

## **The Spread Mind: Is Consciousness Situated?**

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### **RESUMEN**

Si la experiencia fenoménica es un fenómeno físico, ha de tener una localización espacial y temporal. ¿Podría la conciencia estar situada en este sentido fuerte? Aunque a menudo se menciona la importancia del cuerpo y de la localización, la mayoría de los neurocientíficos y de los filósofos cree que la experiencia fenoménica es un producto de la actividad neuronal. En este artículo, examino la cuestión de si el sustrato físico de la experiencia consciente podría identificarse con procesos que se extienden temporal y espacialmente más allá de la frontera del cráneo y la piel. El modelo resultante de conciencia situada se denomina “la Mente Expandida”. Se trata de una hipótesis verificable empíricamente. El modelo contiene las líneas maestras de una forma de externismo fenoménico de vehículos más radical que la mente extendida de Clark o el externismo fenoménico de contenidos de Dretske.

**PALABRAS CLAVE:** *conciencia, mente extendida, cognición situada, externismo, experiencia fenoménica.*

### **ABSTRACT**

If phenomenal experience is a physical phenomenon, it must occur at some spatial and temporal location. Can consciousness be situated in such a strong sense? Although the importance of embodiment and situatedness is often mentioned, most neuroscientists and philosophers alike consider phenomenal experience as an outcome of neural activity. In this paper, the question I would raise is whether the physical underpinnings of conscious experience may be identical with processes temporally and spatially extended beyond the boundary of the skull and the skin. The resulting model of situated consciousness is dubbed the Spread Mind. The hypothesis is verifiable empirically. The model outlines a form of vehicle phenomenal externalism more radical than Clark’s extended mind or Dretske’s content phenomenal externalism.

**KEYWORDS:** *Consciousness, Extended Mind, Situated Cognition, Externalism, Phenomenal Experience*

## I. WHERE TO LOOK FOR PHENOMENAL EXPERIENCE

Although many authors acknowledge the role of the environment in shaping the mind, the prevailing view holds that phenomenal experience is the outcome of neural activity taking place inside the nervous system. In philosophy of mind, this idea has gained so much strength that many authors assume that physicalism entails that phenomenal experience either emerges from or supervenes on neural activity.

Consider Jaegwon Kim's claim that "if you are a physicalist of any stripe, as most of us are, you would likely believe in the local supervenience of qualia" [Kim (1995), p. 159]. He seems to assume that phenomenal experience (qualia) depends exclusively on what takes place *inside* the body. Is such a notion really self-evident and necessary in order to be a physicalist? Should it not be better justified? Why should the physical domain be restricted to the neural domain? After all, a physicalist might appeal to physical phenomena external to the body and still be a physicalist. *Pace* Kim, a physicalist is not compelled to accept the local supervenience of qualia. Physicalism is the view that requires that everything is physical, rather than the view that all mental phenomena supervene locally on the brain. Thus, to be a physicalist and also to consider physical phenomena that are not contained inside the body ought to be a respectable position.

However, somewhat surprisingly, most neuroscientists and philosophers hold a different view. As Michael Tye puts it "until very recently, orthodoxy in the philosophy of mind has favored phenomenal internalism. The received view has been that phenomenal externalism is obviously false" [Tye (2010), p. 193]. John Searle unabashedly wrote that "Mental phenomena are caused by neuro-physiological processes in the brain and are themselves features of the brain" [Searle (1992), p. 1]. On *Nature*, George Miller stated that "Different aspects of consciousness are probably generated in different brain regions." [Miller (2005), p. 79]. On a similar note, while setting the ground for a science of consciousness, a neuroscientist like Attilio Revonsuo states confidently that "*subjective phenomenal consciousness is a real, natural biological phenomenon that literally resides within the confines of the brain*" [Revonsuo (2006), p. 10, italics in the original]. It is fair to say that most neuroscientists either defend or assume internalist views [Logothetis (1998); Zeki (2001); Dehaene, Changeux et al. (2006); Kay, Naselaris et al. (2008); Tononi and Koch (2008); Haynes (2009); Koch (2010)].

At one extreme, an internalist like Semir Zeki suggests the existence of *microconsciousnesses* – namely, explicit conscious representations implemented using dedicated neural circuitry [Zeki (2001)]. According to Zeki's microconsciousnesses, each phenomenal experience is expected to stem out of a local neural activity. Similar views have been to some extent outlined by Koch and others [Quiroga, Kreiman et al. (2008)]. Alternatively, other schol-

ars hold that the whole brain is necessary [Edelman (2001); Tononi (2004)]. It has also been suggested that the whole nervous system may be required [Devor (2002)]. However, the temptation is to go beyond the limits of neural wirings. The subsequent step is to consider not only the nervous system but also the body as a whole – muscles, joints, bones, tendons, various tissues, and the like [Varela, Thompson et al (1991); Gallagher and Jeannerod (2002); Gallagher (2005); Pfeifer, Lungarella et al. (2007); Menary (2010)]? And yet the body itself may not be enough. Where do we have to stop? Unlike the idea that cognition may be extended in the environment, only a handful of scholars seriously take into consideration whether the content of phenomenal experience depends on the external world [Rockwell (2005); Honderich (2006); Manzotti (2006); Cosmelli and Thompson (forthcoming)], and practically no one puts forward the hypothesis that consciousness itself may be situated. The last possibility will be the goal of this paper. I will consider whether both the content and the vehicles of phenomenal experience may be partially external to the agent's body.

In the next section, I will provide a short overview of the shortcomings of internalism – namely the view that assumes that consciousness supervenes locally on the nervous system. In section 3, I will outline the main gist of the Spread Mind. In sections 4 and 5, I will then consider whether the Spread Mind can deal with the issue of representation and with the epistemic gap. Eventually, in the last section, I will deal with cases of apparently non-veridical and indirect perception, such as dreams, memory, hallucination, and the like.

## II. THE PREMISE OF THE SUFFICIENCY OF NEURAL ACTIVITY (PSNA)

Before outlining a radically different hypothesis as to the physical basis of phenomenal experience, it is worth bringing into the open an assumption that biases most internalist views. Christof Koch must be praised for stating his assumptions with great clarity: “The goal is to discover *the minimal set of neuronal events and mechanisms jointly sufficient for a specific conscious percept*.” [Koch (2004), p. 16, italics in the original]. This goal is based on the premise that there must be a set of neural events *sufficient* for a specific conscious percept [Crick and Koch (1990)]. Yet, so far, such a premise has never been empirically demonstrated. Just to be clear, the crucial issue is not whether neural activity is necessary but whether neural activity is either *sufficient for* or *identical with* phenomenal experience. I refer to such a premise as the Premise of Sufficiency of Neural Activity (PSNA). Such a premise is closely related with the identity theory championed by Smart [Smart (1962), p. 163].

Of course such a premise does not conflict with the obvious fact that human brains develop in a real environment and are the result of their indi-

vidual history. A phase of development is a necessary step for most biological structures. Muscles and bones need gravity and exercise in order to grow properly. Yet, once developed, they are sufficient to deliver their output, so to speak. Once a muscular fiber is developed, it is sufficient to produce strength as a result of chemical activity. Once the brain is fully developed, for many neuroscientists, it may be sufficient to produce conscious experience. In the case of consciousness, most neuroscientists would happily agree on the need for the environment during development and possibly during active perception. Yet, they would deny that conscious experience is physically made of portions of the environment. Phenomenal experience is taken to be the outcome of the neural activity occurring in a normally-developed human being. Many authors believe that the nervous system produces consciousness analogous to the way in which muscles produce strength. On the contrary, in this paper, the apparently counterintuitive hypothesis is seriously considered: can conscious experience be made of physical processes more extended than the nervous system?

So far, because of the premise of the sufficiency of neural activity, neuroscientists have been focusing on the localization of the neural correlates of consciousness (NCC). Yet, there is neither evidence that NCC exist, nor any clear notion of what an NCC would look like. Notwithstanding a recent gold rush for the neural correlates of consciousness [Metzinger (2003); Koch (2004)], there is no consensus as to what a *sufficient* NCC could be [Chalmers (2000); Noë and Thompson (2004); Tononi and Koch (2008); Hohwy (2009)]. Of course, there are many neural activities more or less correlated with phenomenal experience, but correlation is an extremely weak explanatory criterion [Velmans (2009), p. 45]. Overall neurosciences are still far from becoming a fully-fledged “mindscience” [Manzotti and Moderato (forthcoming)]. The sufficiency of neural activity is the real acid test of the debate. A *necessary* NCC is neither so difficult to locate nor so helpful. There are many necessary NCCs in humans: extended reticular-thalamic activation systems [Edelman (1989)], re-entrant loops in the thalamo-cortical system [Edelman (1989)], neural assemblies bound by NMDA [Flohr (1995)], higher level of activations at dedicated perceptual areas [Zeki and Bartels (1999)], and many others. They have all been suggested as sufficient NCC, but no definitive empirical evidence has been provided.

In order to show that a certain set of neurons is sufficient, scientists ought to show that if such a set of neurons were to occur somewhere, it should invariably lead to phenomenal experience – furthermore, it should invariably lead to the same phenomenal experience. So, if such neural activity were replicated in vitro, an isolated phenomenal experience would occur. This inescapable conclusion hardly seems plausible. On this possibility, Ned Block admitted that he never heard anyone stating “that if a fusiform face area were

kept alive in a bottle, the activation of it would determine face-experience – or any experience at all” [Block (2007), p. 482].

It is worth remarking that there are no reported cases of conscious activity emerging out of isolated neural activity. Notwithstanding this lack of evidence, many scientists boldly claim that it is a platitude that the entire brain is sufficient to give rise to consciousness. In reality, we only know that healthy brains in living human subjects are often associated with consciousness. In order to show that a brain is sufficient for consciousness, it should be demonstrated that a brain (or a subset of brain matter) undergoing certain states invariably produces consciousness. The fact is that there is no evidence as to whether a body is sufficient to host a conscious subject. The same lack of empirical evidence holds not only for phenomenal but also for intentional content: “Brain-in-vat cases have always been seriously underdescribed. Until the scenario is much better fleshed out, we can’t say what the brain’s intentional contents would be. Simply to assert that they are the same as yours begs the question” [Lycan (2001), p. 34]. Similarly, many scholars would doubt whether a “swampman” brain could have phenomenal experience.

The two more frequently quoted examples of phenomenal experience independent of the actual world are dreams and direct stimulation of the brain [for instance, Penfield (1958)]. As to the former case, which will be considered at greater length below, it is hardly a case of something which is independent of the external world. Dreams are related to our past experience in a complex yet plain way. As to direct stimulation of the brain, it is surprising that such a case is mentioned as an example of autonomous phenomenal experience produced by the brain. In fact, in order to elicit phenomenal experience a physical stimulation provided by the experimenter is necessary. Although such a stimulation does not pass through the usual sensory nervous paths, it is just as external to the subject’s body.

But what should really be worrisome is that, apart from the lack of empirical evidence, so far there is no explanation as to why a certain neural activity should lead to a specific phenomenal experience. Are there any laws connecting neural patterns of activation to a specific phenomenal content? Giulio Tononi attempted to provide an answer to such a question [Tononi (2004)], but he had to admit that, at present, there is no way to explain why a certain pattern of activations should lead to a particular phenomenal content. After all, it is always conceivable that the same pattern might occur without any associated phenomenal properties [the traditional zombie argument, Chalmers (1996)]. Conceivability may not say a lot as to the structure of the world, but surely it is a sign that our theories about the relation between neural activity and phenomenal experience do not allow us to draw definitive conclusions. The late Benjamin Libet remarked that “as a neuroscientist investigating these issues for more than thirty years, I can say that these subjective phenomena are unpredictable by knowledge of neuronal function” [Libet

(2004), p. 5]. Thirty years ago John Eccles stated that “[the emergence of consciousness] is not reconcilable with the natural laws as presently understood” [Eccles (1980), p. 20]. This situation does not entail that an explanation will never be available. But it is fair to maintain that, at present, there are no physical laws constraining where we look for the physical underpinnings of consciousness.

The outcome of internalist approaches to consciousness ought to be a law of the kind:

$$\textit{Phenomenal content} = F_{\textit{bridging}}(\textit{neural activity})$$

$F_{\textit{bridging}}$  represents a correspondence between neural tokens or types and phenomenal content. If anything like  $F_{\textit{bridging}}$  were available, it would allow us to define and locate a sufficient NCC. For instance, the NCC of my conscious percept of red  $C_{\textit{red}}$  would be the neural activity  $N_{\textit{red}}$  occurring in my brain, such that  $C_{\textit{red}} = F_{\textit{bridging}}(N_{\textit{red}})$ . So far, such a law is nowhere to be seen. Neuroscientists do not have a clue as to what  $F_{\textit{bridging}}$  could be.

$F$  is a consequence of PSNA. If PSNA were true, neural activity ought to be sufficient – if a certain neural activity takes place, phenomenal experience must obtain. There should be a sufficient relation between neural activity and phenomenal experience. Further, neural activity ought to be the only argument of  $F$ . If  $F$  had other arguments, neural activity would no longer be sufficient. For instance, suppose that phenomenal experience is a function both of neural activity and a further physical phenomenon  $u$  (for unknown). If  $u$  were part of the equation, neural activity would no longer be sufficient. At most it might be necessary.

### III. THE SPREAD MIND: A MODEL FOR SITUATED CONSCIOUSNESS

Since internalism faces its share of difficulties, it is worthwhile considering an alternative view. If the nervous system does not seem to have the resources to endow phenomenal experience, why do we not consider other physical processes? A viable option may be to consider an extension of neural activity in terms of either causal antecedents, or semantic relations, or goals, or feedbacks, or functional roles. By and large, most of these attempts have been dubbed as different versions of externalism [Manzotti (2011)].

Broadly speaking, externalism is the doctrine that either mental content or the mental vehicles or both are partially constituted by or dependent on what happens outside the head. The difference between vehicles and content has been introduced by Daniel Dennett [Dennett (1991)], Ruth Millikan [Millikan (1993)], and eventually further developed by Susan Hurley [Hurley

(1998)]. However, it has always been part of the philosophical and scientific debate as to the relation between the content of representation and the processes of representation [Putnam (1973)]. In short, a mental content is what the mind refers to, while a mental vehicle is the process/entity/symbol by means of which the mind refers to that mental content. As for phenomenal experience, the phenomenal content is what one feels in a particular experience, while the phenomenal vehicles are those processes that trigger the experience. The distinction is useful since it allows the assignment of different properties to vehicles and to content. Dennett stated that “we distinguish representing from represented, vehicle from content. We have grown sophisticated enough to recognize that the products of visual perception are not, literally, pictures in the head even though what they represent is what pictures represent well.” [Dennett (1991), p. 131] On the same issue, Susan Hurley wrote that “we shouldn’t confuse properties represented in content with properties of vehicles of content.” [Hurley (1998), p. 1]. The advantage is that a vehicle of a red experience, so to speak, does not need to be red, and so forth. The distinction has become almost a platitude in the philosophy of mind. However, it is a potentially dangerous notion since we may indulge in a slippery slope fallacy. In other words, *if the properties of phenomenal experience are not instantiated by the vehicles of experience, what else should instantiate them?* If I have an experience of red, and my neurons are not red, what else is red to allow me to have such an experience? Simply introducing a conceptual separation between content and vehicles may be misleading.

As mentioned above, most externalists do not consider phenomenal experience. They prefer to focus only on semantic, intentional or cognitive aspects [Putnam (1975); Burge (1979); Clark and Chalmers (1998); Clark (2008); Robbins and Aydede (2009); Menary (2010)]. Andy Clark considers the possibility of vehicle phenomenal externalism only to reject it. He claims that all currently available arguments endorsing an externalist view of the conscious mind are irremediably flawed [Clark (2009)]. They leave phenomenal externalism to “a handful of philosophers with too much respect for philosophical theory and not enough common sense” [Byrne and Tye (2006), p. 242]. Among these latter authors, the most celebrated attempts are those developed by Fred Dretske [Dretske (1995); Dretske (1996)] and William Lycan [Lycan (2001)] that, in spite of their many differences, share the hypothesis that phenomenal content depends on what takes place outside the head. However, both Lycan and Dretske only considered forms of content externalism. For both of them, the vehicles of phenomenal experience remain inside the brain. Similarly Max Velmans openly states that the vehicles of phenomenal experience are located in the nervous system [Velmans (2009)] and are different from the phenomenal content of our experience which, according to his view, is projected in the external space.

In this paper, I take into consideration a much more radical version of externalism in which the content depends on what happens outside the head and the vehicles of phenomenal experience extend to encompass a spatiotemporal portion of the environment. This version of externalism suggests that the physical processes constituting the conscious mind are actually larger both spatially and temporally than those taking place inside the nervous system. It is a model of situated consciousness that I dub the Spread Mind.

For the sake of the discussion, I focus primarily on perceptual consciousness. Perceptual consciousness here is split into two non-overlapping cases: *veridical perception* and *displaced perception*. Both terms are used in an idiosyncratic way that only loosely resembles their standard use. In this paper, hallucinations, visual imagery, visual memory, dreaming, after images are all considered cases of *displaced perception* insofar as they appear to be cases of perception of something that is not actually there to be perceived. *Veridical perception* corresponds to perceiving something that is actually there to be perceived. For instance, if you perceive an apple and it turns out that the apple is there and that the apple was the cause of your perception, that is a case of veridical perception. On the contrary, if you dream or hallucinate an apple that is not there (or that is there without being causally linked with your perception), that is a case of non-veridical perception. Here I will consider it as a case of displaced perception. In addition to such cases of perception, there are some kinds of conscious experiences that do not seem to fit in perceptual consciousness such as pains, itches, orgasms, moods, and so forth. According to some authors they are not cases of perception at all. For the time being, I will set aside the very important question as to whether all conscious experiences are indeed perceptual. In the following, I will first deal with veridical perception, but in the last section of the paper I will address displaced perception.

In a nutshell, the following points outline the proposed model for situated consciousness (here dubbed the Spread Mind).

1. The physical world is made of physical processes. Rather than conceiving the world as made of objects interacting with one another, there is no obstacle to conceiving the world as made of processes taking place in time and space. Objects are epistemic shorthand for bundles of processes.
2. If phenomenal experience is real (and it is), it has to be explained in terms of processes. It has to be made of physical processes.
3. Processes are extended in time and space and their boundaries are fixed by their causal connections. As to the kind of such causal links, I will say more below.



4. Whenever we perceive something, a process – beginning in the environment and ending in the brain – occurs. Such a process fixes the content of perception by singling out a portion of the external world. Such a process is neither mental nor exclusively neural insofar as it contains a part of the external world.
5. There is no separation between the representation and the represented, between neural activity and external objects, between the vehicle and the content of experience. The suggested process-oriented perspective allows us to focus on the occurrence of a process which can be conceptualized either as the subject's phenomenal experience or as the perceived object – both descriptions (experience vs. external object) are nothing but two incomplete ways to address the same physical process.
6. Phenomenal experience is no longer a phenomenon different from physical processes taking place inside the brain. Phenomenal experience is one way to address how the physical world is singled out in bundles of processes. Consciousness is thus a situated physical phenomenon.

An example may help to catch the gist of the Spread Mind hypothesis. Consider a subject looking at a white wall with black dots scattered on its surface. Some of these patterns may be grouped into a face, while others may be grouped into other shapes. Due to many different factors, the subject is going to perceive only one shape at a time. Each time she perceives something, a different physical process with different causes and different intermediate and final events is going to progress from the surface of the wall to the inside of her brain. Such a process carves out exactly the particular configuration the subject is aware of. The configuration was not there before being perceived, yet it is neither a creation of the mind nor something concocted inside the brain of the perceiver. Loosely speaking, both the neurons and the dots on the wall are cooperating to endorse the occurrence of a process which is the stuff both the configuration (the external object) and the phenomenal experience are made of.

According to an internalist perspective, the neural endings are the only relevant part of the process. This is by no means obvious. On the contrary, by adopting the Spread Mind perspective, the suggested physical process comprehends the perceived pattern. More precisely, the pattern comes into existence because of the process [Manzotti (2009)]. There are no longer intermediate descriptions of the world [Manzotti (2010)]. There are no more internal re-presentations of the world. There is only the occurrence of the world itself and the subject is made of it.

The Spread Mind suggests that the aforementioned physical process is the physical underpinning of both the phenomenal experience of the pattern *and* the pattern. The two notions are taken to be nothing more than two different perspectives on the same physical occurrence [Manzotti (2006)].

Consider a subject looking at a pattern on a screen (for instance the letter 'A'). What she sees depends on various factors – such as her visual apparatus, her cognitive skills, her categorization ability. If all these conditions obtain, a certain configuration of dots on the screen will become causally engaged with the activity inside her brain. If this is not the case, the alleged configuration will not be seen. If she were equipped with different sensor modalities – X-ray vision, for instance – other configurations might be causally linked with her brain activity. What she perceives is not independent of her being there with a certain bodily structure. She does not perceive the letter as if she were not there. What she perceives is the visual 'A' which is the result of the interaction of her body and certain patches of colours on the screen.

The assumption of the existence of the pattern corresponding to the letter 'A' waiting to be perceived is an oversimplification [Manzotti (2009)]. The so-called pattern is either a visual pattern, or a tactile pattern, or an auditory pattern, and so forth. Every alleged autonomous target of perception is indeed singled out by an actual perceptual process. The pattern is something that takes place rather than being a static and autonomous entity waiting to be perceived. In other words, the Spread Mind suggests that there is no pattern before the occurrence of the process. The pattern takes place whenever the conditions for its occurrence are met. The pattern is identical with the process.

The emphasis on processes is compatible with an ontological bedrock. Of course, before the perceptual process, there must have been other processes and there must have been a pre-existing reality. The pattern was not already there. The Spread Mind is not an idealist view. The pre-existing reality constrains what may or may not take place. When the subject opens her eyes, there are limitations as to what she may see. Yet, to a certain extent, her bodily structure has a role in singling out one actual process from the many still available. She cannot see a pink elephant, but to a certain extent what she will see depends on her cognitive and bodily structures. For instance, she may see an 'A' or three barely connected segments. Before her perception of the pattern, there are the dots, but the dots are not the pattern [Manzotti (2009)]. In turn, the same argument may be used to deal with the dots. Of course, below a certain physical level, there may be a bedrock of atomic simples.

What is the "pre-existing reality", if it is not a perceived pattern (e.g., the letter 'A'); and how does it constrain perception? Is it a Kantian noumenon? How do we know about it (obviously not through phenomenal experience)? As a matter of fact, from an epistemic standpoint, we have an experience only at the macroscopic level. The Spread Mind suggests that such a level is not a phenomenal level concocted by the brain; it is the physi-

cal world in its own right. We *are* identical to such a part of the physical world (made of processes extended in time and space). And what about the microscopic level then? The Spread Mind does not rule out the possibility that there are aspects and constituents of the physical world that do not participate as distinguishable components of our experience (I am not aware of what lies in the underground of my town, yet I am walking over it every day; I am not aware of very small or very short phenomena, yet they happen). Thus I may make hypotheses as to the constituents of reality that are not directly perceived by me. But these epistemic constraints are of a contingent, rather than metaphysical, nature. How do I do so? By observing the relations between the parts of reality that constitute me and thus putting forward a hypothesis as to the existence of unobservable entities. There is another way, of course, to get in contact with subsets of reality which are usually not available to human beings. We can design and implement prosthetic devices such as telescopes, microscopes, and the like. These devices bring us in physical contact with physical phenomena that are usually well beyond our reach by means of changing and extending our *Umwelt* [von Uexküll (1957)].

To the best of our knowledge, the physical world is made of basic entities such as atoms and energy units. However, we are not aware of them in everyday life. The macroscopic world of our everyday experience requires an ontology for macroscopic objects. I suggest here that such an ontology is grounded on processes rather than on objects. As to the bottom level, I will not argue here whether such a fundamental level is made of smaller processes as the string theory would indeed suggest. I leave the issue to much more skilled physicists than myself. However, whatever the nature of the basic level is, physics ought to explain how to step from such a low level to the macroscopic level we experience in our everyday conscious life. The Spread Mind framework presented here suggests that the physical world is made of the aforementioned basic stuff and of the processes in which that basic stuff gets involved. Processes are perfectly respectable citizens of the physical domain. Yet processes take place only when the right conditions are met.

The identity between our experience and the world is related to the transparency of perception [Harman (1990)]. As Michael Tye puts it “visual experiences... are like... sheets of glass. Peer as hard as you like via introspection, focus your attention in any way you please, and you will only come across surfaces, volumes, films, and their apparent qualities. [...] If we try to focus on our experiences, we ‘see’ right through them to the world outside” [Tye (2009), p. 261]. The model for situated consciousness predicts the transparency of perception – to perceive a pattern is nothing but to be that pattern. This makes sense once patterns (or perceived objects) are conceived as physical processes taking place in time and space rather than as autonomous static entities.

So far, the proposed hypothesis should not appear too challenging – after all, it suggests only swapping the focus from physical processes constrained by the boundaries of the skull to physical processes partially external to the body. In the previous section, I claimed that there is no empirical evidence for vehicle phenomenal internalism. But is there any empirical evidence in favour of the Spread Mind? It will be my aim to show that, although there is no conclusive evidence yet, there is no empirical proof against, either. Furthermore, as I will mention, the Spread Mind is not purely a speculative model insofar as it makes predictions as to the conditions necessary for the occurrence of phenomenal experience. Thus it is a scientific hypothesis and it will stand or fail mostly on empirical grounds. The Spread Mind, however counterintuitive, does not violate any known physical law. However, it may offer many advantages.

#### IV. REPRESENTATION AS A CASE OF IDENTITY

The model for situated consciousness proposed above deals in a new and unexpected way with the worrisome issue of representation. The traditional view suggests that the content of phenomenal experience is either a representation of something in the world or an intrinsic quality of internal states. Here I consider an alternative view: to perceive something does not entail concocting a representation of something, but rather perceiving something means that the something is literally part of the experience of the subject. Whatever the subject sees is identical with a process beginning in the environment and ending in her brain. In turn, the perceived object would be identical to that process. There is no separation between the physical world and the experience of the subject.

The above insight, which is at the core of the Spread Mind, may appear to be irredeemably wrong. It seems to run against one of the most entrenched assumptions both of philosophy of mind and cognitive science – namely that the mind “deals with” representations which are numerically and physically separate from what they represent. The claim that the apple one is perceiving is the same as the perception of the apple is rather hard to swallow: more than one reader may be tempted to believe that the suggested identity is an elementary slip-up. For some scholars, how could perceiving *X* be identical with *X*? The identity does not make any sense taken literally insofar as it is assumed that *X* is an entity existing autonomously. Once more, consider the apple. Suppose the apple stands on the table in front of the perceiver. The Spread Mind entails a re-conception of what both conscious experience and the physical world are. According to a traditional view, the world is made of entities that, like the apple, stand on their own. They are somehow at the origin of one’s mental states, which are numerically different from the world’s

entities. The Spread Mind suggests a different view. The physical world is made of processes. Some of these processes may constitute a subject, others may not. A subset of these processes is the apple perceived from one among many possible subjective perspectives. For instance, there is a visual apple, a tactile apple, an olfactory apple, and so on. They are separate and independent from each other. A subject may live all his life blissfully unaware of other possible processes (and thus of other potential apples). For instance, I have no idea what an echolocate apple may be like. Each of these processes singles out a certain apple. It is impossible to experience the apple regardless of such processes. Each process is thus identical with the experience of the apple under a particular physical perspective. Is there an amodal apple underpinning each of these processes? There is no need to make this assumption since it is neither the target of our phenomenal experience nor is it necessary to the physical description of the world. The amodal apple is a very useful conceptual shorthand, though. Like a centre of mass or a meridian. Both notions are very handy, but none is real.

To recap, there is no static apple waiting to be represented by means of perceptual processes (or worse, by means of the outcomes of such processes). There are only processes. Thus the visual apple is identical to the process encompassing both light rays and the neural activity in the occipital cortex (in addition to countless intermediate events and processes). This is the sense of the above claim that perceiving X is to be identical with X. It means that perceiving X is identical with X, insofar as X is not an abstract apple *in itself* but rather a visual apple, or a tactile apple, or an olfactory apple. The existence of the 'Apple' as something independent of any actual causal engagement is not really necessary. Once you reconsider the physical world – and the objects inside it – as made of physical processes, the claim that "perceiving X is identical with X" is no longer so counterintuitive.

## V. AN ALTERNATIVE APPROACH TO THE EPISTEMIC GAP

Could the answer to the riddle of phenomenal experience be the one suggested by the Spread Mind? It is correctly maintained that the epistemic gap outlined by scholars like Levine and Chalmers does not concern the neural on the one side and the external world on the other. Rather, it concerns the phenomenal domain on one side and the physical on the other. Thus it may seem that situated consciousness does not tackle the epistemic gap.

However, the main insight offered by the Spread Mind is that the epistemic gap appears so intractable because scholars have been looking for the wrong physical subset. Scholars have been looking mostly inside the nervous system and thus have despaired of finding anything that remotely resembles phenomenal experience. From the many possible physical phenomena, neural

processes are only one candidate among many. There are countless others. Of course, neural activity may have looked like the most promising choice. And yet, maybe, it was ill-chosen. In short, the bad reputation of the physical world may have been the result of an arbitrarily narrow choice. The Spread Mind suggests a solution to the epistemic gap by showing how the physical world may indeed host the same properties traditionally attributed to phenomenal experience.

Furthermore, the formulation of the epistemic gap is correct only insofar as we assume to know everything about the nature of matter. This is not necessarily the case. As Galen Strawson recently observed “We can know for sure that we’re quite hopelessly wrong about the nature of matter so long as our positive account of it creates any problem about how consciousness can be physical” [Strawson (2011)]. The same concerns have been raised by many physicists [Eddington (1929)]. Recently Galen Strawson argued that our subjective experience tells us something “about the intrinsic nature of matter, over and above everything we know in knowing the equations of physics. Why? Because we know the intrinsic nature of consciousness and consciousness is a form of matter” [Strawson (2011)]. Yet what matter exactly? What is the physical substratum which is our consciousness? What is the physical phenomenon that has the exact properties of our experience?

The idea of reconsidering the nature of the physical world is still a difficult idea for many scholars. The whole debate on the epistemic gap depends on our premises as to the nature of the phenomenal domain, the nature of the physical domain, and the subset of the physical domain that is proposed as the physical underpinnings of phenomenal experience. In fact, the Spread Mind suggests that there are physical processes whose properties will match the properties of phenomenal experience: intentionality, privacy, first-person perspective, and perhaps even qualia.

In short, I suggested that intentionality may be solved insofar as there is no more distinction between the object and the mental state, between the representation and the process of representing. Mental representations, in common with physical processes (like rainbows) are private insofar as they cannot be shared or observed from outside. Further, they have a somewhat first-person perspective since the way in which they single out an object depends on the point of view from which the beholder is interacting. Indeed which object is singled out depends on the point of view. Once the Spread Mind standpoint is adopted, the coupling between object and subject is so tight that it may be argued that the relation with the object is an intrinsic property both of the object and the subject. Of course, these are just the beginning of arguments that I hope may be properly developed. However, I have not yet touched upon the seemingly thornier issue: do physical processes have qualitative feel?

Although I do not pretend to provide a definitive answer, let me flesh out the skeleton of an argument that may address the epistemic gap regarding the qualitative aspects. Conceiving consciousness as a situated and indeed spread physical phenomenon may offer significant advantages as to the issue of the phenomenal character of experience. The phenomenal experience of something might not entail the emergence either of an unexpected phenomenal world or of a phenomenal character out of a physical world, rather it might mean that certain parts of the physical world act together – this unity might be consciousness.

Consider this example. You look around in a room. You see a plant, a computer and a bookshelf overflowing with books. Because of you, those things – which are processes – take place at once. If you were not there, those processes would remain isolated. If you were not conscious of your visual field as a whole, those processes would not intermingle. So there is a macroscopic and physical difference. Your physical presence – your *conscious* presence – makes the difference. I would dare to say that consciousness is precisely that difference. To be conscious of something is to allow that something to act as a whole. To be conscious of a room is to allow that room to take place as a whole.

The objects of the above examples are not unities in themselves. They are wholes occurring because of your body and your nervous system. They would not take place without your body in that room. The hypothesis is that their occurrence is coextensive with what you call your *conscious* experience of the room. Thus, conscious experience might be identical with the process-unity resulting from a collection of scattered events.

Thus, is phenomenal experience of a tree different from the tree? Yes and no. The tree, without being engaged with a perceptual system of a conscious being, is a scattered collection of relatively simpler processes. When you look at it, you allow the occurrence of a new and much larger process that, in turn, lets a substantial subset of those processes act as a whole. This process would not have happened without your body in that forest. The tree we have an experience of is that process too. Is there any true difference between your conscious experience of a tree and that process? They occur at the same time, in the same place. Furthermore, they put together the same aspects of reality (the tree, its leaves, its position with respect to you, and the like). Why should we separate them?

I am aware that this argument is still pretty crude. It is no more than a skeleton. However, the solution to the epistemic gap, as to the physical instantiations of the qualitative aspects of phenomenal experience, might consist in the way in which reality is partitioned into unities – each unity having its own specific form and thus its own specific quality.

## VI. DISPLACED PERCEPTION ... AT LAST!

For the sake of the discussion, let us suppose that the Spread Mind satisfies one's intuitions as to cases of veridical perception. Would the model not be contradicted by cases of displaced perception – namely hallucinations, dreams, after images, phosphenes, mental images, and the like? In all these cases, it seems that there is no external target from which the process may start. Apparently, there is no object to be perceived. I hallucinate an apple, and there is no apple to be included in the perceptual processes. Hence, what external object may constitute the physical process that is the mind? Are cases of displaced perception fatal counterexamples that rule out the Spread Mind? By and large, I will argue that the Spread Mind may indeed cope with displaced perception.

Unfortunately, due to space limitation, I cannot address all these cases here. However, I may focus on the familiar case of dreams, because they are the most often quoted cases of phenomenal experience occurring without direct contact with the external world. Moreover with minor changes, the same argument may be used for all cases of displaced perception. During a dream, the brain alone seems sufficient to sustain phenomenal experience identical or very similar to actual perception. This fact has been so convincing that many scientists consider direct perception as a special case of dreaming, namely a case where the external stimuli trigger brain activity that concocts a special dream that the subject believes is the real world [Edelman (1989); Revonsuo (1995); Lehar (2003); Metzinger (2003)].

However fascinating as this model may be, there is no conclusive evidence. First, we are not sure what a dream is. Second, there is no proof that a neural tissue is sufficient to concoct a dream. Would a brain in a vat dream? Would Block's fusiform area dream of faces? To the best of our knowledge, in order to dream, a subject must develop in a real environment and must have had physical contact with what she dreams about. There are no examples of dreaming subjects who have been isolated from the external world. Moreover, to the best of our knowledge, human beings dream of combinations of features/events/people which they have (or have had) physical contact with. This is a well known fact that should raise some suspicions as to the alleged autonomy of mental content in dreams. Most of the available evidence suggests that everything we dream about is the result of an actual physical continuity with some aspects of the environment. It is well known that dreams are made of phenomenal building blocks that are invariably the result of direct contact with the corresponding physical phenomenon in the external world. In dreams and in other cases of mental imagery, the brain seems incapable of producing autonomously new phenomenal content. During dreams, phenomenal experience is nothing but a recombination of past, actual, situated experiences. Systematic studies of dream content show a re-



markable lack of novelty in dreams with respect to real life [Domhoff and Schneider (2008b)]. The overall finding is that “dreaming consciousness” is “a remarkably faithful replica of waking life” [Snyder (1970), p. 133]. Not only does it seem that there is no pristine mental content, but even the combinations concocted by dream activity are seldom truly unusual - a notions dubbed *bizarreness* of dreams that measures the amount of events outside the norm. In most surveys the majority of dreams were rated as having little or no bizarreness [Snyder (1970); Domhoff and Schneider (2008a)]. Specific studies emphasized “the rarity of the bizarre in dreams” [Dorus, Dorus et al (1971)].

Congenitally blind patients offer a convincing case. They seem unable to have any phenomenal experience of colour and other purely visual content. Nevertheless, there is a widespread and largely unsupported belief that there are congenitally blind subjects able to experience visual content during dreams. This is, to the best of my knowledge, largely dismissed by actual data [Pons (1996); Ittyerah and Goyal (1997); Kerr and Domhoff (2004)]. Congenitally blind subjects do not dream of any colour and do not have any mental imagery with colours. In this regard, there is some confusion in the literature. Many allegedly born-blind subjects are neither blind nor born with that condition. Many subjects classified as congenitally blind became blind at a very early stage in their development (from a few months to a few years), but nonetheless they had some kind of contact with light-related phenomena. Once we set aside all the dubious and vague cases, it seems that no congenitally blind subject ever reported a mental colour of any kind. As shown in a detailed study on 372 dreams from 15 blind adults “those blind since birth or very early childhood had [1] no visual imagery and [2] a very high percentage of gustatory, olfactory, and tactual sensory references” [Hurovitz, Dunn et al (1999), p. 183]. Of course congenitally blind subjects have mental imagery of various kinds, but mental imagery is not necessarily “visual” imagery. They experience shapes and forms by means of proprioceptive and tactile direct contact in the environment.

If this were confirmed for every sensor modality, it would support the fact that mental content is not generated *inside* the brain, but rather it is the result of physical continuity with external phenomena. A possibility is that the difference between unconscious and conscious processes (either veridical or displaced perception) lies in the existence of a physically causal continuity with real events in the environment, no matter how long and complex.

Of course, a possible objection at this stage is that it is one thing to say that mental imagery is *caused* by (and even made possible by) causal contact with the physical environment and quite another to hold that mental imagery is *constituted* by causal contact with the physical environment. The conservative character of dream content is not a conclusive proof of the Spread Mind. However, at least it shows that the often misquoted example of dreams does not rule out the possibility that all forms of phenomenal experience are in-

deed forms of perception. In fact, if there were only one uncontroversial reported case of mental content radically unrelated to external physical phenomena, the Spread Mind would be falsified. Obviously, cases such as bodily feelings do not count since they occur within the skin but outside the limits of the nervous system.

The argument in favour of a constitutive role for the physical environment is more general and it may be useful to recap once more. The neural activity inside the nervous system does not appear to have any of the properties of our experience. On the other hand, the events in the external world are, to a certain extent, closer to what we experience. Is it so inconceivable that the processes beginning in the environment *may be* our own experience and not simply be playing a causal role?

At present, there is no empirical evidence capable of proving that the Spread Mind is correct. However, the aim of the paper would be fulfilled by showing the lack of empirical data ruling out the theory. After all, to the best of our knowledge, there is no empirical evidence in support of internalism, either. As I have mentioned above, there is no evidence showing that neural activity is sufficient to produce phenomenal experience and yet many scholars assume that it is.

But how can situated consciousness justify the fact that dream content is constituted by physical continuity with past events? The tentative explanation is the following. When we perceive the world there is a physical process that has begun in the environment and ends in our brain. This physical process takes time to complete. When we dream, the same conditions obtain. There is a physical process that has begun in the environment and ends in our brain. Suppose I dream of my grandmother deceased long ago. Is it plausible to admit that an actual physical process links my chat with my grandmother and the current activity in my brain? Could my mental imagery while dreaming not be constituted by a physical process encompassing my current brain and my past encounter with my grandmother? The difference between normal perception and dreaming may be only a matter of the temporal length of the corresponding processes. Dreaming may be just a case of postponed perception. Since such a delay also entails a change in spatial location, a more proper label could be *displaced* perception.

But why do we dream of bizarre combinations of previous experiences? What about the traditional flying pink elephant? May we dream of it, or of flying, or even of a conversation with our grandmother that never really occurred? A tentative explanation is that, during normal perception, the processes that constitute our mind are constrained by the proximal surroundings of our body. In temporal and spatial terms, the proximal environment is so overwhelming and compelling that one is bound by the surrounding causal order of the events. Thus I perceive the world more or less as it really is since I am continuous with my proximal spatial and temporal surroundings. But

when I am sleeping and my senses are to a certain extent shut down, the past events may freely exert their residual causal power in an almost arbitrary order. Thus, if I had an experience of a pink patch yesterday, of an elephant at the zoo last month, and of a fly when I was a child, nothing would prevent them from being the cause of a neural activation during my sleep. Then I would perceive three past events as if they were one and I will refer to that dream as to the dream of a flying pink elephant.

By the way, the same reorganization may occur in normal perception. For instance, suppose you look at a glass shop window in the evening. You see what lies beyond the screen (for instance a pair of shoes) but also the reflection of your face on the glass. So you see a head on top of a pair of shoes. But such a combination is not a mentally generated content. Rather, it is an unusual combination of perceptual processes normally separate. Dreams may be a similar case of displaced and scattered perception.

From a causal perspective, let me elaborate on the similarity between dreaming and perception. Consider a simple physical system: a bottle of water. You shake it. As a result, the liquid inside begins to move. When you stop shaking it, the water inside the bottle keeps on moving for a while. Suppose that, after a powerful shake, you put the bottle inside an insulating box. Is the bottle causally disconnected from the environment? Yes and no. Of course, the bottle and its content are disconnected from what is taking place outside the box. However, are the events inside the bottle (the movement of the water molecules) autonomously produced by the bottle? Obviously, the answer is negative. From the point of view of the physical processes involved, what is going on is causally continuous with external events which occurred a few moments ago (the shaking). From a causal perspective there is no real difference with respect to what happened when you shook the bottle. When you shake the bottle, the causal chain between your movement and the movements of the molecules is temporally so short that you have an intuitive feeling of being the cause of the water movements. When you put the bottle inside a box after a powerful shake, the causal processes are temporally longer, but you are still the cause of the water movements. Consider the analogy between 1) the shake, the bottle, and the movements of water molecules and 2) the external stimuli, the brain, and the neural activity. What goes on inside a brain is an echo of past stimulations received from the external world. When you are shaking the bottle, the case is tantamount to direct perception. You are causally affecting the bottle so much that you are prevailing on past causal influences. But when you put down the bottle, the influences of previous shaking are still exerting their influence on the inside of the bottle.

It could be argued that the kind of physical continuity between a past event and the moment of its recollection is only a case of causal connection between past events and current dreaming experience. There is merit in this argument and it is a point well taken. Yet, this is no different from what hap-

pens in veridical normal perception. When one perceives a tree in front of oneself, there is both a temporal delay and a causal connection between the light bouncing on the surface of the tree and the activity in one's brain. The case is no different from what happens when one is dreaming – there is a temporal delay and a causal connection. The same conditions obtain for internal neural activity – between two subsequent spikes there is a temporal delay and a causal connection. If we consider the possibility that a series of neural spikes (separated by time and causal connections) constitute a unity of some kind, why should we reject other cases? This is not a negotiable issue. It has to be admitted explicitly. The Spread Mind entails something stronger, namely, that those environmental factors are not only causally responsible but also, and crucially, *constitutive* of the corresponding experiences. If the Spread Mind claimed that external factors play a causal role in determining our conscious experiences, it would not be a very interesting thesis. This paper strives to make clear that the thesis is stronger than that. If the above considerations about the constitutive role of the environment are not convincing, the skeptic reader must explain why a 300 milliseconds process is indeed different from a 30-year process – given that all causal conditions are the same.

Instead of considering normal perception as a special case of dreaming as some authors suggest, dreams are seen here as a delayed and disordered case of perception. Thus it is finally obvious why I suggested using the term *displaced* to address all cases of apparent object-less perception (hallucinations, dreams, after images, phosphenes, and the like). By and large, the Spread Mind suggests that they are all cases of perception displaced in time and space according to unusual causal geometries.

To sum up, instead of being a counterexample of phenomenal externalism, dreams and other cases of non-veridical perception may offer a convincing test bed for the kind of situated consciousness advocated by the Spread Mind.

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