PHENOMENAL, SUBJECTIVE, SELF-AWARE: A CLEAR DISTINCTION WITH A VIEW TO AUGMENTED SENSORY MODALITIES

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Abstract:

This paper aims to analyze the concepts of phenomenal experiences, subjective standpoints, and self-awareness in light of an enactive approach to mind. In doing so, it assumes that a clear-cut reorganization of those three concepts will help to deal more safely with technological enhancements of sensory modalities, including the hypothetical introspection of a person's own neural states. It argues in favor of understanding the mental as a subcategory of the physical and of considering measurement scales and mutually complementary perspectives while tackling the mind-body relation. After discussing realistic prospects of sensory enhancement, it explores the overlaps of the notions of phenomenal experiences, subjective standpoints, and self-awareness, concluding for a reorganization that seems convenient to understand new neurotechnologies more effectively.

Keywords: Phenomenal experiences, subjective standpoints, self-awareness, sensory modalities, enactionism.

1. Introduction

Assuming that the concepts of phenomenal experiences, subjective standpoints, and self-awareness are very often prone to overlaps that lack rigor, I will argue for a careful distinction of each other, given this would probably provide one with basic resources to answer questions such as the following: How is it possible to have an objective standpoint for phenomenal experiences, whether one's own or those of other people? Can it ever become possible to have a subjective standpoint for one's own neurological states? What does it mean to have phenomenal experiences without self-awareness? Is first-order awareness necessarily detached from second-order analysis? A clear-cut use of those concepts seems helpful to tackle more safely theoretical frameworks underlying the current spread of new technologies aimed not only at engaging physically and phenomenologically with surrounding reality but also at investigating scientifically such engagement.

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As I defend my position, I will provide a conceptual reorganization of central aspects of phenomenal experiences, subjective standpoints, and self-awareness in light not only of the notions of scales and perspectives but also of minds as within a subcategory of physical processes. For that, this paper will consist of two main sections. The next one will focus on the realistic prospects of augmenting sensory modalities, including awareness of one's own neural states. The third section, while building on the previous one, will develop the analysis of phenomenal, subjective, and self-aware.

2. A bet on science-based augmented experience

Churchland (1981) conceives of commonsense language games involving mental states and events as outdated, inefficient, and inconsistent with natural sciences, albeit largely used to satisfactorily explain and predict certain kinds of behavior in the case of wakeful persons that are not usually considered mentally ill. Not only sleep and psychiatric dysfunctions but also processes of learning new skills are usually not covered by the explanation and prediction. A further constraint for the behavior observed under that light is its usually being interpreted on the basis of propositional attitudes. Assuming natural languages as no more than limited projections of all the rich cognitive dimensions we are capable of somehow handling, he speculates about possible future means of communication that are thoroughly committed to scientific frameworks. Neuroscience and its technological applications, for example, might then be so much advanced that properly educated people will be able to grasp certain aspects and internal connections of their patterns of behavior that are inconceivable under the framework of commonsense mentalistic vocabulary. If that eventually turns out to be true and sustainable, people will probably change their habitual manners to refer to their own patterns of potential or actual behavior as well as to those of others. This shift will probably involve a neuroscientific reduction of selected concepts of commonsense mentalism or even a complete elimination of it. Instead of focusing on mere linguistic projections of certain dimensions of cognition and affection, there will be the trend to embrace an incredibly broader range of experiences, along with a more precise analysis of possible connections and a more versatile and strong way to explore and harness one's potential to actively engage with others and environment.

In that context, the novel techniques and frameworks will blur the current distinction between (a) experiencing sensations that are mapped by traditional mentalistic

language games and (b) accessing physiological processes that are only to a very restricted extent available to current science. Instead of only objectively analyzing such processes with no direct phenomenal engagement, proper training will be likely to provide people, if Churchland is vindicated, with a subjective point of view with respect to the physiology. That means the scope of possible sensations may be much wider and more sophisticated:

> Dopamine levels in the limbic system, the spiking frequencies in specific neural pathways, resonances in the *n*th layer of the occipital cortex, inhibitory feedback to the lateral geniculate nucleus, and countless other neurophysical niceties could be moved into the objective focus of our introspective discrimination, just as G*m7* chords and A*dim* chords are moved into the objective focus of a trained musician's auditory discrimination. We will of course have to *learn* the conceptual framework of a matured neuroscience in order to pull this off. And we will have to *practice* its noninferential application (CHURCHLAND, 1985, p. 10).

In Churchland's hypothetical scenario, a neurophysiologist would have as possible contents of experience not only aspects of e.g. the process of examining an experimental subject but also his own bodily workings that run parallel to that procedure. He would benefit from a multiplied set of possible sensory modalities beyond coarse-grained interoception, pain, balance, the traditional five, and others. Similarly, the subject examined would be able to experience both the process of undergoing the procedure and his own internal organic activities.

Perhaps real cases of "sensory substitution" (BACH-Y-RITA; KERCEL 2003; FROESE ET AL. 2012; LONG ET AL. 2014) are initial evidence of how feasible it might be in future to transcend the scope, to blur the boundaries, and to refine the distinct qualities of the original senses. Bach-y-Rita's navigation devices based on vibrations on the skin as well as body balance devices based on tongue sensors date back to research in the 1970s. Froese et al. (2012) have presented the "Enactive Torch", an infrared-based handheld device that can be used for navigation by visually impaired people. Long et al. (2014) have shown "a method for creating three-dimensional haptic shapes in mid-air using focused ultrasound."

The augmented spectrum of sensations in Churchland's scenario would not eliminate a distinction between first-order, phenomenal, subjective, present-oriented perspectives and second-order, analytic, objective, cross-temporally oriented perspectives. Instead, new horizons of experience would be accessible by means of new conceptual and technical instruments. More on this later.

Churchland (1985, p. 16) usually focuses on elimination[3] or at least reduction of the nonscientific framework about mental phenomena:

> Consider now the possibility of learning to describe, conceive, and introspectively apprehend the teeming intricacies of our inner lives within the conceptual framework of a matured neuroscience, a neuroscience that successfully reduces, either smoothly or roughly, our common-sense folk psychology.

To be sure, scientific knowledge of nervous systems is a necessary condition to understand deeply our skills and awareness of inner states and behavior patterns. But, *pace* Churchland, it is worth making it explicit that this knowledge is not a sufficient condition. Nervous systems are only the biological *basis* for mentality, which is strictly speaking a property of entire organisms or else of further properties of entire organisms, such as propositional attitudes, mental images, and sensations. Clearly, mentality consists rather in complex and versatile structures of interactions among dynamic patterns of actual or potential information. However essential for mind and behavior a brain and the rest of body structures involved in nervous processes are, they amount to no more than the organizing center. Beyond this, there are networks of interactions between the nervous system and the rest of the body, which do play a role in mental processes, and these are in turn processes of the organism as a whole. A crucial function is also performed by the networks of interactions between an organism and its environment, which includes other organisms whether or not these belong to the same biological species. In brief, one should not look for an identity relation between the behavioral/phenomenal and the neural. In reality, they are complementary aspects of one and the same kind of process, namely a whole organism's experience of engaging with environment whether or not that experience is accompanied by certain degrees of self-awareness. This enactive line of reasoning is in part supported, among others, by Gallagher (2013, p. 11):

> Cognition is not about content (whether non-derived or derived) being carried by vehicles (whether neural or extra-neural); cognition is an enactive and emotionally embedded engagement with the world by which we are able to solve problems, control behavior, understand, judge, explain, and generally do certain kinds of things—much of that constitutionally shaped by tools, environmental factors, social practices, etc. On this conception, the mind is constituted primarily by just such activities, whereas the concepts of propositional attitudes, mental states, representations, vehicles and even non-derived contents are derivative and are inexplicable except in reference to such activities.

[3] Note I am not considering the possibility of eliminating certain mental processes but rather certain mentalistic approaches.

Once Churchland's contribution is recontextualized against that background, it can hardly fall short of illuminating the specific issues it proposes to handle, even when these are confined to low levels of description. Regardless of that, his bet on a broader and more refined spectrum of conscious experiences is insightful in its own right. With that goal in mind, he contributes valuable objections to outdated resistance to scientific frameworks.

Such a powerful skill, if it turns out to be real, will challenge the difference between measurement scales or description levels with respect to the possible position of phenomenal experiences. Currently, sensations as well as whole body behaviors belong to a macroscopic scale, whereas neuron spiking frequencies do not. One might contend that here Churchland dismisses the difference between types of knowledge. From an inner (i.e. restricted to one's own body), subjective standpoint, one has sensations without necessarily having simultaneously analytical awareness of them, whereas from an outer, objective standpoint, one has second-order structured information about a phenomenon, without necessarily having direct engagement with sensations involved. To know certain sensations or to know what something feels like is to know something by acquaintance, that is, to have accumulated similar experiences involving something that gradually becomes familiar. In contrast, to master information one can report verbally about something is to have propositional knowledge or knowledge by description about the content. However, in Churchland's (1985, p. 21) view, his own argument

> does not collapse the distinction (between knowledge-by-description and knowledge-by-acquaintance) […]. But it does show that the "taxonomies" that reside in our prelinguistic media of representation can be profoundly shaped by the taxonomies that reside in the linguistic medium, especially if one has had long practice at the observational discrimination of items that answer to those linguistically embodied categories. This is just a further illustration of the plasticity of human perception.

Such plasticity, if Churchland's bet gets to be won, will dispense with folk-psychological constraints and enhance possible phenomenal experience, so that feedback loops develop between natural science achievements and human potentialities. In Churchland's project of conceptual preparation for mature neuroscience and neurotechnology, he proves to be aware of the gradual nature of development. Not only this feature has characterized the complex transition from prescientific to current culture, but also the long path to a more conceptually and technically advanced culture is supposed to keep having numerous obstacles, holes, quagmires, and bumps. Underlying all this process, Churchland clearly assumes one

specific kind of mind–body relation—which by the way I do not accept—, namely identity between phenomenal and neurophysiological processes, a consequence being that what is currently accessible exclusively either from a subjective or an objective standpoint has no principled reason for not to eventually blend these forms of perceptual access. Such a shift, instead of dropping the basic distinction between processes of lived experiences and theoretical analyses of such experiences, reflects cognitive versatility in assuming different perspectives and levels of perception. I believe that shift does not require the identity of the category of mental processes with an entire subcategory of physical ones.

3. Both lived and analyzed experiences from complementary perspectives

What a present-day scientist experiences while examining neural activities of a living, wakeful experimental subject is obviously not the experience itself of this subject but rather his or her own interaction with an objectively analyzable process. In that scenario, the scientist has access to at least two different categories of contents: a) his or her own subjective engagement with the experiment or with any parallel mental representations; b) the observed processes undergoing the scientist's conscious experience.

Only in case Churchland's dream of a neurotechnological instrument of sensory introspection comes true can one and the same person engage phenomenally with a vast number of his or her own internal bodily processes as well. I believe that novel self-referential activity would probably involve some form of sophisticated set of interoceptive and chemical sensors and would blur the distinction between subjective and objective perspectives with respect to one's own bodily processes, including sensorimotor, representational, and computational ones[4]. Nowadays, however, if neurophysiologists engage phenomenally, even emotionally, with part of their own neural substrates of experiences, this has no practical difference compared to observing someone else's brains, because in both situations it comes down to interpreting externally generated images, sounds or other forms of technical codification. The perspective of neither situation is subjective, that is, it is not focused on a stream of present, self-contained effects.

[4] It is worth reinforcing here that technically augmented sensory modalities are no science fiction. See, for example, Bach-y-Rita and Kercel (2003), Froese et al. (2012), and Long et al. (2014).

Although a neurophysiological substrate of a subjective experience and qualities of the experience itself are aspects of one and the same thing, such a thing that can be grasped from more than one perspective cannot be simultaneously identical to both perceptual aspects, given one of these has a wider range than the other. It is easier to recognize this contrast with respect to *current* possible scenarios. The neural substrate has, in fact, been confined until present day to a layer of observation that is accessible uniquely from a measuring scale and a horizon that do not match the macroscopic, sensorimotor, and strictly phenomenological one. However, even if there turn out to exist self-referential real-time forms of directly experiencing neural processes and if that experience is then unique and constantly present as one engages with environment, the agent of responsive engagement will still have a perspective opposed to the portion of nature that receives the straightforward effects of such activity. Therefore, although it is correct to stress the opposition (a) of subjective or first-person perspectives to objective or third-person perspectives, the current opposition (b) between objectively analyzable neurophysiology and subjective experience is something different. The former opposition is necessary while the latter is contingent—whereas the first-person perspective is arguably irreducible into its counterpart, this relation is not necessarily translatable into that between phenomenal and neural. In brief, the contrast between two overall sorts of perceptual aspects of behavior or experience is not to be conflated with the claim of purported irreducibility of the mental into the physical.

However, refuting such a claim of irreducible autonomy does not entail identity or necessary reduction. If mind and brain processes are two aspects of one and the same object—whatever it is—perceived from different, mutually irreducible perspectives, one is not entitled to conceive of the one sort of aspect as equal to the other. That a certain aspect adds to another so they constitute a single whole does not mean they are the same. What is more arguable is at least one of the following claims: either that mental processes form a special subcategory of physical processes or that brain processes amount to a critical part of organic processes that allow an organism to interact with its dynamic environment. My position embraces both claims. Accordingly, one cannot jump from the identity of a complex process—either phenomenal experience or cognitive behavior—perceived from two overall types of mutually complementary perspectives—either subjective or objective—to the identity of the aspects perceived—either mental or straightforwardly physical.

Experiences are self-contained and have a real-time form of self-referentiality that is determined by the bodily and historical peculiarities of the phenomenal agent. Although any possible experience must be self-referential, it can additionally be open to objective access, i.e. to being experienced indirectly and analyzed by other sentient agents. Finally, experiences happen to organisms engaged with environments, and organisms as the centers of experience can be analyzed according to multiple organic levels, one of these being that of neural ensembles, another that of synapses, another the patterns of production and distribution of neurotransmitters, and so forth. Beyond the centers of experience, other elements can be properly analyzed, such as the network of relations with other organisms, spatiotemporally adjacent or not, and with the nonorganic environment, whether in background or in focus. If this approach is correct, then two different aspects of one and the same process—phenomenal experience with its high-level relations and its neural substrates—do not translate into two different perspectives of experience (subjective and objective), even though the terminology (e.g. *phenomenal* as identical to, or different from, *subjective*) may often lead to thinking otherwise and the self-referential nature of experience may be a further source of misunderstandings.

A correlation can be sufficient whereas an identity link can be excessive. It would be oversimplified to reduce a whole process—mental interplay—into its merely central aspects—neurological mechanisms. The mental belongs to the level of entire organisms and their behavior. If every instance of behavior and every experience happen at the same time something necessary also happens in the brain, there is more than one possible way to try to explain this. Instead of assuming that both events are identical, mental processes can be conceived of as functional parts of physical processes. Since human behavior and experience are usually ascribed not to nervous systems but rather to persons, neural events should be explicitly ascribed not to persons but rather to nervous systems. After all, the neural level is not only lower than the phenomenal, but also less broad. Higher and broader processes cannot equal their smaller-scale correlates. By the way, even the concept of correlate of consciousness is often vague insofar as it may mean not only substrate but also prerequisite or consequence (DE GRAAF ET AL. 2012, p. 193-194). Additionally, what exactly is to be correlated with the neural activities often needs clarification and lacks uniformity: subconcepts of scientific cognitive concepts, overall scientific cognitive concepts, commonsense cognitive concepts or operational tasks (FRANCKEN; SLORS 2014, p. 250). If even correlation is an elusive issue,

much more so would be identity. Hence, one had better be satisfied with correlation and explain it in terms of parts and wholes.

Churchland's account envisages one among other possible changes in habitual patterns of human selective attention in function of changes in available and widespread scientific knowledge and technology. This latter sort of changes, instead of intending to threaten human potentialities, is supposed rather to expand and fortify these. Necessary basic conditions for that enterprise include perspectives for perceptual processes, and these processes vary in function both of each responsive agent and of each of his or her spatiotemporal configuration, this including a pattern of organic states and of interactions with environment. Such an interplay is framed in multiple ways within domains ranging from the sensorimotor through the cognitive-emotional, the linguistic-pragmatic, and the technical-algorithmic to the social-cultural-economic, not to mention others in between. Each perceptual perspective necessarily has a subjective center of experience, which in turn necessarily aims at peripheral objective targets, whether these lie closer to the center or farther from it. What is subjective always presupposes what is objective and vice-versa. Within that context, certain targets undergo circumstances where the contents experienced are more tied to the subjective center. Equally, certain targets may undergo other circumstances where contingencies allow for a less self-contained, present-focused, straightforward form of awareness, which is sometimes even analytic and covers different scales. Such a spectrum of variation between subjective and objective is explored without ever making these dimensions fall apart. Two things that can surely be occasionally decoupled from each other are the following subjective elements: phenomenal experience and additional second-order self-reference, this latter being a form of self-awareness. From a more objective standpoint, marked by analytical traits, what is mental is a set of physical interactions that are circumscribed to a higher layer than e.g. that of neural or molecular interactions. The higher level is not autonomous or irreducible to the lower, but the latter has no privilege over the former. Behavior, sensations, and mental representations and computations are complex phenomena of which some necessary, central, but partial aspects are neural ones. The relation between the one (mental) and the other category (physical) is mereological, instead of identity-based. From a very abstract, generic viewpoint, there is surely an identity between mental processes and any sort of physical processes, including neural, behavioral, and phenomenal ones, which does not imply that particular subcategories are identical with others. The mental subcategory shares with the rest the property of being physical

in general, but each subcategory has its particular properties too. Moreover, causal effects are to be sought not across whole subcategories such as mental and nonmental ones but rather predominantly among processes belonging to one and the same level or scale of observation: either biomolecular or cellular or synaptic or cerebral or behavioral or social or still another. Additionally, a certain layer may be understood as containing weakly "emergent" properties reducible into the interplay of processes occurring at the adjacent lower level[5]. Finally, it might take many complex steps for humans to be able, if ever, to shift to a conceptual framework where new kinds of sensations and of self-conscious control of cognitive functions and contents are available. Wishing for that, consequently trying to prepare for it, and focusing on specific realms and objects of study is really a sign of commitment to scientific and philosophical progress, which includes an ever-stronger human self-image.

4. Conclusion

I expect my analysis contributes to answering some questions I presented in the introduction: How is it possible to have an objective standpoint for phenomenal experiences, whether one's own or those of other people? Can it ever become possible to have a subjective standpoint for one's own neurological states? What does it mean to have phenomenal experiences without self-awareness? Is first-order awareness necessarily detached from second-order analysis?

If my exploration is valid, then it follows: It is indeed possible to have an objective, third-person perspective in engaging with one's own phenomenology the same way one can engage with other people's experiences, namely by using instruments to inspect and/or record one's behavior or inner processes. The other way around, in contrast, is currently not possible in practice, but it is logically possible that technological developments eventually allow one to incorporate new habitual practices of engaging with physiological states, namely directly, instead of by means of external instruments. A necessary component of phenomenal experience is some degree of awareness about the contents experienced, but self-awareness is a second-order concept that refers to additional, nonnecessary aspects. This applies even to the very

[5] Developing a detailed refutation of a causal relation between mind and brain or of any other kind of relation, such as realization and supervenience, is outside the scope of this paper, focused on exploring the overlapping of the concepts of phenomenal, subjective and self-aware so as to cast light on the assumption of possible augmented sensory modalities.

experience of analyzing another experience: even though the analysis is a second-order process in relation to the experience analyzed, it is a first-order process in relation to itself.

Just as I said before, one cannot jump from the identity of a complex process—either phenomenal experience or cognitive behavior—perceived from two overall types of mutually complementary perspectives—either subjective or objective—to the identity of the aspects perceived—either mental or straightforwardly physical. Phenomenal experience has both high-level relations—with the organism as a whole and with environment—and low-level relations, with its neural substrates. These two sorts of relation reflect two different facets of one and the same process, which are in turn not equivalent to two different perspectives of experience: subjective and objective. Besides, experience must have some degree of awareness, self-awareness being contingent. Finally, experience is a process of a whole organism, not of its brain or nervous system. Once these basic understandings are clear and solid, so can future, enhanced experiences also be.

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References

BACH-Y-RITA, Paul; KERCEL, Stephen W. Sensory Substitution and the Human–Machine Interface. **Trends in Cognitive Sciences**, v. 7, n. 12, 2003, p. 541-46.

CHURCHLAND, Paul M. Eliminative Materialism and the Propositional Attitudes. **Journal of Philosophy**, v. 78, n. 2, 1981, p. 67-90.

CHURCHLAND, Paul M. Reduction, Qualia, and the Direct Introspection of Brain States. **Journal of Philosophy, Inc**., v. 82, n. 1, 1985, p. 8-28.

DE GRAAF, Tom a.; HSIEH, Po Jang; SACK, Alexander T. The "Correlates" in Neural Correlates of Consciousness. **Neuroscience and Biobehavioral Reviews**, v. 36, 2012, p. 191-97.

FRANCKEN, Jolien C.; SLORS, Marc. From Commonsense to Science, and Back: The Use of Cognitive Concepts in Neuroscience. **Consciousness and Cognition**, v. 29, 2014, p. 248-58.

FROESE, Tom; MCGANN, Marek; BIGGE, William; SPIERS, Adam; SETH, Anil K. The Enactive Torch: A New Tool for the Science of Perception. **IEEE Transactions on Haptics**, v. 5, n. 4, 2012, p. 365-75.

GALLAGHER, Shaun. The Socially Extended Mind. **Cognitive Systems Research**, v. 25-26 (December), 2013, p. 4-12.

LONG, Benjamin; SEAH, Sue Ann; CARTER, Tom; SUBRAMANIAN, Sriram. Rendering Volumetric Haptic Shapes in Mid-Air Using Ultrasound. **ACM Transactions on Graphics**, v. 33, n. 6, 2014, p. 1-10.