

# WHY SHOULD WE STUDY EXPERIENCE MORE SYSTEMATICALLY: NEUROPHENOMENOLOGY AND MODERN COGNITIVE SCIENCE

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## ABSTRACT

In the article I will defend the view that cognitive science needs to use first- and second-person methods more systematically, as part of everyday research practice, if it wants to understand the human mind in its full scope. Neurophenomenological programme proposed by Varela as a remedy for the hard problem of consciousness (i.e. the problem of experience) does not solve it on the ontological level. Nevertheless, it represents a good starting point of how to tackle the phenomenon of experience in a more systematic, methodologically sound way. On the other hand, Varela's criterion of phenomenological reduction as a necessary condition for systematic investigation of experience is too strong. Regardless of that and some other problems that research of experience faces (e.g. the problem of training, the question of what kind of participants we want to study), it is becoming clear that investigating experience seriously – from first- and second-person perspective – is a necessary step cognitive science must take. This holds especially when researching phenomena that involve consciousness and/or where differentiation between conscious and unconscious processing is crucial. Furthermore, gathering experiential data is essential for interpreting experimental results gained purely by quantitative methods – especially when we are implicitly or explicitly referring to experience in our conclusions and interpretations. To support these claims some examples from the broader area of decision making will be given (the effect of deliberation-without-attention, cognitive reflection test).

## KEY WORDS

experience, (neuro)phenomenology, reduction, decision making, conscious deliberation

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## **INTRODUCTION: THE HARD PROBLEM OF CONSCIOUSNESS**

“Consciousness is a word worn smooth by a million tongues. Depending upon the figure of speech chosen it is a state of being, a substance, a process, a place, an epiphenomenon, an emergent aspect of matter, or the only true reality.” (G. Miller as quoted in [1; p.32]). The quote of George Miller nicely describes our bafflement when we are faced with the question of what consciousness is. Even though there are many different answers to this question we seem not to be able to avoid conscious experience in explaining consciousness and human mind in general.

In his article *Facing Up to the Problem of Consciousness* Chalmers [2] divides problems of consciousness into easy and hard problems. Easy problems are those that seem to be at least in principle solvable by standard methods of cognitive science – methods that are suitable for generating computational and neurophysiological explanations of mental phenomena. If for example we want to explain the difference between sleep and wakefulness we need to explain neurophysiological mechanisms responsible for generating these two distinct states. If we are to explain different functionalities of various kinds of attention, we need to describe mechanism that makes possible these different functionalities. Or so the story goes ... But even if we were to describe mechanisms and processes that generate various cognitive functions we could, according to Chalmers (with whom I agree), still ask ourselves “[w]hy does not all this information-processing go on “in the dark”, free of any inner feel?” [2; p.203], without any conscious experience. We have come to the problem of consciousness which seems to be insolvable using standard methods of cognitive science – we have stumbled upon a hard problem indeed. According to Chalmers [2] (similarly Varela [3]) we have not and will never be able to explain *what is it like to be* [4] a human being that feels, thinks, has a body that interacts with its environment, etc., only by explaining information processes and mechanisms. Besides information processing that goes on in the brain, there also exists a subjective aspect of consciousness (and mind) – a certain subjective way in which the world presents itself to the one experiencing and interacting with it. The following question remains unanswered: “It is undeniable that some organisms are subjects of experience. But the question of how it is that these systems are subjects of experience is perplexing. ... It is widely agreed that experience arises from a physical basis, but we have no good explanation of why and how it so arises. Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does. ... If any problem qualifies as *the* problem of consciousness, it is this one.” [2; p.201].

The hard problem of consciousness, as put forward by Chalmers almost twenty years ago, still haunts cognitive science in its goal of understanding the human mind. Experience remains to be at the core of what it means to be a human being, but at the same time it seems we lack any good explanations and descriptions of the phenomenon. In this regard, the critique of the traditional computational-representational theory of mind (which and one could argue is still mainstream<sup>1</sup> in cognitive science nowadays) as a form of behaviourism is still pertinent today: “Although the information-processing paradigm was already well on its way in 1965, it had not brought much relief from behaviorism’s stranglehold on consciousness, the historical, true subject matter of psychology. The mental processes with which the newly emerging cognitive scientists began filling the “black box” were the observer's abstractions rather than the individual's conscious experiences. It was the study of the mind from the point of view of the “third” person, and in that sense did not differ greatly from the basic orienting attitudes of behaviorists.” [8; p.viii].

In his article *Neurophenomenology: A Methodological Remedy for the Hard Problem* Varela [3] proposes an interesting solution to the hard problem of consciousness, namely that of neurophenomenology<sup>2</sup>. The neurophenomenological programme is based on three essential claims: the irreducibility of conscious experience, the necessity of using first-person approaches in studying consciousness and human mind (phenomenology<sup>3</sup>) and combining first- and third-person methods in studying consciousness and human mind (neurophenomenology).

In the first part of the article<sup>4</sup> (*What kind of irreducibility are we talking about: Did Varela solve the hard problem of consciousness?*) I will discuss different types of reduction and argue that Varela actually advocates methodological and epistemological irreducibility of consciousness. I will further explain some consequences this has for the proposed “remedy” of the hard problem of consciousness. Then (second part, *Neurophenomenology and phenomenological reduction*) I will briefly present Varela’s programme of (neuro)phenomenology and its core element of phenomenological reduction which for Varela represents a necessary condition for systematic research of experience. In the third part (*Some problems of researching experience; Does Varela demand too much?*) I will argue that requirements for systematic exploration of experience made by phenomenological reduction are too strong. I will also explicate some other problems with which we are faced when researching experience: the problem of the “right” training, the problem criteria by which we could decide whether the “right” state for observing experience and reporting on it was achieved, and the problem of the difference between trained versus untrained participants<sup>5</sup>. Nevertheless, I will conclude that avoiding researching experience brings more problems than solutions and that contemporary cognitive science is in the need to take researching experience more seriously. I will support this claim in the last part of the article (*Dubious interpretations: Do we really want to avoid first-person data?*) by discussing some empirical examples from the broader area of decision making, where it is relatively obvious that not looking into the experiential part of the mind is especially unsatisfying and problematic. More specifically, I will address the effect of deliberation-without-attention and the cognitive reflection test in the context of dual process theories of cognition.

## **WHAT KIND OF IRREDUCIBILITY ARE WE TALKING ABOUT: DID VARELA SOLVE THE HARD PROBLEM OF CONSCIOUSNESS?**

According to Chalmers [2] and Varela [3] reductionistic explanations will always fail to explain the “what is it like to be” – the essence of what it means to experience something. Varela claims that if we are to explain and understand experience at least to a certain degree, we need to avail ourselves of a different research approach – we need to start using first- and second-person methods and take studying experience seriously. If we stick with reductionistic explanations we will never bridge the explanatory gap [10] between objective and subjective. With the goal of bridging this gap, Varela [3] proposes a methodological solution (neurophenomenology) which strives to combine first- and second-person methods for studying consciousness and human mind, and argues for the irreducibility of experience to some “lower” level (be it quantum or neurophysiological). But before we introduce and discuss Varela’s suggestion in more detail, we have to clarify what kind of irreducibility Varela actually has in mind.

Within the context of the question of reducibility of experience Lutz and Thompson [11] differentiate the hard problem of consciousness from the explanatory gap. They argue that the hard problem of consciousness is in fact a metaphysical question about the place of experience in nature, whereas the problem of explanatory gap is an “epistemological and methodological problem of how to relate first-person phenomenological accounts of

experience to third-person cognitive-neuroscientific accounts.” [11; p.47] Under this “weaker” interpretation of Varela [3] we have to understand the remedy for the hard problem of consciousness as an attempt of a methodological and epistemological solution and not as an answer to the metaphysical question of the ontological status of consciousness.

Lutz and Thompson also claim that Varela in fact tried to show that Chalmers’ question of “[w]hy should physical processing give rise to a rich inner life at all?” [3; p.201] originates from a false assumption about the world and the nature of cognition. Chalmers’ question presupposes a strict differentiation between physical (objective) and experiential (subjective), which is denied by Varela’s enactivist view [3, 5]. Modern phenomenology is thus many times blamed as being unscientific (unobjective, not studying the “objective” world), but according to Varela, this criticism is unwarranted, since it derives from an illusory view of science. Similarly as Kuhn [12] criticizes the thesis of objectivity of science, claiming that science is always a social endeavour, the phenomenological tradition [3, 5, 13] rejects the strict separation and opposition of objective and subjective, that objectivist science many times takes for granted<sup>6</sup> (for the discussion of these problems in the context of enactivism and neurophenomenology also see Vörös [14]). The phenomenological tradition in my opinion correctly states that studying so called objective phenomena always entails a subjective component, even more so when studying the mind. For example, the scientific community chooses problems worth studying, scientific knowledge is always subjected to verification from the side of a scientific community consisting of individual subjects who decide what belongs to the corpus of scientific knowledge and what not, etc. Nonetheless, both “standard” science and empirical phenomenology (see e.g. [3, 15]) try to achieve a methodologically strict empirical approach to studying consciousness which is open to intersubjective verification of scientists forming the scientific community. From this perspective Varela [3] defends the view that studying experience should be brought back into science. Varela’s proposal of the neurophenomenological programme can thus be interpreted as a methodological-epistemological solution of the hard problem of consciousness, but not as the solution to the problem of ontological status of consciousness. From this perspective I agree with Varela that experience is an irreducible phenomenon on the methodological and epistemological level – demanding the right methods (first- and second-person methods), level of knowledge and explanation. In what follows, I will try to explicate in more detail why experience is an irreducible phenomenon on the methodological and epistemological level.

In the context of researching experience, methodological reduction (for methodological reduction in biology see [16]) would mean that experience can be most fruitfully studied at the lowest possible level, e.g. at the electro-chemical level or the level of sub-atomic particles<sup>7</sup>. As is nicely shown by Varela [3], it is hard to imagine how one could study experience on electro-chemical or functional level of the brain and by that explain experiential, first-person perspective of the mind. Studying experience on the level of the brain using for example neuroscientific imaging techniques, and claiming that we have explained experience, is a false belief. If nothing else, when putting forward an explanation of experience, we are always referring to the experiential level about which we all have folk psychological beliefs derived from our own introspections. In this way, the thesis of methodological reduction of experience presupposes the thesis of epistemic reduction. Namely, it implies that we can explain experience using only third-person methods without stepping back to the level of experience in our explanations of data gathered by third-person methods. For the goal of studying a phenomenon is to gain knowledge and to explain the phenomenon.

In the context of researching experience, epistemic reduction (for epistemic reduction in biology see [16]) would mean that we can reduce knowledge about experience gained in the domain of phenomenology, to knowledge gained at some lower level, for example to

knowledge gained in the domain of neuroscience. Even if we had all the knowledge about experience that neuroscience can provide with its methods, our explanation of experience at this level would lack first-person experiential descriptions/explanations, which are an essential part of what we call experience. An especially tenacious problem here is the question of explanatory reduction (a sub-class of epistemic reduction). The thesis of explanatory reduction states that properties of some higher level can be explained by properties of some lower level. Even though we claimed we had explained all properties of the experiential by properties of the brain, our explanation would still not include the first-person perspective. Leaving out the experiential, first-person perspective, would render our explanation of experience incomplete, since an explanation makes sense only if it entails understanding of the phenomenon to be explained. Leaving out the first-person perspective, at least a part of the phenomenon (i.e. experience) would remain unexplained and the reduction would fail. Let us imagine we were able to give a mathematical explanation of experience and that we understood (also on the experiential level?) such an explanation, at least after we got used to the language of mathematics for describing experience. But such an explanation would always, at least implicitly, refer to our own first-person experience which is already knowledge and understanding at a “higher” level. Using concepts such as feeling, consciousness, deliberation, etc., and pretending they have nothing to do with our own (or socially shared) experiential states, is similar to pretending for example there is no such thing as environment (however we conceive of it). Similarly, neurophysiological explanations of mental phenomena as feelings, conscious deliberation, understanding, etc., necessarily include (even though many times implicitly, intuitively) our folk psychological knowledge (and understanding) of the experiential, which does not only come from studying neurophysiological substrates of the mind, but also from our own introspections.

As a result, if we are only studying experience with third-person methods, and based on that try to explain experience, it could easily happen that our conclusions and interpretations of empirical results would be false or inaccurate (as we will see on the example of attention-without-deliberation effect in the last chapter). Hence, I see no reason why we would not avail ourselves of first- and second-person methods phenomenology is offering, and at least try to say more about the experiential part of the mind.

## **NEUROPHENOMENOLOGY AND PHENOMENOLOGICAL REDUCTION**

### **NEUROPHENOMENOLOGY**

Neurophenomenology [3] is a research programme which advocates combining third-person methods of cognitive science and first-person methods of phenomenology: “...only 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. ... The key point here is that by emphasizing a co-determination of both accounts one can explore the bridges, challenges, insights and contradictions between them. This means that both domains of phenomena have equal status in demanding a full attention and respect for their specificity.” [3; p.343].

We must strive to create a dialogue between the third- and the first-person view of the human mind. In neurophenomenological studies of Varela’s school we gather data on the dynamics of experience and or instance data on the dynamics of global brain activity. After that we can start establishing correlates and bridges between the dynamics of experience and the dynamics of brain activity. This enables us to get a better insight into mutual constraints, contradictions and co-determination of both perspectives. A good example of such research is the study done by Petitmengin et al. [17]. Studying epileptic seizures and the possibility of

their anticipation, researchers nicely showed how it is possible to connect, correlate and reveal co-determinations of the “pheno-dynamic” structure (first-person perspective) and the “neuro-dynamic” structure (third-person perspective) in interictal, preictal and seizure phases. Furthermore, they showed that most subjects learn to anticipate seizures by learning to be aware of their own experience (through the process of second-person interview techniques) opening up the space for developing countermeasures and transformations. Using precise and systematic first- and second-person methods – such as interview techniques used by Petitmengin [15, 17] – and combining them with precise and systematic third-person measuring techniques, we can discover a richer and a more accurate image of consciousness and mind in general.

But because first- and second-person methods are not as developed as methods of third-person cognitive science, we need to put more resources into developing new and improving already existing tools for studying experience. “The so-called hard problem ... can only be addressed productively by gathering a research community armed with new pragmatic tools enabling them to develop a science of consciousness. I will claim that no piecemeal empirical correlates, nor purely theoretical principles, will really help us at this stage. We need to turn to a systematic exploration of the only link between mind and consciousness that seems both obvious and natural: the structure of human experience itself.” [3; p. 330].

## **PHENOMENOLOGY AND PHENOMENOLOGICAL REDUCTION**

For Varela the foundation of phenomenology “is the re-discovery of the primacy of human experience and its direct, lived quality that is phenomenology’s foundational project.” [3; p.335]. Phenomenology argues for a methodological path which does not – contrary to the objectivistic, external approach of science – reject experience, but takes it seriously with all the consequences subjectivity brings. Varela describes phenomenology as a “special type of reflection or attitude about our capacity for being conscious.” [3; p.335] Even though reflection always uncovers various conscious contents, this naïve or natural attitude which we are used to, contains and unknowingly presupposes “a number of received claims about both the nature of the experiencer and its intended objects.” [3; p.336] and by doing that veils our insight into the experiential. “The Archimedean point of phenomenology is to suspend such habitual claims and to catalyse a fresh examination.” [3; p.336].

The core of Varela’s phenomenology is phenomenological reduction (PhR) which enables a different, more open look into the experiential and its structure. PhR is an embodiment of a special manner of how to be conscious, a special way of how to approach experience and the world. It consists of four main elements: attitude of reduction, intimacy with experience (intuition), invariants (forming intersubjectively valid descriptions of experience) and training (which enables stability necessary for self-observation). In the present article I will describe briefly the first and the last element of PhR – the attitude of reduction and the necessity of training – since my critique of PhR mainly concern the first and the last.

The first element of PhR is the ability to change our attitude from our naïve, habitual natural attitude to that of reduction. “The point is to turn the direction of the movement of thinking from its habitual content-oriented direction backwards towards the arising of thoughts themselves. This is neither more nor less than the very human capacity for reflexivity, and the life-blood of reduction. To engage in reduction is to cultivate a systematic capacity for reflection on the spot thus opening new possibilities within our habitual mind stream. For instance, right now the reader is very likely making some internal remarks concerning what reduction is, what it reminds her of, and so on. To mobilize an attitude of reduction would begin by noticing those automatic thought-patterns, let them flow away, and turn reflection

towards their source.” [3; p.337] By bracketing our habitual structuring of experience and suspending our beliefs about how one should experience, the attitude of reduction enables a richer and “deeper” insight into the experiential. Such attitude is fundamentally different to uncritical (unreflective) introspection, which, according to Varela, presupposes that observing experience is simply “looking inwards”. Phenomenology, on the other hand claims, that human beings are able to shift from pre-reflective to reflective consciousness [15] in their self-observation which allows the field of experience to remain open and un-smudged by underlying theories and beliefs. “Becoming aware of the pre-reflective part of our experience involves a break with our customary attitude, which tends to be – as we saw earlier – to act without being conscious of the way we are going about it, without even being conscious of this lack of consciousness. We need to divert our attention from ‘what’, which usually absorbs it entirely, towards ‘how’.” [15; p.240] For phenomenology this shift in our attitude towards the experiential is essential for researching experience “as it is” and not “as it should be”.

But as this shift in our attitude towards the experiential does not come naturally, training and learning are of utmost importance. According to Varela [3], there is a large difference between casual observation of consciousness and disciplined cultivation of PhR. Since the state of PhR is a fragile, unstable state which is not easily attainable, one has to “cultivate the skill to stabilize and deepen one’s capacity for attentive bracketing and intuition, as well as the skill for illuminating descriptions ...” [3; pp.337-338] if one wants to achieve systematic study of experience. PhR thus represents a necessary condition for systematic study of experience – according to Varela, there is no other way than to follow the path of PhR. On one hand, the proposal of PhR as an enabling “tool” for studying experience is a well imagined ideal, but on the other hand, I believe it demands too much. If we were to accept his ideal (PhR) as a necessary condition for being able to study experience systematically, his and other first- and second-person methods would be faced with insurmountable problems and rigorous study of experience would cease to be possible.

## **SOME PROBLEMS OF RESEARCHING EXPERIENCE: DOES VARELA DEMAND TOO MUCH?**

If we take Varela’s neurophenomenological programme [3] seriously, we have to ascertain that persons researching and reporting on experience are skilled in achieving the phenomenological reduction. The first question that comes to mind, is how do we actually know the person who is self-observing is skilled enough in reaching the state of reduction repeatedly and systematically. Secondly, how do we know whether the state of reduction is stable enough to ensure satisfactory observation and reporting on what is experienced? It might seem obvious to some what it means to shift from the pre-reflective to reflective attitude, but by what criteria should we go by when judging whether this shift really occurred or not? In Varela’s and other proposals it is not quite clear how strongly should phenomenological reduction be stabilized to yield a state that would enable acquiring “right” type of data from self-observational reports. A possible answer to this problem would state that subjects only need enough training and learning in PhR. But such an answer is not satisfactory – it does not tell us what kind and how much training is necessary. For one thing, if it is possible to reach a stable state of reduction repeatedly, phenomenology should specify criteria that would help us judge whether this was indeed the case or not (Petitmengin [15] does specify these criteria to a certain degree).

In its search for an answer many phenomenologists stress the importance of studying and integrating various meditative<sup>8</sup> practices with phenomenology [15, 20]. Techniques for developing the state of mindfulness are an example [21] of “tools” for cultivating the attitude towards the experiential similar to that of reduction. Even though such methods hold much

promise in enabling better study of experience, it is not clear, how could we ascertain that a person trained in mindfulness meditation can consistently achieve the attitude of reduction and follow the path of PhR. Also, we should take into account the differences between novice and advanced meditators [22, 23]. I do not claim it is a priori impossible to follow Varela [3] in his methodological proposition. But I do claim this is partly a theoretical question of setting criteria, and partly an empirical question which is in need of a thorough investigation.

On the other hand, it seems that some methods already used in today's phenomenology can give us insights into human experience. But, if we take Varela and rigorousness of training he proposes seriously, we have to admit that today's phenomenological methods do not enable us to study experience systematically. For they mainly do not include such training<sup>9</sup>, and are in this way not so different from naïve introspection. It is questionable for example, whether the method of descriptive experience sampling (DES) proposed by Hurlburt [24] is really a good method for researching experience. Subjects get very little training (a few days) in experience sampling, self-observing and describing their own experience. Also, as criticised by Petitmengin [15], DES does not enable subjects to direct their attention to the process of constructing what is found in the field of experience (changing the attitude from "what" to "how"), DES does not lead subjects through various dimensions of experience and DES does not enable increasing the precision of self-observation. Hurlburt and Heavey themselves admit that "DES is not interested in the obscure or the hard to detect. It is interested only in the obvious, the easily apprehensible." [25; p.119].

DES might bring different data than the method prescribed by Varela, but this does not mean it cannot be fruitfully used in researching experience. It has for example already broadened our understanding of different kinds of experiential phenomena [26], it has deepened our understanding of thinking [27, 28] and feelings [29], etc. On the contrary, I believe that the use of diverse rigorous methods is in fact advantageous, even necessary, since it enables comparison of results obtained on different levels and enables mutual constraining already among different first- and second-person methods<sup>10</sup>. From this perspective Varela's requirement of phenomenological reduction – which I think DES for example does not even try to achieve – as a necessary condition for systematic research of experience is too strong and even unacceptable.

Second-person methods (interview techniques) – also partly used in the context of DES – on the other hand enable subjects to a certain degree (or so its proponents claim [15]) to move beyond the problem of training in phenomenological reduction by guiding them through the process of self-observation and reporting on experience. Even though the interview techniques described by Petitmengin [15] are well developed, the question of whether subjects actually attain the state of phenomenological reduction as described by Varela [3] or the state of mindfulness as described by meditative traditions, remains open. I strongly doubt that directing subjects alone can overcome the problem of subjects being relatively unskilled in self-observing and reporting on experience. It is an empirically open question whether second-person methods lead to experiential reports (data) similar or different to those gathered from subjects that underwent long-term and rigorous training in techniques of self-observation<sup>11</sup>. (Markič [30] discusses similar problems in the context of comparing heterophenomenology and phenomenology).

Furthermore, it seems that if we wish to study mistakes made by untrained subjects (or just how untrained subjects introspect) in tasks that include self-observation, self-awareness and subjective reports, trained subjects are not really an option. An example where we might get different results from trained vs. untrained subjects are Johansson et al.'s [31] experiments on choice blindness. They found out that untrained – the "usual" subjects – in fact do not notice



the change in chosen images of faces and proceed to state reasons for choices they did not make (unbeknownst to subjects, the experimenters switched the images). Even when faces on images were not alike and when subjects had unlimited time for making their choices, approximately 60 % of them still did not notice the switch<sup>12</sup>. The choice blindness phenomenon was also shown in other choice scenarios, from choosing jam [32], to voting choices [33]. These experiments nicely show how we act without being aware of how we act and report of our experience without being aware of what we actually report about.

If phenomenology is right and the right kind of training in self-observation would enable us to confabulate less (since our self-observations would not be as laden by our preconceptions, beliefs and theories about our experience), it would be interesting to do the same experiments with subjects trained in self-observation (e.g. in phenomenological reduction). If phenomenology is right in its assumptions, than results should be different at least in some regards. If this turned out to be true, it would mean that trained subjects cannot be used in experiments where we wanted to study self-observation, self-awareness, subjective reports, etc., i.e. the experience of “average”, everyday subjects.

But despite many problems with which studying experience is faced, today’s phenomenological methods described above are elaborate and rigorous enough that we could start using them more widely. This would enable the comparison of data obtained by a number of different researchers and comparison of data obtained in similar studies. It is not the use of first- and second-person methods that is problematic. The challenge lies in developing better and better methods for researching experience without which our picture of the mind will remain incomplete or even false.

## **DUBIOUS INTERPRETATIONS: DO WE REALLY WANT TO AVOID FIRST-PERSON DATA?**

Not taking into account first-person, experiential data can lead to false conclusions and interpretations of results. A good example is the deliberation-without-attention effect<sup>13</sup> (DWA) which was “discovered” in the context of the unconscious thought theory (UTT) [35] by Dijksterhuis et al. [36]. Their experiments supposedly showed that unconscious decision making in the context of complex choices leads to better choices than conscious, deliberate decision making. In one of the experiments participants had to choose between four cars. In the first condition they read the description of cars with four characteristics (simple choice scenario) in the other twelve (complex choice scenario). After reading description of cars participants were divided into further two conditions: one group was instructed to think for four minutes about their choice (the condition of conscious thinking with attention on choice (CT)), the other group was instructed to solve anagrams for those four minutes (the condition of unconscious thinking without attention to choice (UT)). After four minutes both groups were instructed to choose the best car (the car having most positive characteristics<sup>14</sup>). In the context of the complex choice scenario results showed that participants in the UT condition chose better cars than participants in CT condition. Authors conclude the article with the following sentence: “Although we investigated choices among consumer products in our studies, there is no a priori reason to assume that the deliberation- without-attention effect does not generalize to other types of choices—political, managerial, or otherwise. In such cases, it should benefit the individual to think consciously about simple matters and to delegate thinking about more complex matters to the unconscious.” [36; p.1007].

Even though the question of generalizability of results of the described study to other types of choices (political, managerial, etc.) is not as relevant for the present article, it is worth mentioning, since it shows how naïve and unimaginably overgeneralised the statement

actually is. Choices they studied do not include strong emotional factors, they are done in a safe environment of a laboratory, they are relatively simple, do not include other people and interactions with them, etc., which are all characteristic of more “social” choices (such as political and managerial). Such overgeneralization can potentially have harmful influence on approaching various social issues and decisions.

This experiment is strictly speaking, questionable already at the level of defining positive and negative properties of cars, since the experimenters did not study (also first-person), a) how much properties are comparable and secondly, whether and how they are perceived by participants. Furthermore, Waroquier et al. [37], in later studies of the phenomenon of DWA, showed that approximately 70% of participants (they asked them) chose the best car already in the phase when they were presented with descriptions of cars, i.e. even before they were divided into the CT and UT condition. This means that the statement “unconscious thinking leads to better choices in complex choice scenarios” is simply false<sup>15</sup>. The experiment of Dijksterhuis et al. [36] did not study what it intended to. Moreover, Waroquier et al. [37] showed that deliberate, conscious thinking led to better choices if participants were instructed to remember descriptions instead of being instructed to form impressions about products, which is contrary to predictions of UTT. Last but not least, Waroquier et al. did repeat results of Dijksterhuis et al. showing that participants were less satisfied with their choice in the CT condition [36, 37]. But in Waroquier et al.’s study [37] that only turned out to be true for participants with low level of indecisiveness<sup>16</sup>. On the other hand, participants who showed higher level of indecisiveness were more satisfied with their choices in the CT condition [37]. As has been shown many times in the past, the picture of mental phenomena and mind in general is in fact much more complex than sometimes believed.

In cases of empirical research where differentiating between conscious and unconscious (thinking, etc.) is important, and where we have to know whether subjects are conscious of something or not, we need to avail ourselves of methods that allow us to actually study this – considering subjective reports is necessary. This would shield us, at least to a certain degree, from putting forward ungrounded statements and interpretations of phenomena that are partly unavoidably experiential (see chapter on methodological and epistemic irreducibility of experience). Even though Waroquier et al. [37] did not use any rigorous methods for studying the experiential part of thinking processes in decision making, first- and-second-person methods described in the previous chapter – even though not ideal – seem to be well fitted for such research.

A similar example is the cognitive reflection test (CRT) developed by Frederick which consists of three simple questions: “1) A bat and a ball cost 1,10 US\$ in total. The bat costs 1,00 US\$ more than the ball. How many cents does the ball cost? \_\_\_\_\_ cents; 2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? \_\_\_\_\_ minutes; 3) In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? \_\_\_\_\_ days.” [39, p.27] The CRT is on purpose designed so as to elicit wrong, fast, intuitive and impulsive answers<sup>17</sup>. Frederick – in the line with dual process/system theories of cognition (e.g. [40-42]) – tries to infer that participants who get most answers wrong accept these intuitive answers without further (conscious) deliberation, whereas participants that get more answers correct use more reflective processes<sup>18</sup> (conscious and deliberate processes). His hypothesis might turn out to be correct, but the inference from this simple test to the mode of thinking participants use to solve questions on the test is only indirect. The step from the fact that CRT is solved more correctly by some than others, to the statement that those that solve the test better, use more conscious, reflective “mode” of thinking, is rather large. We could come closer to filling in this gap in our knowledge (not knowing how participants from their subjective perspective really are

solving the test; what kinds of modes of thinking they are using; how much is conscious deliberation involved) by studying the dynamics of experience in a more thorough manner, for example by using systematic second-person interview techniques.

## CONCLUSION

In the article I tried to show that Varela's neurophenomenological programme [3] does not solve the hard problem of consciousness, but it does represent a good proposal of how to tackle the hard problem on the methodological and epistemological level. Even though I believe his phenomenology (especially the requirements of phenomenological reduction) demands too much, his basic claim that we have to start studying experience, if we are to understand and explain consciousness and mind in general, is in place. I argued that we should not limit ourselves to one "right" method of studying experience. On the contrary, using many different well developed systematic methods (e.g. DES and various interviewing techniques) would in my opinion enrich our understanding of the mind, since different methods would give us insight into different aspects and levels of the experiential. If we are aware of limitations and assumptions of different first- and second-person methods (same of course holds for third-person methods) and if we invest into developing new and bettering already existing methods, we are on a good way of understanding what seems most intimate to humans – the phenomenon of conscious experience. In this way I agree with Varela that "[t]he nature of 'hard' becomes reframed in two senses: (1) it is hard work to train and stabilize a new methods to explore experience, (2) it is hard to change the habits of science in order for it to accept that new tools are needed for the transformation of what it means to conduct research on mind and for the training of succeeding generations." [3; p.347] Avoiding the subjective, first-person aspect could lead us to a simplistic, incomplete or even false understanding of the mind, which I tried to show on examples from the broader area of decision making. These considerations and examples should remind us that we in fact cannot avoid experience in studying the mind. If we will not at least try to study experience systematically, as part of everyday research practice, "the riddle of the place of experience in science and world will continue to come back, either to be explained away or to be re-claimed as too hard, given what we know." [3; p.347].

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## REMARKS

<sup>1</sup>There are of course many theories of cognition that strongly criticise this classical view – most prominently the proponents of enactivism and other more radical theories of embodied cognition, see e.g. [5-7]. But looking more closely at mainstream neuroscientific or cognitive psychology's theories and experiments one hardly finds systematic consideration of experience.

<sup>2</sup>By neurophenomenology Varela is not only referring to the "neuro-part" of cognitive science but to all relevant scientific correlates of experience and approaches to studying the mind that are used in cognitive science.

<sup>3</sup>By phenomenology I refer to empirical, not Husserl's phenomenology, although the latter forms a theoretical basis of the former.

<sup>4</sup>This article is partly based on [9].

<sup>5</sup>Phenomenological tradition would call persons participating in phenomenological experiments co-researchers and not subjects or participants. An important difference which I will not delve into in the present article.

- <sup>6</sup>It is not completely clear to which degree the difference between objective and subjective is eliminated in the phenomenological tradition – completely or just partly?
- <sup>7</sup>One could of course argue that the lowest possible level for studying experience is actually the level of subjective experience but in fact in cognitive science it is many times implicitly implied that the appropriate level (and methodological tools that go with it) is some level of the brain.
- <sup>8</sup>For comparison between traditional meditative practices and western views on meditation see e.g. Walsh and Shapiro [18] and Lutz, Dunne and Davidson [19].
- <sup>9</sup>They include some training but not really much in comparison to years and years of training in self-observation of various meditation traditions.
- <sup>10</sup>It would be interesting to see whether different systematic interview techniques would give us a similar “landscapes” of modalities of experience as described by Heavey and Hurlburt [25].
- <sup>11</sup>A related question is how much (if at all) it is problematic if the mediation of the interviewer and/or being skilled in self-observation changes the experience being observed.
- <sup>12</sup>Experimenters took into account all references to the switch in the post-experiment interviews.
- <sup>13</sup>This example is also mentioned by Froese et al. [34].
- <sup>14</sup>One had 75 % of positive characteristics, other two 50 %, and one 25 %.
- <sup>15</sup>For a very relevant critique of the statement that unconscious decision making leads to better choices than conscious decision making see also Baumeister et al. [38]. Baumeister et al. stress the important difference between direct and indirect influences of conscious thoughts on our behaviours, where indirect influences of conscious thoughts are more prominent and stronger than direct ones. In my opinion this is a crucial difference researchers should take into account when studying the role consciousness in various cognitive processes and behaviour.
- <sup>16</sup>Data about satisfaction and indecisiveness were gathered by a questionnaire.
- <sup>17</sup>The intuitive, impulsive (and wrong) answers which are supposed to come to our minds quickly and are usually accepted without any further deliberation are: (1) 10 cents, (2) 100 minutes and (3) 24 days.
- <sup>18</sup>Even top-end university students, such as students of MIT answered in average only 2,18 questions correctly, whereas low-end university students, such as students from the University of Toledo answered only 0,57 questions correctly. The idea is that top-end university students use more reflective, deliberate processes when solving such tasks.

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## ZAŠTO TREBAMO JOŠ SUSTAVNIJE PROUČAVATI ISKUSTVO: NEUROFENOMENOLOGIJA I MODERNA KOGNITIVNA ZNANOST

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### SAŽETAK

U radu zastupam gledište kako kognitivne znanosti trebaju sustavnije rabiti metode prvog i drugog lica, kao dio svakodnevnih istraživačkih prakse, ako žele razumjeti ljudski um u cjelosti. Neurofenomenološki program kojega je predložio Varela kao način rješavanja čvrstih problema svjesnosti (npr. problem iskustva) ne omogućava to razumijevanje na ontološkoj razini. No, taj program predstavlja primjereno polazište za sustavnije, metodološki potpunije razmatranje fenomena iskustva. S druge strane, Varelin kriterij fenomenološke redukcije kao nužnog uvjeta sustavnog istraživanja iskustva je prejak. Neovisno o tome i nekim drugim problemima na koje se nailazi prilikom istraživanja iskustva (npr. problem treniranja, pitanja koju vrstu sudionika želimo proučavati), postaje jasnije kako je ozbiljno istraživanje iskustva – iz perspektive prvog i drugog lica – korak kojeg kognitivna znanost mora napraviti. Ovo je posebno prisutno kod istraživanja pojava koje uključuju svjesnost i/ili kod kojih je razlikovanje svjesnog i nesvjesnog procesiranja presudno. Nadalje, prikupljanje iskustvenih podataka bitno je za interpretiranje eksperimentalnih rezultata prikupljenih kvantitativnim metodama, posebno ako se izravno ili neizravno pozivamo na iskustvo u zaključcima i interpretacijama. Za potvrdu ove tvrdnje navedeni su primjeri iz šireg područja odlučivanja (učinak rasprave bez pozornosti, test kognitivne refleksije).

### KLJUČNE RIJEČI

iskustvo, (neuro)fenomenologija, redukcija, odlučivanje, svjesno promišljanje