Interdisciplinary Description of Complex Systems 13(4), 525-533, 2015

A BETTER METAPHOR FOR UNDERSTANDING CONSCIOUSNESS?

Urban Kordeš*

Faculty of Education – University of Ljubljana
Ljubljana, Slovenia

DOI: 10.7906/indecs.13.4.4
Regular article

Received: 7 October 2015.
Accepted: 19 October 2015.

ABSTRACT

The article is an attempt at – yet once again – finding a source of more fitting metaphor for the study of consciousness inside the framework of quantum mechanics. It starts by doubting into the possibility of the naturalization of research of experience. Proceeding from that it searches for a more adequate way to implement Varela's idea about a balanced bridging the explanatory gap. By comparing certain positions of the Copenhagen interpretation of quantum mechanical phenomena with the properties of introspection, it tries to point out that there might exist better epistemic positions for understanding consciousness than the ones most frequently used today.

KEY WORDS

introspection, phenomenology, quantum mechanics, probing, measurement

CLASSIFICATION

APA: 2340, 2380, 2630
JEL: Z13

*Corresponding author, η: urban.kordes@guest.arnes.si; +386 1 5892 327;
Faculty of Education – University of Ljubljana, Kardeljeva ploščad 16, SI – 1000 Ljubljana, Slovenia

INTRODUCTION

In his seminal article *Neurophenomenology: a methodological remedy for the hard problem,*Varela [1] points out the problem of absence of the first-person perspective in contemporary cognitive science. The author suggests a strategy of bridging the explanatory gap: a balanced, mutually inspiring research both from the first- and third-person perspective. Despite his explicit arguing for the equality of both approaches, only three years later Varela encouraged the publishing of the compendium *Naturalizing Phenomenology: Issues In Contemporary Phenomenology and Cognitive Science* [2] in which the editors (among them also Varela) argue for the integration of phenomenology into an explanatory framework in the way that the only properties acceptable would be the ones that are compatible with the properties admitted by natural science. Phenomenology is thus welcome, but only after accepting the standards of measuring demanded by natural science.

Dan Zahavi [3] presents a comprehensive analysis of the possibilities for including first-person positions into cognitive science. He concludes that from the point of view of transcendental phenomenology (i.e. phenomenology which is not synonymous with a type of empirical research of experience, as understood by most first-person research methods in contemporary cognitive science) such inclusion is impossible. In many aspects, the project of naturalization of phenomenology is in direct opposition to the objectives of phenomenology as a research project which does not settle for non-critical acceptance of our everyday intuitions about the nature (and existence) of the world. "For Husserl, natural science is (philosophically) naive. Its subject matter, nature, is simply taken for granted. Reality is assumed to be out there, waiting to be discovered and investigated" [3; p. 337]. From this point of view phenomenology is "unnatural", as it "calls for a reflective stance quite unlike the one needed in the positive sciences. This, of course, is one reason why the phenomenological attitude has frequently been described as an unnatural direction of thought. But to describe phenomenology as unnatural is of course also to deny any straightforward continuity between philosophy and natural science" [3; p.337] (also [4; p.14]).

While Zahavi sympathises with the idea of including the first-person approach into cognitive science, he also points out that the above-mentioned authors of the project of naturalization also called for a reexamination of the concepts of naturalization. "They also speak in favor of recasting the very idea of nature, and of the need for modifying our modern conception of objectivity, subjectivity, and knowledge. In other words, why let the reductionists monopolize the concept of naturalism? Most revealing of all, however, is perhaps a reply given by Varela to a question that I posed to him at a meeting in Paris in 2000: The volume *Naturalizing Phenomenology* was only intended as the first part of a larger project. The second complementary volume was planned to carry the title *Phenomenologizing Natural Science*" [3; p.342]. Thus it would appear that Varela was quite serious when talking about the balanced bridging. Unfortunately, the second part of Varela's project – the phenomenologization of natural science – was hindered by his untimely death in 2001. It is well known that since then the use of first-person data in cognitive science has gained some recognition, alas in the vast majority of cases merely as supplement to third-person research. It is not yet clear how a more balanced structure could be conceived. In *Neurophenomenology* Varela offers us mere glimpses into how the first- and third-person side might inform each other. Instead of correlational research, Varela envisions a more reconciliatory concept of 'mutual constraints'. It is not yet entirely clear how such mutual informing should take place. It has certainly not been clearly demonstrated by empirical studies so far.

At this time, cognitive science has not yet succeeded in appropriately including first-person data. Thus the conclusion reached by Roy et al. [5; p.7] that cognitive science is "a theory of

the mind without being a theory of consciousness. It is a theory of what goes on in our minds when they are cognizing without being a theory of what it is like to be a cognizing mind" is still valid. Later on I suggest an alternative starting point which might help unify first- and third-person research. Following the example of the strategy which enabled the very emergence of cognitive science as an interdisciplinary area, I discuss the possibility of a new metaphor which could be relevant for both sides of the explanatory gap.

THE MANIFOLD FACES OF QUANTUM MECHANICS

A metaphor that might allow for a more holistic research of the mind will be looked for in quantum mechanics. The idea for seeking inspiration for theories of consciousness in the strange laws governing the quantum world is by no means a new one. Andrej Ule [6] gives an excellent overview of the attempts to explain quantum reality on the one hand and theories of consciousness frequently related to them on the other one. He mentions that as early as 1923 the biologist Alfred Lotka has suggested some connections between the laws of quantum mechanics and certain properties of consciousness. Quantum mechanics has acted as a kind of source of hope and inspiration for numerous researchers of consciousness ever since. Ule concludes that their positions can vary widely: anything from enthusiastic acceptance of the quantum basis of human consciousness to outright rejection of such a possibility and even ironic disregard for any connection between the two as absolute nonsense.

According to Ule [6], the debate about the connection between quantum physics and consciousness can be divided into three main lines of thought:

a) searching for the origin of consciousness in the quantum (or even subquantum) world;
b) attempts to understand the influence of consciousness on quantum mechanical measurements (the question if quantum physics demands the presence of a conscious observer);
c) notions about the parallels between quantum mechanical (physical) reality and consciousness as two separate aspects which nevertheless share a common origin, or as one aspect viewed from opposite perspectives.

Ule adds that beside these, many other questions arise as well, like for example: does the human brain include some special quantum mechanic processes which are responsible for the emergence of consciousness; or is there some special type of psycho-physical interaction between consciousness and the reality of microphysics; or does such an interaction reach beyond the horizon of naturalistic explanations; or could we explain free will by referring to quantum indeterminism etc. [6].

Ule mentions following reasons for the popularity of quantum mechanics for considerations about consciousness:

i) quantum physics as the fundamental physical theory also represents the fundamental theory of consciousness – on condition that we accept the assumption of the natural origin of consciousness;
ii) in case we do not accept this assumption, quantum physics might nevertheless appear even more appealing for thinking about consciousness. Ule quotes the (dualistically inclined) opinions of some prominent quantum physicists about quantum mechanics in itself demanding the existence of conscious observers, i.e. it is impossible to formulate it adequately in the absence of such consciousness;
iii) unlike all other theories of natural science, quantum mechanics does not adhere to determinism and causal explanation of phenomena (or at least it appears so), thus allowing for certain components which allow for the existence of free will (Ule even claims that they appear slightly 'spiritual'). Among such components the most appealing and weird are: quantum indeterminacy, the uncertainty principle, the strong holistic nature of

quantum mechanic states, inseparability of the observer and the observed (measured) quantum phenomenon, momentary or at least incredibly fast 'leaps' from very coherent, mutually consistent changes in quantum objects to chaotic processes, quantum entanglement and nonlocality (regardless of the spatial distance among objects, the changes in their physical states stemming from some common quantum system always occur simultaneously, sometimes even reaching into the future);

iv) as one of the possible reasons for the appeal of quantum physics Ule also mentions the fact that "quantum physics, despite its incredibly sophisticated mathematical apparatus, continuously gives the impression of incompleteness, as if begging for some additional 'interpretation'. In this, a certain level of anthropomorphism, i.e. interpretation by using analogies with the human mental world, is virtually inevitable. To many it would appear that due to its mysteriousness, quantum mechanics can only be related to the similarly mysterious phenomenon of consciousness. Neither quantum mechanics nor consciousness can be reduced to or included into the world of 'macrophysics' governed by classical physics. This gives rise to the assumption that one mystery might be explained by another, at least by finding parallels between the two if not otherwise" [6; p.68].

Here I might venture to add one more reason: conclusions (or even 'forced thoughts') implied by certain properties of quantum mechanics, despite being remote from our assumptions about the functioning of the 'outer' world, are quite similar to the anatomy of our experience. I hope that in the following section I will be able to demonstrate that this 'reason' might not be as speculative as it may seem at first sight.

Most attempts at relating consciousness and physics originate in non-physical circles. Most physicists do not concern themselves with the deeper meaning of the equations they use. This has become especially obvious in the last decades, ever since the interpretation that the observer effect (i.e. the role of consciousness in measurement) can be explained away with the so-called quantum decoherence has become dominant – a principle explaining the meeting of the micro and the macro world without referring to consciousness. Nevertheless, some physicists are still convinced that the only way to resolve some of the fundamental problems of physics today is to rethink its ontological fundament. Their discussions mostly revolve around the question how to preserve a minimal version of realism in the face of all the weird laws of the quantum world. I believe a discussion of fundamental assumptions is very much necessary and I hope we will soon witness an attempt at a physical theory which would make a step into the direction hinted at by some of the quantum considerations – and thus radically give up realistic presuppositions. Perhaps Varela's idea of the phenomenologization of natural science might represent an appropriate basis for that?

This text however has no such ambitions. It will not delve into ontological speculations. Instead, it compares certain quantum physical patterns to phenomenological patterns. Ule warns us about the danger of interpreting quantum laws, especially when trying to apply the insights and doubts of quantum physics in the area of research of consciousness. As he says: "Thus anyone trying to write about these topics will find themselves on a slippery slope of scientifically acceptable assumptions from which one might quickly slip into a sea of incontrolable speculations where any thesis about the above-mentioned questions and issues proposed by anyone, while having very eloquent and vibrant metaphors and some fervent advocates and equally determined opponents, has very few convincing arguments" [6; p.67].

I utterly agree with Ule's warning. I believe that 'eloquent and vibrant metaphors' might quickly turn out to be misleading by offering us a false feeling of comprehension or even explanation. Nevertheless, this is exactly what I will attempt to achieve. From the history of cognitive science it is well known that a good metaphor can be very useful in this interdisciplinary field (even if it does not necessarily give an explanation).

LEAVING BEHIND THE SPLIT BETWEEN OBSERVER AND THE OBSERVED[1]

Most physicist swear upon the so-called Copenhagen decree: "Shut up and calculate" – the realization that there is no point in thinking about the ontology behind quantum phenomena, which are clearly very weird and unfathomable. What really matters to physics is that the measurements fit equations and models. The Copenhagen interpretation can be seen as a ban for physicists to consider philosophical (or, more precisely, ontological) questions. That was the position, for example, of Albert Einstein and David Bohm, who spent a large part of their careers fighting against such interpretations. Most physicists obey the "Shut up and calculate" directive by quietly presupposing a realistic notion of the world: they believe they are measuring and exploring *something* from the point of view of a measurement-independent observer. It should be pointed out that such physicists do not follow in the footsteps of Bohr's understanding of the Copenhagen interpretation. Bohr was anything but a philosophically naive physicist who would wish only to calculate while disregarding any wider perspective. Quite the opposite, Bohr indulged in intensive study of philosophy, especially the ideas of the Danish philosopher Harald Høffding, in which he found inspiration for some of his suggestions about the interpretation of the formalisms of quantum physics. To him, the ban on the discussion of ontology was the result of the realization that the observed reality is the only thing we can say something about with certainty (it is thus much better to talk about observables rather than measurements in quantum physics). This insight seems very close to Husserl's realisation about the primary nature of experience and the importance of accepting experience as it is given.

Following the above mentioned parallel, I will attempt to construct my proposition: to research physics through the observable and consciousness through phenomenal data – experience as it is given. We are thus talking about quantum physical observations, which might as well be phenomenological observations. We have given up ontological discussion in order to focus on the overview of epistemological patterns.

ILLUSION OF THE STREAM OF CONSCIOUSNESS OR THE STREAM OF EVENTS?

Dan Dennet and later Susan Blackmore famously deny William James' intuition of the existence of the stream of consciousness. In the multiple drafts theory by D. Dennett, "there are no fixed facts about the stream of consciousness independent of particular probes" [7; p.138]. Like Dennett, Susan Blackmore [8] also points out that in the absence of probing there is no need for categorizing mental processes into conscious and unconscious ones. The answer to "what it is like to be" exists only when we inquire about it. It is the probing itself which creates the feeling of a stream of consciousness. Introspection is here regarded as the probing of potentiality, or – to start using physical metaphors – a probability cloud of experience which forms the result: the subject's belief about experience. This is quite similar to a quantum probability function which only crystallizes into concreteness when probed (measured).

MEASUREMENT, INTROSPECTION, PROBING

Two of the most common objections against the use of introspection as a form of scientific research technique are the so-called subject-object split and the excavation fallacy. The first objection points out that in introspection the demarcation line between subject and object becomes unclear. Who (or what) is researching what (or whom)? The latter one is about how the experience becomes distorted by the very act of introspection itself. Phenomenologically speaking, observed or attended experience is definitely not the same as unattended and this change is normally considered as a "disturbance".

Bitbol and Petitmengin [9] attempt to bypass such objections by rethinking the epistemology behind the act of introspection. They roughly follow the phenomenological line of thinking by rejecting the understanding of introspection as an act of dividing the field of experience within which one segment of consciousness (the subject) observes another distinct segment (the object). Instead, introspection is perceived as a full-fledged new experience – as opposed to it being merely a passive reproduction of parts of experience which exist *an sich*, independently of the act itself.

Thinking about experience it is often tempting to adopt an objective viewpoint which presupposes that experiential phenomena exist independently of the process of observation. Such a view promotes the tendency to study experience *an sich* and prevent the contamination of the results of observation. Such conceptions present a vantage point for the above-mentioned objections. If introspection is viewed as an entirely new experience, such objections become irrelevant, since the definition no longer contains an independent past experience *an sich* that could be compared to the belief about past experience.

This is not to say that introspection does not have a very special epistemic status (distinguishing it from other approaches to the study of mind and the world). This status however cannot be grounded in its accuracy or correctness – instead it stems from its unique intention to see beyond everyday theories and beliefs about experience and contemplate lived experience in its pure form. Edmund Husserl [4] used the expression *natural attitude* to designate the totality of presuppositions and theories commonly applied in our apprehension of the world. According to him, pure contact with experience is possible only by discarding this natural attitude. Husserl denominated the process of such contemplation of experience as *phenomenological reduction*. It is this act of intending to bracket the natural attitude gives introspection its special epistemic status and not its alleged ability to achieve the split between the object and the subject (of the "measurement"). The very nature of introspection is a transformative one (and not passive, as one would expect from any good measurement): it is the endeavour to disregard the prism of assumptions implied by the natural attitude, thus attempting to transform the naïve view of experience into a reflective one [1]. Thus, the act of introspection is not a second-order addition to experience or its disturbance, as perceived by many researchers.

The demonstrated interdependence of data and the process of acquiring it is analogous to the situation encountered in quantum mechanics, where prior to the measurement a particle only exists as a distribution of probabilities of the states in which it might be encountered. It is the very act of measurement that causes the so-called collapse of the wave function by which a particular state (among all the possible ones) is determined. In a way, the exact reality of the particle only comes into being once it has been measured. Due to this inseparability of the measured phenomenon and the act of measurement itself, Niels Bohr (in [9]) proposed to replace the idea that measurement in quantum mechanics disrupts the measured phenomenon by the interpretation in which the phenomenon is co-defined by the conditions of its measurement. According to such understanding, the measurement does not disturb, but rather determine the phenomenon. Similarly, in our conception of introspection we refuse to perceive experiential data as existing *an sich*, independently of the process of introspection and thus prone to being contaminated by it. Instead, the data itself is grounded in the introspective process. Any objections about the contaminating nature of introspection thus lose their value. Instead, the act of introspection is seen as co-defining experience. Horizons of introspection are perceived as a characteristic of both the measurement instrument and the act of measuring itself, indistinguishable from the measured phenomenon which they thus do not contaminate but rather co-determine.

UNCERTAINTY PRINCIPLE AND THE CONSTRUCTIVE PROCESS OF THE EMERGENCE OF AN OBSERVABLE

This analogy of quantum entities as a composite of measurement might be expanded even further. In quantum mechanics, measuring causes the so-called collapse of the wave function. From a state in which all that is known is the probability distribution of individual states in which the researched phenomenon could be encountered, the collapse selects one of these states and changes it from probable into actual, just like the questioning tackles the gist or the feeling of being able to answer into an actual answer. Probing selects a part of the cloud of the feeling that the answer is in reach and carves out the answer. Thanks to Schroedinger's uncertainty principle, we know that in quantum mechanics we can never see all of the aspects of the observed entity. For example, one must decide whether to measure the properties of a particle or a wave. Choosing one (e.g. its position), this can be measured with great precision, but only at the expense of the other one of the complementary variables (e.g. momentum), about which in this case we can find out nothing at all. Or we could measure both at the same time, but with much less precision. The analogy with the gesture of becoming aware is evident: the question determines the answer. The probing determines or rather co-creates the resulting belief about experience. One can focus only to a limited number of "parameters". The act of introspection is always marked by the introspector's presuppositions of what is to be observed, the so-called *horizon*, and it is hard to imagine how such a horizon could entail the totality of all possibilities (aspects) of human experience. It always picks just one aspect and dismisses the others. One could even envision pairs of complementary aspects of experience, but that would exceed the aim of this article.

The well-known physicist John Archibald Wheeler once attempted to describe quantum reality, the process of the collapse of the wave function, by using the metaphor of the game of twenty questions. We believe this metaphor is also very appropriate for describing the iterative, self-referential process of creating belief about (past) experience. Twenty questions begins when one of the players (let us call him the inquirer) leaves the room. The others then select an object, a person, an animal etc. The aim of the inquirer is of course to discover what it was that the other players have selected. She disposes with twenty questions by which she tries to pinpoint the object in question. Wheeler was convinced that this might be a good description of the collapse of the wave function – provided that a minor twist be added to the game: in Wheeler's version, when the inquirer leaves the room, the other players do not select an object. All other rules apply. The inquirer, believing that somewhere in the heads of the other players there exists a desired object, starts asking questions, thus narrowing down the space of the potential conclusions of the game. The participants are bound to take account of all previous answers – every new answer has to be consistent with all previous ones. The final answer is thus enacted through an interchange of questions and answers. Every question co-determines the answer, every answer narrows down the set of possible questions. This process might in the end bring us to a point in which only one entity is possible, but it just as well might not, in which case the answer is left hanging.

To speak about an answer in itself existing before the probing has started thus becomes pointless. In Garfield's words (as cited by Bitbol and Petitmengin): "Indeed, observational, temporal, and interpretative distortions can only be called 'distortions' with respect to experience as it is in itself, previous to any attempt at observing, catching, and interpreting. In other terms, the previous objections rely on some version of the myth of the 'given'" [10; p.270]. Despite giving up the notion of a given experience, similarly to quantum mechanics we remain stuck in the dialectics emerging "between (a) the actual inseparability and (b) the alleged necessity of separation between subject and object" [9; p.177].

The list of parallels does not end here. It could be a topic for an entirely different discussion to consider the oscillations between the epistemic position of natural attitude characteristic of our everyday life, and the more reflected, philosophical positions (like constructivism etc.) It would be very easy to compare such "oscillations" with Bohr's observations about the "dialectic" between "(i) the situation of an introspector who wishes to observe herself by splitting into a subject part and an object part, and (ii) the situation of an experimenter in quantum mechanics who is (instrumentally and interpretationally) intermingled with microscopic phenomena, yet wants to observe them. In both cases, said Bohr, one witnesses a kind of dialectic between (a) the actual inseparability and (b) the alleged necessity of separation between subject and object" [9; p.177].

CONCLUSION

The objective of this article is to examine the possibility of a new metaphor for the research of consciousness. I have compared (some of) the Copenhagen interpretations of the weird consequences of accepting quantum formalism with the (equally unintuitive) characteristics of the act of introspection. The article takes quantum discourse as a starting point, but one could as well start from the other side – from phenomenological considerations. In this spirit, let me conclude with a quote from Zahavi [12; p.336] in which he summarises Husserl's position: "Frequently, the assumption has been that a better understanding of the physical world will allow us to understand consciousness better and rarely, that a better understanding of consciousness might allow for a better understanding of what it means for something to be real. However, one of the reasons why the theory of intentionality has often assumed a central position in phenomenological thinking is exactly because a study of the world-directedness of consciousness has been claimed to provide us with insights into not only the structure of subjectivity, but also into the nature of objectivity. That something like a conscious appropriation of the world is possible does not merely tell us something about consciousness, but also about the world."

Could it be that by studying consciousness we might actually learn about the world?

REMARK

[1]The inspiration for and a part of this part of the text is taken from the yet unpublished article by Urban Kordeš and Ema Demšar entitled *What Is It Like To Answer the Question 'What Was It Like…'?*.

ACKNOWLEDGMENT

I would like to express many thanks to Ema Demšar and Florian Klauser who enabled the space for emergence of some of the presented ideas and also offered technical assistance. Also, profound thanks to Jaka Andrej Vojevec for help with translation.

REFERENCES

[1] Varela, F.J.: *Neurophenomenology: A methodological remedy for the hard problem.* Journal of Consciousness Studies **3**(4) 330-349, 1996,

[2] Petitot, J.: *Naturalizing phenomenology: Issues in contemporary phenomenology and cognitive science.* Stanford University Press, Stanford, 1999,

[3] Zahavi, D.: *Husserl's phenomenology.* Stanford University Press, Stanford, 2003,

[4] Husserl, E.: G*eneral introduction to a pure phenomenology.* Kluwer Academic Publishers, Boston, 1982,

[5] Roy, J.-M.; Petitot, J.; Pachoud, B. and Varela, F.J.: *Beyond the gap: An introduction to naturalizing phenomenology*.
In: Petitot, J.; Varela, F.J.; Pachoud, B. and Roy, J.-M., eds.: *Naturalizing Phenomenology*. Stanford University Press, Stanford, 1999,
[6] Ule, A.: *About the Quantum-mechanical model of consciousness*. In Slovenian.
Poligrafi **16**(63-64), 67-98, 2011,
[7] Dennett, D.C.: *Consciousness Explained.*
Little, Brown and Company, New York, 1991,
[8] Blackmore, S.: *There is no stream of consciousness. What is all this? What is all this stuff around me; this stream of experiences that I seem to be having all the time?*
Journal of Consciousness Studies **9**(5-6), 17-28, 2002,
[9] Bitbol, M. and Petitmengin, C.: *On the possibility and reality of introspection.*
Kairos **6**, 173-198, 2013,
[10] Bitbol, M. and Petitmengin, C.: *A defense of introspection from within*.
Constructivist Foundations **8**(3), 269-279, 2013,
[11] Garfield, J.L.: *The Myth of Jones and the Mirror of Nature: Reflections on Introspection.*
Philosophy and Phenomenological Research **50**(1), 1-26, 1989,
http://dx.doi.org/10.2307/2108106,
[12] Zahavi, D.: *Phenomenology and the project of naturalization.*
Phenomenology and the Cognitive Sciences **3**(4), 331-347, 2004,
http://dx.doi.org/10.1023/B:PHEN.0000048935.94012.4e.