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Editorial Introduction

Consciousness Unbound: Going Beyond the Brain

Proponents of extended conscious experience say things like this: ‘phenomenal experience strongly supervenes on, or is constituted by, temporally extended, interactive worldly engagement’ (Hutto and Myin, 2013, p. 158). What could such a statement possibly mean and how did people come to say such things? The deep history here would take us back to James, Husserl, Heidegger, Merleau-Ponty, and many others. For now let us just say that the recent debate over whether conscious experience ‘extends beyond the brain’ in some sense starts with the ongoing debate over whether or not cognition extends beyond the brain in some sense. For our purposes there is no need to go into this debate at great length, but it is a good place to start (for more details see Chemero and Silberstein, 2008). Before we begin discussing taxonomies and pedigrees, it is worth noting the ambiguity in the claim that cognition is embodied or extended. First, this could be a claim about the spatio-temporal extent or location of the mind; for example, does it somehow literally range beyond the brain to include the body or external world? Second, it could be a claim about what aspects or features of reality constitute the mental, e.g. could a chalkboard or computer constitute part of our cognitive or mental apparatus every bit as much as the brain does? This is really a worry about types or essences, i.e. what is the mark of the mental. Third, it could be a claim about what elements of reality constitute the mechanism, machinery, ‘supervenience base’, or physical underpinnings of cognition. We

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have argued that only the last question is of any real interest (*ibid.*). This is precisely because we think the first two questions are either ill formed or purely metaphysical. We want the debate about extended cognition to be a subset of cognitive science and philosophy of science and not metaphysics. We will also have more to say shortly about how this third question, so formulated, begs the question in favour of a particular metaphysical picture of reality that many fans of extended experience (including ourselves) reject. Moreover, affirmations of extended cognition in answer to this third question are expressed in many different terminologies. Here are just some examples from the literature (see Chemero and Silberstein, 2008, for more details):

- 1) Bodily and/or environmental features are not merely causal inputs or contributors to cognition, sometimes they constitute part of the cognitive process.
- 2) Brain processes are only necessary but not sufficient for constituting or enabling mentality. (Of course talk of necessary and sufficient conditions is also ambiguous, e.g. causally versus metaphysically necessary/sufficient for example.)
- 3) Cognition has a ‘wide supervenience base’ that essentially includes parts of the body or environment. Brain processes that are necessary for cognition occur when and only when certain interactions with the external environment are present, such that the relevant brain processes plus the ‘extra-cranial conditions’ are part of the ‘minimal supervenience base’ for the mind. (Again, talk of supervenience is also multiply ambiguous, as there are many different accounts of this relation.)

To the chagrin of some (see Shapiro, 2013, for example), we have tried to characterize and focus the debate on extended cognition as an empirical one as opposed to a purely conceptual or metaphysical one. (More shortly on how hard this is to do and what is required.) At any rate, our naturalistic prejudice is that talk of supervenience or metaphysical necessity is too far beyond the reach of scientific enquiry to be of interest. Among the problems here is that interlocutors in the debate over embodied cognition do not even necessarily agree upon which questions are empirical ones and which are purely metaphysical or conceptual. This is part of the reason there are so many different formulations, in different terminologies, of the various positions. Given that the conversation about extended cognition has involved philosophy of mind in the metaphysical vein, philosophy of science, and philosophy of cognitive science, people sometimes speak past one another or miss the point that the other is making.

Differing formulations aside, however, at its core the debate here is whether or not (in some important sense) the brain is the sole unit of cognition. The work on embodied, embedded, and extended cognition (in allegedly increasing degrees of radicalness) within philosophy and cognitive science, both pro and con, has grown immensely over the last two decades. On the pro side there are more and less ‘radical’ views. The least radical views all remain within the paradigm of computationalism (CTM) and representationalism (RTM). Sometimes called ‘wide computationalism’, such views just extend the computational machinery of cognition to include bodily and environmental features beyond the brain, e.g. notepads and chalkboards. More radical accounts of embodied or extended cognition tend to come from traditions that reject CTM and RTM such as ecological psychology, the sensorimotor approach, and enactive accounts more generally (see Silberstein and Chemero, 2011). These traditions differ in many respects but they also share many features. For example, ‘[e]nactivism, after all, gives explanatory pride of place to dynamic interactions between organisms and features of their environments over the contentful representations of such environmental features’ (Hutto and Myin, 2013, p. xi). This could be said of all the preceding traditions. One caveat here, note that some dynamical systems based accounts of cognition extend the unit of cognition beyond the brain and some do not (Chemero and Silberstein, 2008).

Regarding the question-begging formulation of the third question, it is worth noting that most of the accounts that reject CTM and RTM also reject those particular physicalist, reductionist, or mechanistic conceptions of mind and reality that lead one to talk of minds *supervenient* on physical bases however wide or small, minds being *realized* by physical machinery, or talk of the *underlying machinery* of mind. For example, supervenience and realization relations are generally taken to be synchronic metaphysical relations, but on most dynamical, sensorimotor, enactive, and ecological accounts mind will be extended in both space and time, so any important relationships between mental processes and physical ones will be diachronic. Furthermore, on such accounts mental processes do not merely float on top of physical processes, nor are mental processes metaphysically determined by physical processes, rather, there is intertwined and complex dynamical interaction. That is, one cannot divide the world into mutually exclusive mental versus physical processes/levels as envisioned by physicalism or reductionism.

Once we fix a particular version of embodied or extended cognition we can then ask what are the consequences for conscious experience.

All the ambiguities that arise in discussing extended cognition, and then some, arise when talking about extended conscious experience. Perhaps it is not surprising that most proponents of extended mind (especially on the non-radical side) do not think that conscious experience is extended (see Clark, 2009, for example). After all, if one thinks of conscious experience in terms of qualia and cognition in CTM terms or functionalist terms, then it stands to reason that conscious experience will be brain-bound. However, as we will see in this special issue, those who extend their particular brand of functionalism to conscious experience (e.g. those who attempt to reduce conscious experience to the intentional such as HOT theory or think that the two are always somehow intimately correlated) will be committed to the claim that anything functionally equivalent to the brain or to the wider computational system must also be conscious. Some call this extended functionalism. For example, Vold (this issue) argues that if the original parity argument of Clark and Chalmers (1998) works as an argument for extended cognition then it works just as well as a defence of extended conscious experience. Recall that the parity principle says that we should treat functionally equivalent processes with ‘the parity they deserve’, regardless of whether they are internal or external to the brain. This is a statement of extended functionalism *par excellence*. However, Clark and Chalmers reject extending the parity principle to conscious experience on the basis of speed and bandwidth considerations. Vold rebuts that argument and thus advances a parity argument for extended consciousness.

Those, such as Vold and Rowlands (this issue), who think there is a significant connection between conscious experience and intentionality should also accept that conscious experience extends. As Rowlands says, at least part of what makes a cognitive process conscious is also what makes it liable to extend beyond the skin of the subject of that process; that is, the directedness of an intentional act is that in virtue of which objects appear to a subject under aspects. Both Vold and Rowlands are working within the confines of RTM. As Rowlands puts it, ‘those of us with broadly representationalist sympathies — who think that intentionality is at least part of the story about what makes an act or process conscious — can accept that what makes an act conscious is at least part of the story of what makes it extended’ (this issue).

If trying to empirically settle the question of extended cognition is difficult, it is even more so for the question of extended conscious experience. With regard to the former, those who oppose extended cognition view it as increasingly accepted and popular but not yet

justified. As Prinz puts it, extended cognition is ‘easier to sell than to prove’ (Prinz, 2009, p. 419). Those of us who reject RTM and CTM would say the same about those projects. One of the best reasons for taking extended cognitive science seriously is the explanatory lacuna of CTM and RTM, such as the unresolved frame problem. But the deeper question is what would constitute proof? Real world under-determination is a scientific fact of life and there are no crucial experiments; still one hopes that cognitive science will get increasingly clever about trying to differentiate and test these two very different accounts of cognition. We certainly believe that there is strong evidence of extended cognition within cognitive science already (Silberstein and Chemero, 2011; Chemero, 2009). In any event, one hopes to go beyond stale and often question-begging philosophical debates over whether extended features of cognition are merely causal contributors or truly constitutive of cognition. And the same goes for debates about intrinsic intentionality and whether or not only brains can have contentful states. We agree these were useful and important discussion to have initially, but we hope they are only the beginning. Some of these purely conceptual debates strike us as no more clever than ancient philosophical attempts to determine the necessary and sufficient conditions for when a relation is one of causation or what counts as *the cause* of an effect in a particular case. These are discussions most of us now believe to be moribund.

However, there are important and empirically tractable questions in the history of science that bear some resemblance to the one at hand. We would like to make the analogy with other cases in the history of science where we debate over the unit of X. For example, are genes the unit of heredity? Are neurons the unit of brain function? Are species the unit of selection in Darwinian evolution? While each of these questions has pragmatic aspects that must be respected, no one would say that the question about genes, for example, is a purely conceptual or metaphysical one. Indeed, one is hard put to find any genetic determinists anymore, perhaps especially among molecular biologists. We learned through hard-won empirical results that genes (defined in the standard textbook way) are only one very important part of a very complex non-linear, interactive biological process leading to proteins, phenotypic characteristics, and organisms. Other key variables include RNA networks, cellular environment, external environment, and much more. In short, given the recent revelations from epigenomics, given the existence of extended phenotypes, extended cognition is far from radical even in its most radical form. In fact, we would argue that what we already learned about genes, we are

learning now about neurons in systems neuroscience (Silberstein and Chemero, 2013). Therefore we have faith that through continued scientific effort we can also make progress on the question of extended cognition.

Cognitive neuroscience is currently looking for the neural correlate of consciousness (NCC) — the minimally sufficient brain processes for conscious experience. One can search locally for the NCC of a particular experience such as seeing red or more globally for the NCC of the entire conscious field of experience. There is no consensus yet as to what an NCC is, and many in neuroscience, including card-carrying reductionists, are becoming increasingly doubtful of this research project for reasons both conceptual (principled) and methodological (practical).

There are deeper conceptual worries as well. Belief in the NCC is regarded as the most conservative position about conscious experience, but upon reflection it is a pretty counter-intuitive idea. For example, what kind of law of nature dictates that if a brain in a vat (BIV) were spontaneously put into the same brain state we are in now as we write this text, that the BIV must have the same experiences we are having? Even if one finds such correlations plausible or natural, how would we ever get beyond such seemingly absurd brute mind–brain bridge laws to anything like nomological or mechanistic scientific explanation? As Clark notes himself, even if we had such correlations in hand how could we rule out bodily movements and the environment as necessary elements for whatever the experience in question is (2009)? It is also worth noting the ambiguity of the expression ‘brain state’ considering that the activity of the brain encompasses so many different temporal and length scales, and subsumes physical, chemical, and biological entities/processes. Talk of brain states cannot be treated on a par with talk of physical states where we have particles in phase space with just a few properties. In short, even very sober-minded neuroscientists are starting to doubt (both in principle and in practice) that the NCC paradigm could ever resolve the hard problem of consciousness or bridge the explanatory gap (see Revonsuo, this issue).

So at least for now we need another approach to making the issue of extended mind an empirical question. As a start to resolving the question of extended conscious experience empirically, some philosophers and scientists are using thought experiments and the like to tease out predictions or implications of various accounts of mind. For example, if internalism about conscious experience is true then a BIV ought to be able to have the same coherent experiential states as an embodied

brain manoeuvring through an environment. We can think of such thought experiments as the beginning of an attempt to apply Mill's methods to the question at hand. Could a brain without any connection to a body or an environment have the same experiences as an embodied brain in an environment? Of course for reasons both ethical and practical we cannot perform this experiment, but Cosmelli and Thompson (2010) and Thompson and Cosmelli (2011) have argued that, at the end of the day, the vat in question would have to fully replicate the function of a body and environment to get the brain to perform as usual. As Clark puts it, 'brain-in-a-vat considerations are thus unable to advance the argument' (Clark, 2009, p. 981).

In addition to the BIV thought experiment, people have argued that we have a real live case of experiences without environmental inputs and without bodily movements — namely, dreams. People have conscious experiences while dreaming so does that not prove that internalism about conscious experience is true?

Revonsuo is one of the leading proponents of the idea that dreaming falsifies the hypothesis of extended conscious experience and he has interesting responses to those who resist his conclusions (this issue). It will surprise no one that in the debate over dreaming and extended consciousness there are many moves and counter-moves, and Revonsuo's article does a nice job summarizing the debate up to this point. Revonsuo is not alone in focusing on dreams, as many take dreams to be a good model for consciousness more generally. Indeed, people who focus on dreams often go further to argue that dreaming is a good analogy for waking experience in many respects and both should be regarded as brain-generated 'virtual reality'. Furthermore, this view is now often connected to the widely held belief that above all else the brain is an inferential Bayesian engine of some sort: 'The picture of consciousness that is emerging here is that consciousness is an operation that produces beliefs and is therefore quintessentially inferential in nature. For example, qualia are products (beliefs) of inference on sensory data and access consciousness is the process of hierarchical inference that operates on qualia or the products of phenomenal consciousness' (Hobson and Friston, 2014, p. 17). In this virtual reality inference machine or brain-based simulation, 'predictions (fantasies) are generated in a virtual model of the world and then tested against sensory reality... We consider consciousness in terms of inference based on the private theatres of virtual reality that are so manifest in dreaming' (*ibid.*, p. 9). Hobson and Friston follow Revonsuo in claiming that even fetuses in the womb have coherent dream states. Needless to say, this is a conception of cognition and

conscious experience directly at odds with enactive, ecological, and sensorimotor accounts. This is a conception of experience that threatens to bring back the Cartesian theatre with a vengeance. Therefore, Kirchoff (this issue) reinterprets Bayesian inferential models in an embodied and enactive vein. The alternative he develops places the anticipatory, predictive dynamics of the brain within a larger brain–body–niche dynamic.

At any rate, one can now begin to see the problem with any quick and easy empirical resolution to the question of extended conscious experience. If the hypothesis does not rule out dreaming, certain kinds of BIVs, congenitally paralysed people who have never left their room, etc. how can we resolve this issue any time soon? Proponents of extended conscious experience might take comfort in the fact that their view is safe from falsification, but unfortunately it plays into the hands of philosophers of mind who claim that the debate is primarily metaphysical or conceptual. It would be nice to apply Mill's methods here but how can we do this? It would be nice if we could, say, make Boltzmann brains spontaneously appear in the lab and record their phenomenological states. It would be nice if we could probe disembodied human brains that had no causal, historical, or evolutionary connections to the world, but we cannot. Obviously even the purportedly dreaming baby in the womb does not fit the bill.

So how do we resolve the debate? Perhaps the only way forward is to let cognitive science play out and make our inferences based on the best available evidence at hand. Of course, we recognize there will be differing interpretations of the data but, along with conceptual analysis, this is the only game in town. This is precisely where the Gallagher and Aguda article, Roberts article, and Wheeler article respectively come into play. The first two articles in this triad argue for some type of extended conscious experience. Gallagher and Aguda argue that bodily affects are in part *constitutive* of phenomenal consciousness (this issue). Roberts attempts to extend the enactivist perspective to emotional experience by arguing that there are types of emotional experience whose physical underpinnings include parts of the extra-bodily environment (this issue). Wheeler on the other hand argues that two common sensory substitution arguments for extended conscious experience fail to land (this issue). In contrast, Rupert (this issue) argues that embodied cognitive science neither solves the hard problem of consciousness head on nor allows it to be dodged by front-loading phenomenal experience into cognitive science. In fact, he argues that first-person phenomenological accounts of consciousness and embodied cognitive science are at odds. Rupert is, thus,

suggesting that if embodied cognitive science helps resolve the hard problem, it only does so by showing us why we should not take the first-person perspective seriously in the first place.

Finally, we come to the question of whether or not the idea of extended conscious experience helps resolve the hard problem of consciousness or helps bridge the explanatory gap. The consensus view is that it does not help (see Hutto and Myin, 2013, for background). If one accepts the hard problem at face value it is hard to see how extended conscious experience as typically conceived could help. The problem is supposed to be why and how brains construed structurally or functionally possess conscious experience at all. Or rather, why if physicalism or ontological reductionism is true is there conscious experience in the world? If one accepts the premise of the hard problem, then merely bringing in the body or environment is not going to help matters any, on the contrary. Indeed, if one accepts the premise of the hard problem it is hard to imagine any straightforward solution to it other than to embrace the fundamentality of qualia. As we noted in our earlier work (Silberstein and Chemero, 2013), even if an extended account of cognition and intentionality allows us to be rid of qualia, it does not allow us to jettison the core of the hard problem, namely, subjectivity. In that work we argued that in order to resolve or deflate the hard problem, the hypothesis of extended consciousness needs to be understood in terms of neutral monism. That is, we agree with critics that the bare enactive, sensorimotor, and ecological accounts do not by themselves deflate the hard problem of consciousness. Proponents of such accounts could make it clearer why they are not just dodging the hard problem altogether by being more explicit in their adoption of neutral monism. We argued that many accounts of extended conscious experience have their historical roots in the Jamesian tradition of neutral monism and in the tradition of phenomenology. In this issue, we argue that, properly understood, the hypothesis of extended conscious experience opens the way for, is an expression of, neutral monism. The brand of extended conscious experience and neutral monism we defend explicitly undercuts the premise of the hard problem of consciousness. The key is in rejecting the idea that matter and mind were ever essentially different to begin with. We extend this argument in our contribution to this special issue.

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