

Introduction – the explanatory gap: To close or to bridge?

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In this special issue, four essays discuss the possibility of rooting the current neuroscientific study of consciousness in the tradition of phenomenological philosophy. This approach has been recently advocated by Jean Petitot, Francisco Varela, Bernard Pachoud and Jean-Michel Roy who co-edited the book *Naturalizing Phenomenology*. In their long introduction, they argued that Husserlian phenomenology can influence specific contemporary scientific theories, either by complementing or by questioning them. Originally, we invited the authors of this issue to use this book, or related work on “neurophenomenology” (e.g. Varela 1996), as a starting point for a discussion of naturalizing phenomenology. One of our concerns was to provide space for scholars who are interested by this debate but who are not directly in the classical tradition of phenomenology. We hope through such critical but constructive interactions to further delineate and clarify the potential contribution of phenomenology to cognitive sciences.

One of the most expensive books I've ever purchased

At least, two common themes emerged from the present contributions. The first one, which is more theoretical, deals with the “explanatory gap” debate and with its solutions as proposed by Petitot et al. (1999) or by neurophenomenology. The second one, more methodological, deals with the first-person methods inspired by phenomenology and with their possible ability to generate original first-person data.

It is appropriate to say that there is still an “explanatory gap” (Levine 1983) between the scientific account of consciousness and the subjective attributes of experience. This gap is sometimes identified with the hard problem of consciousness (Chalmers 1996), and can be viewed as a metaphysical question about the place of consciousness in nature. This problem is typically formulated as the issue of whether it is conceptually possible to derive subjective experience (or phenomenal consciousness) from objective physical nature. If it were possible, then materialism or physicalistic monism would gain support; if it were not possible, then property dualism (or panpsychism or idealism) would gain support. There is still an explanatory gap because functionalist or connectionist cognitive science “purports to say how the cognitive mind/brain works *in* itself and not how it comes to seem to be working *for* itself in the way it does” (Roy et al. 1999, p. 10). Throughout their essay, Roy et al. reviews

Good take-home description of the Hard Problem

and proposes several possible strategies to naturalize phenomenology. Their central hypothesis is that “when provided with adequate characterization such as those conducted along the lines of Husserl’s phenomenology, phenomenological data can be adequately reconstructed on the basis of the main tenets of cognitive science, and then integrated into the natural sciences” (p. 48). Thus, the implementation of this proposal requires, firstly, a disciplined first-person characterization of experience, inspired by phenomenology. And, secondly, it ascribes a key role to mathematics because “it alone is seen capable of generating naturalistically implementable reconstructions of phenomenological data” (p. 49).

For the reader not familiar with the tenets of Husserlian phenomenology, it is important to note that their proposal seems to contradict Husserl’s notorious anti-naturalism. Indeed, Husserl was deeply convinced of a “necessary incompatibility between the general nature of phenomenal data (. . .) and their basic requirements of mathematization, thereby introducing a sharp contrast between phenomenology and the Galilean sciences of nature” (Roy et al. 1999, p. 42). The fundamental characteristic of mathematics cannot describe experience. Yet, as argued by the editors of *Naturalizing Phenomenology*, Husserl’s anti-naturalism can now be seen as largely obsolete, considering scientific progress. For instance, contemporary morphodynamical mathematics such as the theories of self-organization of non-linear systems, could provide a way to describe the morphological structures of experience (for an illustration see Varela 1999; Petitot et al. 1999).

Discuss this argument in the review of Henry's "What science doesn't know"

The first three essays take issue with the project of naturalizing phenomenology, respectively from three different viewpoints: *Dan Zahavi* from the perspective of phenomenology itself questions the relevance of a mathematical modeling of experience and argues that Husserl’s anti-naturalism is based also on transcendental philosophical reasons that have been poorly addressed by the Roy et al. *Tim Bayne*, from the perspective of analytic philosophy of mind argues that the theoretical framework of neurophenomenology is inconsistent. On the one hand, neurophenomenology seems committed to an anti-reductionist position that maintains the autonomy of the phenomenal realm; on the other hand it aims also to illuminate the causal principles involved in conscious activity. *Morten Overgaard*, from the perspective of a cognitive neuroscientist, points to a similar contradiction between the theoretical claim of transcendental phenomenology and the explanatory framework of natural science. He then explores the possible use of phenomenology as a descriptive heuristical strategy.

Evan Thompson, in contrast, defends Francisco Varela’s program of naturalizing phenomenology. He argues that although Varela (1996) originally proposed neurophenomenology as a ‘methodological remedy for the hard problem’, a careful reading of this paper indicates that he did not aim to address

the metaphysical hard problem of consciousness on its own terms. From the perspective of phenomenological philosophy, these terms – in particular the Cartesian conceptual framework of the ‘mental’ versus the ‘physical’ – are considered to be part of the problem, not part of the solution. Thompson proposes a radical reformulation of this debate via a framework that does not set “mental” and “physical” in opposition to each other, or reduce one to the other. For him the common ground beneath this opposition is the phenomenon of life or living being, intrinsically connected to the mind. On this view, **cellular organisms already exhibit mental properties such as a minimal form of self or a form of intentionality toward an environment. As suggested by the autopoietic theory of life, these processes can not be equated to a (Turing) machine.** Thus the opposition between “mental” and “physical” is already questionable at the level of cellular life. Thompson argues then that consciousness shares the general principle of living systems but differs from this rudimentary form of mind. So the main issue becomes rather to understand “the emergence of living subjectivity from living being, including the reciprocal shaping of living being by living subjectivity.” It is this empirical question that is addressed by neurophenomenology not the metaphysical question of the hard problem.

Why can't autopoietic structures be captured by a Turing machine?

In addition, these essays investigate the methodological role of phenomenology in the naturalization project. Zahavi recalls and defends the Husserlian distinction between phenomenological psychology and transcendental phenomenology. The former is traditionally presented as an original and specific method to suspend and examine our habitual claims about the experiencer and its intended objects. This method is referred to as the phenomenological reduction, or epoché. The spontaneous and unquestioned mode of engagement in the world is called the natural attitude. Transcendental phenomenology suspends the natural attitude via the phenomenological reduction in order to study the constitutive dimension of subjectivity. Bayne questions this claim and argues that Husserlian phenomenology is not a unique or privileged method of describing the first-person nature of consciousness. In particular, it does not differ from introspection.

In his essay, Overgaard agrees that phenomenological method can improve first-person data and guide the study of third-person data. But he also stresses the need of incorporating second-person methods to facilitate eliciting descriptive accounts of experience. Second-person methods could also foster our understanding of the intersubjective dimension of consciousness. In his contribution, Thompson discusses the theoretical framework that motivates the methodological choices of neurophenomenology. Its methodological tenets could be summarized as followed: neurophenomenology stresses the importance of gathering first-person data from phenomenologically trained subjects as a heuristic strategy for describing and quantifying the physiological processes relevant to consciousness. The general approach, at a methodological

level, is (i) to obtain richer first-person data through disciplined phenomenological explorations of experience, and (ii) to use these original first-person data to uncover new third-person data about the physiological processes crucial for consciousness (for details see Varela 1996; Bitbol 2002; Lutz and Thompson 2003; Thompson et al. in press).

First-person methods are disciplined practices subjects can use to increase their sensitivity to their own experience from moment to moment (Varela and Shear 1999). They involve systematic training of attention and emotional self-regulation. Such methods exist in phenomenology (Depraz 1999), psychotherapy (Gendlin 1981; Epstein 1996), and contemplative meditative traditions (Wallace 1999). Some are routinely used in clinical and health programs (Kabat-Zinn et al. 1985), and physiological correlates and effects of these practices have been investigated (Austin 1998; Davidson et al. 2003). The relevance of these practices to neurophenomenology derives from the capacity for attentive self-awareness they systematically cultivate. This capacity enables tacit, pre-verbal, and pre-reflective aspects of subjective experience – which otherwise would remain simply ‘lived through’ – to become subjectively accessible and describable, and thus available for intersubjective and objective (biobehavioural) characterization.

Thus, in this approach, the call to phenomenology, or to first-person methodology in general, is a pragmatic not a theoretical one. In contrast to Bayne, one could argue that there are methodological differences between phenomenology and introspection: for instance, some phenomenological methods will rely on a sheer witnessing or noticing of the process of experiencing, a bare attention without judgment, whereas introspection will involve a more active attention or reflection to the objects of experience (for discussion see Thompson et al. in press; Zahavi 1999). The central issue, at least for the experimental work, is not to oppose phenomenological methodology to introspection, as understood by Bayne, but to go beyond the just-take-a-look attitude with experience. In this respect, it is important to point out a recent convergence of theories and research involving introspection (Vermersch 1999; Jack and Shallice 2001; Dehaene and Naccache 2002), the study of expertise and intuitive experience (Petitmengin-Peugeot 1999; Petitmengin 2001), phenomenology (Depraz 1999), and contemplative mental self-cultivation (Wallace 1999).

Finally, the reader will find a critically analysis of the notion of “mutual constraints” or “reciprocal constraints” as used in neurophenomenology, in the essays by Bayne and Overgaard. For readers not familiar with this framework, the working hypothesis of neurophenomenology in an experimental context is the following: phenomenologically precise first-person data produced by employing first-person/second-person methods provide strong constraints on the analysis and interpretation of the physiological processes relevant to consciousness. In addition, third-person (biobehavioural) data produced in this manner might eventually constrain first-person data, so that the relationship

between the two would become one of dynamic reciprocal constraints (Varela 1996; Lutz et al. 2002). The concept of reciprocal constraints means not only (i) that the subject is actively involved in generating and describing specific phenomenal invariants of experience, and (ii) that the neuroscientist is guided by these first-person data in the analysis and interpretation of physiological data, but also (iii) that the (phenomenologically enriched) neuroscientific analyses provoke revisions and refinements of the phenomenological accounts, as well as facilitate the subject's becoming aware of previously inaccessible or phenomenally unavailable aspects of his or her mental life. Preliminary examples of this third step can be found in neurophenomenological studies of epilepsy (Le Van Quyen and Petitmengin 2002) and pain (Price et al. 2002).

To conclude, the reader will find in this special issue a nice illustration of some of the contemporary conceptual, epistemological, and methodological issues that surround the notion of the naturalizing phenomenology. We hope that these contributions will clarify or inspire the scientific research program to make progress in addressing these issues.

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