenomenology. We have seen that, in his later works, Varela elaborates on the topic of naturalization in terms of three threads that have to be interwoven if we are to successfully enter into, and explore, the non-dual region of *Leibkörper*. However, and crucially, this interweaving should not leave us with a *mere juxtaposition* of three *separate* threads - regardless of how closely interlinked - but should end up in their fusing into a "seamless braid" (Varela 1999a: 151; 2001: 232-3), into a *new unity* or a *new gestalt*. In other words, a successful interlacing of the three threads has to result in, as Varela puts it, a "'stereoscopic' perspective" (Varela 1999b: 195) capable of providing "an *in-depth view* of phenomena" (Varela 2004: 189; my emphasis).

Note that this is all but trivial. For, just as in the case of visual perception, a three-dimensional object is more than a mere sum of two two-dimensional images, so the goal of the neurophenomenological project is not a mere 'sum' of natural sciences and phenomenology, but, again, a new "a coherent whole" (Varela & Depraz 2003: 225). And just as a visual patch acquires a completely different meaning once it is grasped as an element of a larger perceptual gestalt - what was previously a dark amorphous blotch suddenly becomes an eye

[8] This, of course, raises a whole plethora of thorny questions about the (non)existence of scientific methodology and normativity, to which Varela does not provide clear answers; thus, and as is often the case, by solving one set of problems, a series of other, no lesser issues emerges.

of a cat -, whereby its qualities (the density of its colours, the dimensionality of its spatial relations, etc.) change radically, so the three threads have to undergo a similarly all-encompassing transformation when grasped, both intellectually and existentially, from the non-dual perspective Varela speaks of.

Thus, if we are to remain true to the ideal of mutual reciprocity and generative passages on which neurophenomenology is founded - if we are, that is, ever to attain a *truly synoptic view* of psychophysical phenomena - then no mere expansion or juxtaposition of natural sciences and phenomenology will suffice; instead, and in line with the example of perceptual gestalt above, these two seemingly disparate approaches have to be apprehended as two co-specifying and co-implicating moments of a larger whole. And this, in turn, means that any step in the direction of naturalization has to be counterbalanced with an *equally strong, if not stronger* (see below), step in the direction of phenomenalization:

> This means that in the study of mind, any phenomenon is understood from the beginning as a mixed object, as if the real is also in delicate balance between two avenues of discourse. On the one hand, we have the avenue that seeks to *naturalize phenomena* [...] and that leads directly to the account we can glean from science. On the other hand, we have the avenue that seems to make experiential, or phenomenalize the empirical [...], by discovering in them one's entire experience (including our social history and language), which is always already present. This balancing act of traversing the route of naturalizing and the route of experientially phenomenological is both possible and productive. (Varela & Depraz 2003: 226; my emphasis)

To get a better handle on this point, let us take a step back (in time) so that we may take two steps forward (in content). For, while the idea of three threads may seem new, it can in fact be traced back to the very beginnings of Varela's thought. Thus, in one of his earliest papers, "Not one, not two" (1976; cf. also Varela 1979, Chs. 10, 16), Varela outlines a solution to the mind/body problem that is remarkably similar to the one put forward in his later neurophenomenological essays. The paper, for instance, opens with what by now should be a familiar idea: to successfully (dis)solve the mind/body problem we have to change the overall context, and this includes at least a change in:

> (i) the *logic* used to understand [w]hat dialectics and wholes are;
> (ii) the *scientific ideas* about what mind is (moving away from the brain-secretion image, towards an understanding of mind as conversational domain); and
> (iii) the *cultural conceptions* about the mind (which restrict the kind of experience that are socially and individually accessible)." (Varela 1976: 62;

emphases in the original)

The parallels with the three threads from the previous section are striking. What is particularly interesting, however, is that, in the said paper, Varela adds a further spin to the story. Namely, he develops a (semi)formal procedure called *Star*-dialectics* (also: Star*-cybernetics), whose goal is to transform the fruitless talk of *dualities* into the effective talk of *trinities*.

What, then, are trinities, and how do they relate to our current discussion? According to Varela, we should think of a "trinity" as a conceptual template that allows us to modify our apprehension of the seeming opposites - "pairs (poles, extremes, modes, sides)" of any sorts - in a way that discloses them as "*related* and yet [...] *distinct*" (Ibid.). In other words, trinities, which constitute the heart of the Star*-dialectics, are conceptual encapsulations of the non-dual perspective, from which the two opposing poles can be grasped as both separate (ergo: *not one*) and interlinked (ergo: *not two*). Each trinity can be expressed in the form of a *Star*-statement* (or simply a *Star**):

Star*: "trinity" = "it/process leading to it" (Ibid.)

Here, "it" refers to an emergent whole whose dynamic organization enables the process on the right to unfold; "process leading to it" stands for pairs, poles, etc., whose antagonistic interactions bring forth the whole on the left; finally, "/" (slash) stands for a bidirectional operation that reads: "consider both the it and the process leading to it" (Ibid.).

Let us look at a simple example: the "predator-prey" pair. Taken on their own, the two items appear to be mutually opposed; however, if embedded into a framework of the Star*-dialectics, they turn into two co-specifying aspects of a larger domain - "ecosystem". Thus, we can paraphrase the opposition as follows:

Star*: "ecosystem/species interaction"

where "species interaction" stands for a dynamic polarity "predator<->prey". Note that, just like in the case of the visual gestalt formation mentioned above, so the two aspects, while "materially" the same (no "element" is added to or subtracted from them), acquire a radically different significance (orientation, texture, etc.) when embedded into a new "form".

We can apply the same procedure to neurophenomenology. What, from a static perspective, looks like two opposing "forces" - science and phenomenology -, can, by shifting to the dynamic view of Star*-dialectics, be apprehended as two aspects of a larger whole:

Star*: "neurophenomenology/naturalization<->phenomenalization"

Note, however, that this can only be done if the two processes, naturalization and phenomenalization, are in fact grasped against a larger unity - a unity that is not independent of them, for it is precisely through their productive tensions and interactions that it can manifest itself, but still a unity that imbues them with a radically different significance (orientation, texture, etc.).

However, there is an additional twist to the story. For Varela, at least in some of his moods, seems to put phenomenalization *above* naturalization (a point alluded to briefly at the end of Section I). Take the following quote:

> [T]he question is [1] not so much how to naturalize Husserlian phenomenology, but, rather, [2] what should a natural science (such as cognitive science) become to be fully adequate to phenomenological descriptions that could be naturalized but not epistemically reduced? (Varela 2001: 212)

In other words, the central aim of neurophenomenology, at least in this *a*-symmetric reading, is not to naturalize phenomenology, but rather to *phenomenalize natural sciences*, i.e., instigate another epistemic mutation that would make them amenable to phenomenological evidence and reflection. This, in turn, means that phenomenology can be naturalized only against natural sciences that *have already been reshaped* by phenomenology - and *radically so*, namely to the point where the usual tools of the naturalist trade (e.g., mathematization and mechanization), even if still carrying the same names, will have acquired completely different meanings. After all, and more narrowly, it was phenomenology that served as the main source of inspiration for the development of enactive approach, lauded by Varela as the most suitable neurobiological "substrate" for the non-reductive naturalization of phenomenology (Varela et al. 1991: xv-xvi); and it was, more broadly, phenomenology that opened the door to the exploration of lived experience and the non-dual region of vital corporeality, which serve as the ultimate criteria for the interweaving of the three braids mentioned above.

In fact, we find a similar idea already in the "Not One, Not Two" essay, in which Varela singles out the following Star* as "the most interesting":

experience/knowledge (Ibid. 66)

Here, experience - the sphere of our concrete, immediate existence - is seen as the ultimate, 'ungobehindable' *it*, which is brought forth by, and gives orientation to, the effective polarities permeating our cognitive domains. Thus, in this asymmetric reading, it is not phenomenology *per se* that should be opposed to naturalism, but its transcendentalist "excesses"; in other words, the opposition is not between naturalization and *phenomenalization* but between naturalization and *transcendetalization*:

Star*: "vital corporeality/naturalization<->transcendentalization"

Regardless of which reading we ultimately adopt - be it the more balanced or the more asymmetric one (I leave this question open) - it should be clear that the undue emphasis on naturalization can be highly misleading. The reason for this is that, while it can perhaps have some merit if *hyper*-qualified - if we take extra care to differentiate our use of the term from its usual renditions, underscoring the importance of the balancing move of phenomenalization, etc. -, it simply leaves too much room for misinterpretation. When it comes to integrative endeavors of any type, science has the unfortunate habit of sliding back into its "business as usual" mode: the new, more "eccentric" side of the equation (in this case: phenomenology) usually receives but a faint nod of recognition, until it either fades out of the picture altogether or loses its status of an equal partner and turns into a yet another object of scientific study.

But even more importantly - and this brings us to my second objection to the naturalization talk - it is difficult for me to see how, even if all the qualifications required by the neurophenomenological programme are taken on board, Varela's project could be considered "naturalist" in anything but name only. We are here confronted with what I would like to call *Stroud's dilemma*, which, in its original wording, goes as follows:

> 'Naturalism' seems to me in this and other respects rather like 'World Peace.' Almost everyone swears allegiance to it, and is willing to march under its banner. But disputes can still break out about what it is appropriate or acceptable to do in the name of that slogan. [...] There is pressure on the one hand to include more and more within your conception of 'nature,' so it loses its definiteness and restrictiveness. Or, if the conception is kept fixed and restrictive, there is pressure on the other hand to distort or even to deny the very phenomena that a naturalistic study - and especially a naturalistic study of human beings - is supposed to explain. (Stroud 1996: 43-4)

The central ontological tenet of naturalism - that all there is is nature and that there is therefore no room for supernatural entities - is not, as is sometimes claimed, indiscriminately open to interpretation. Indeed, it rests on a very specific - thematically restricted and historically mediated - way of understanding nature as, to use David Armstrong's apt phrase, "the single, all-embracing spatio-temporal [and we may add: causally closed] system" (1978: 262). Not every conception of nature is compatible with naturalism: Would Aristotle's, Paracelsus' or Böhme's nature count as naturalism? Would Schelling's, Whitehead's or Bergson's? Is there room in the naturalist's nature for final causes and forms? What of values, acausal events, and entelechies? Further, it is in relation to this very specific way of understanding nature that modern scientific methods developed. One's methods of inquiry reflect what one expects to find in nature; and what one finds in nature reflects one's methods of inquiry. The two dimensions - the ontological and methodological - are closely interlinked; if you change one, you change the other (and vice versa). You cannot have teleology on the cheap; and neither can you have creative imagination.

The dilemma arises when we try to provide naturalist accounts for phenomena that, *prima facie*, seem to resist such accounts: moods and sensations, norms and values, beliefs and thoughts - in short, most aspects of human experience (broadly construed). If we want to tackle these phenomena in the naturalist framework, we are left with two alternatives: we *either* try to show that they are "fully expressible somehow within the restricted resources available in the naturalist's world", which can, and does, lead to distortions; *or* we can expand our understanding of naturalism so as to accommodate these phenomena in all their richness, in which case naturalism "loses its bite" (Stroud 1996: 47-8). In a nutshell, we are caught between a rock and a hard place: if we stick to the narrower conception of naturalism, we risk disfiguring a vast array of phenomena; if we expand the meaning of naturalism beyond its original meaning, we risk rendering the very term useless.

From what has been said so far, it is clear that Varela does not subscribe to the former (i.e., narrower) camp. Moreover, it is difficult not to see the mutation of science, as envisioned by Varela, as anything less than a *full-blown transformation* of - if I may be permitted this Bachelardian anachronism - *scientific spirit* (Bachelard 1984). And Varela is fully aware of that. He notes that, while science has already - e.g., in its confrontations with Quantum Mechanics and Dynamics Systems Theory - "transformed itself in its cultural ecology a few times with radical consequences", this particular encounter between science

and phenomenology would, if it led to a truly successful integration, have much more far-reaching and profound effects (Varela 2004: 192). That is, we would no longer be dealing with "science 'as usual'", but would be witnessing what, in his earlier days, he called an "epistemological earthquake" (Varela 1976: 63). For, if lived experience is indeed taken seriously, the concept of nature, as conceived of by natural sciences, has to implode and transmute into something else entirely - something that, ultimately, may not square all that well with our *current* views of the *natural/supernatural* divide. This, I think, is how we have to read Varela's comment that the phenomenalization of sciences would ultimately lead to the transcendence of nature.[9]

But if this is indeed the case, what, if anything, is left of naturalism in Varela's neurophenomenology? There seems to be little to go on with regards to specific content. And once the term gets diluted to the point where it can mean everything, it ends up not meaning anything. In this particular case, we either insist on the rather trivial idea that naturalism boils down to what natural sciences happen to be doing at any given moment in their history - even if, at some point, they change into something entirely different from, and perhaps even opposite to, what they are doing today (but then: why still call them sciences then, and not, say, phenomenologies?) - or we simply drop, or at least severely restrict, the term altogether.

If we revert to Wittgenstein one last time: we should think of naturalism as Wittgenstein urges us to think of his own *Tractatus*. He says that the reader should treat his book as a ladder that he has to "throw away [...] after he has climbed up it" (Wittgenstein 2001: 6.54). In the same manner, we should use naturalism to challenge the extremes of transcendentalism, but once this goal has been achieved, we should discard it. By this I do not mean to suggest that we should revert to Varela's earlier pragmatic-quietist approach - not unless, that is, we see acts of philosophical reflection as specific modes of practice (as I think we should; but in that case, we would end up with a stance that is pragmatic, yet not quietist). I believe Varela's decision to cast off the "veil of silence" covering

[9] In this regard, I agree with Gallagher (2018) that, in order to be able to make good on the prospect of naturalization in the neurophenomenological context, a radically different understanding of nature is needed, one that departs from the classical scientific notion (see also Zahavi 2004). However, I would add that this alteration in the object of the sciences of nature would have much more far-reaching implications for the nature of sciences than Gallagher seems willing to recognize.

his seminal paper was a move in the right direction; but I also think we should take this impetus further. Is naturalist/transcendentalist distinction truly the best we can do? Are we - and if so, *why* - truly limited to these old terminological distinctions?

I would like to close this paper with an appeal of sorts: instead of unceasingly juggling between old conceptual dichotomies - something Varela himself was strongly averse to - why not devote ourselves whole-heartedly to articulating, both conceptually *and* terminologically, the non-dual or co-specifying spirit of the new thought style that Varela was trying to forge? I don't pretend to have a good, let alone final, solution to this question – nor was this, as mentioned in the introductory section, the purpose of this paper – but perhaps something along the lines of "ouroboric", "chiasmic" or "dialectical" may fit the bill. Note that this is not merely a matter of sticking a label to what is already there, fully formed and articulated; instead, it is more akin to an evocation or an opening of a new field which, although perhaps tacitly present, gets often overlooked and is devoid of clear elucidation. In other words, it is a call to *articulate, and then explore*, the new trinity that Varela was referring to. Neurophenomenology, to my eyes, is but a temporary resting place - a *mixture*, where what is needed is a *compound* - and we should try to expand the spirit that is permeating it.[10] This spirit is neither naturalist nor transcendentalist, or - if you prefer to see the cup as half full - it can be both (but in a dialectically qualified sense). The in-betweenness or non-duality of this spirit should not be seen as a flaw, but rather as its main strength, and should consequently, and consistently, be treated as such.

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[10] At one point, Varela, following Natalie Depraz, experimented with the term "transcendental empiricism" (Varela 2004: 196), which, frankly, does not strike me as a significant improvement to neurophenomenology (it sounds like another mixture and not a proper compound).

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