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**Sketch this: extended mind and consciousness extension**

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**Abstract**

This paper will defend the claim that, under certain circumstances, the material vehicles responsible for an agent's conscious experience can be partly constituted by processes outside the agent's body. In other words, the consciousness of the agent can extend. This claim will be supported by the Extended Mind Thesis (EMT) example of the artist and their sketchpad (Clark, 2001; 2003). It will be argued that if this example is one of EMT, then this example also supports an argument for consciousness extension. Clark (2009) rejects claims of consciousness extension. This paper will challenge Clark and argue that he fails to show that the material vehicles responsible for consciousness must be internal to the agent.

**Keywords:** Extended Mind – Cognitive Extension – Consciousness – Consciousness extension

## Introduction

Claims about extended mental states or cognitive extension have in the past decade received lots of attention in cognitive science and philosophy of mind. One of the foremost exponents of the Extended Mind Thesis (EMT) is Andy Clark. Clark argues that mental states and cognitive processes can, under certain circumstances, be partly constituted by material vehicles that criss-cross brain-body-world boundaries (Clark, 2008). However, interestingly, Clark explicitly rejects the claim that the same applies to consciousness. Instead, he argues that the vehicles responsible for conscious experience must, as a matter of contingent fact, remain brain-bound (Clark, 2009).

The central concern of this paper is with consciousness extension. This paper will examine and defend the claim that if you accept that the cognitive processes of an agent can extend, then you must also accept that the conscious experience of an agent can also extend. The example that will be used to illustrate this comes from the EMT literature, namely that of the artist and their sketchpad (Clark, 2001; 2003). It will be claimed that if the cognitive processing of the artist extends to include their interaction with the sketchpad or canvas (as Clark and others have argued), then the conscious experience of the artist also extends.

Two notions are worth clarifying at the outset however. First, in the debate over EMT, the term “constitution” is contrasted with the term “causation”. The Extended Mind Thesis is a constitutive claim (Clark and Chalmers, 1998). It is a claim about the constitutive role of environmental objects or processes in an agent’s mental or cognitive processing. It is this constitutive role that substantiates the notion of mental or cognitive extension. One of the main criticisms levelled against EMT is that the examples it gives only reveal the causal (and not constitutive) role of environmental objects or processes and hence do not demonstrate that the mind or cognition can extend outside the head (Adams and Aizawa, 2001, 2010). Thus, the distinction between constitution and causation has become (and is) central to the EMT debate.

Second, EMT is a constitutive claim because it is explicitly concerned with “vehicles”, that is, the physical processes or mechanisms responsible for mental and cognitive states and processes.<sup>1</sup> This is important since it may strike some as confused to talk of the mind extending. After all, do minds even have a location? If they do not, how can they extend? EMT avoids this problem by focusing on vehicles. For whether or not minds or cognitive states have a location, the vehicles responsible for minds or cognitive states must be spatially and temporally located.<sup>2</sup>

The layout of this paper is as follows. In “Two examples of extended mind”, two examples from the EMT literature will be introduced and outlined. The first example is that of Otto and his notebook (Clark and Chalmers, 1998). The second is that of the artist and his sketchpad (Clark, 2001; 2003). Clark and Chalmers argue that the Otto example demonstrates how mental states can be partly constituted by vehicles outside the agent. Clark argues that the artist example demonstrates how cognitive processes can be partly constituted by material vehicles outside the agent. Understandably, these examples have generated much debate (see Menary, 2010). For the purposes of this paper, it will be assumed that both examples are indeed cases of EMT.

In “Otto and the artist”, it will be argued that there is an important difference between these two examples. In the Otto example, there is a clear separation between cognition and consciousness. This entails that the Otto example is one of EMT that does not support an argument for consciousness extension. However, in the artist example, there is no such clear separation between cognition and consciousness. Consequently, if you accept that the artist’s cognitive processes are

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<sup>1</sup> Hutto and Myin (in press) argue that the Extended Mind Thesis is vulnerable because of an uncritical acceptance of the existence of contents and associated vehicles.

<sup>2</sup> This is a point that some fail to recognise. For example, Ross and Ladyman (reprinted in Menary, 2010:pp155-166) say “..our view is straightforwardly opposed to any thesis that minds are, as a matter of fact, partly located outside people’s heads. We don’t think there is any such matter of fact, as a special case of there being no fact about where minds are located at all. To talk about the location of the mind is simply to resort to metaphor.” (p156) I would agree that talk about the location of the mind is metaphorical, but since this is not what EMT is doing, this charge cannot be levelled against it.

extended by their interaction with the sketchpad, then you should also accept that the consciousness of the artist is extended by that interaction as well. That is, the artist is an example of EMT that does support an argument for consciousness extension. Since this challenges Clark's own views on the material vehicles of consciousness, "Clark and consciousness extension" will offer reasons as to why Clark's view should be rejected.

Thus, it is the central claim of this paper that in those moments of interaction between an artist and their sketchpad or canvas, the material vehicles responsible for the consciousness of the artist can be partly constituted by, and so extend to include, that interaction.

#### Two examples of extended mind

Consider the following two examples of EMT. The first example is that of Otto and his notebook. It is claimed that Otto's mental state, that is, his belief about the location of a museum, can be partly constituted by material vehicles outside his body – in this case, entries in his notebook (Clark and Chalmers, 1998). The second example is that of the artist and his sketchpad. It is claimed that when using the sketchpad, the cognitive processes of the artist can extend to include their interaction with their sketchpad (Clark, 2001; 2003). The following section will outline in detail these two claims.

Imagine two people: Otto and Inga. Otto suffers from a mild form of Alzheimer's disease and so has difficulty remembering things. In order to remedy this, he always carries with him a notebook. Any time Otto learns something new, he writes it down in his notebook. Inga, on the other hand, does not suffer from Alzheimer's. Her memory is just fine.

Now, consider the following scenario. Inga hears about a new exhibition at the Museum of Modern Art (MoMA) in New York that she is really keen to see. She thinks for a moment about where MoMA is, recalls it is on 53<sup>rd</sup> street and then sets off to visit the museum. Suppose that Otto also hears about the same exhibition and

he also decides he really wants to see it. Using his notebook, Otto retrieves the address of the museum and then he too sets off to visit MoMA.

Clark and Chalmers argue that, dependent on certain important conditions, the notebook can be viewed as much a part of Otto's mind as Inga's biological memory is a part of hers.<sup>3</sup> This is because "the notebook plays for Otto the same role that memory plays for Inga" (1998: 34).<sup>4</sup> This is a claim of functional parity. Clark and Chalmers argue that "[i]f, as we confront some task, a part of the world functions as a process which, were it done in the head, we would have no hesitation in recognising as part of the cognitive process, then that part of the world is (so we claim) part of the cognitive process" (1998:29).

Clark and Chalmers' argument can be summarised in the following way. There is functional parity between (1) the role of the notebook in Otto's long-term belief about the location of the museum and (2) processes within Inga's biological memory involved in her long-term belief about the museum. This is because the contents of the notebook are poised to guide and control Otto's behaviour just as the contents of Inga's biological memory are poised to guide and control her behaviour.<sup>5</sup> Since there is functional parity between the role of the notebook and the role of biological memory, and biological memory can be regarded as straightforwardly cognitive, then we can also regard Otto's use of the notebook as cognitive. That is, the notebook can be regarded as playing a constitutive role in Otto's long-term non-

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<sup>3</sup> Clark and Chalmers argue that there are four such conditions: "First, the notebook is a constant in Otto's life – in cases where the information in the notebook would be relevant, he would rarely take action without consulting it. Second, the information in the notebook is directly available without difficulty. Third, upon retrieving information from the notebook, he automatically endorses it. Fourth, the information in the notebook has been consciously endorsed at some point in the past, and indeed is there as a consequence of that endorsement" (Clark and Chalmers, 1998. As it appears in Menary, 2010: p 38).

<sup>4</sup> All subsequent quotes from Clark and Chalmers come from the reprinting of their 1998 paper in Menary, 2010.

<sup>5</sup> As Clark and Chalmers put it: "the information in the notebook functions just like the information constituting an ordinary non-occurrent belief; it so happens that this information lies beyond the skin" (1998:34).

occurrent belief about the location of the museum. In which case, Otto's mental state extends to include the physical entries in the notebook. That is, Otto's mind extends beyond his body into the world.

The second example of EMT comes from Clark (2001; 2003) and is that of the artist and their sketchpad. Clark argues that there is evidence to suggest that by externalising an image through drawing or sketching, agents can manipulate and transform that image in ways that they could not do by internal means alone.

For example, Chambers and Reisberg (1985) asked subjects to observe and then recall an ambiguous drawing such as the famous duck/rabbit picture. Subjects were briefly shown the drawing and then asked to engage in mental imagery so that they could re-draw the picture at a later date. The researchers found that when they asked the subjects to attend to the imagined drawing and find what is ambiguous in it - for example, in the case of a rabbit, find the duck, and vice versa - none of the subjects tested were able to do so. However, when asked to draw the image and find the alternative interpretation, all of the subjects tested were able to find the alternative interpretation.

Van Leeuwen, Verstijnen and Hekkert (1999) reach a similar conclusion when they examine the role of sketching in the creation of abstract art. They argue that our internal imaginative capacities allow us to combine components that retain their shapes into new recombined wholes. However, those very same capacities also prevent us from decomposing an imagined shape into wholly new components.

They then claim that this shows why sketching plays an important role in abstract art. This is because abstract art often depends on the deliberate creation of "multilayered meanings" – for example, cases where a shape or pattern supports multiple different interpretations. In which case, the inability of the artist to decompose an internal imagined shape into new components means that the only way for the artist to discover such new meanings in their work is by engaging in an iterated "trial-and-error process" with an external source. That is, it is only by sketching, observing what they have sketched, then re-sketching, then re-observing

what they have sketched etc, that the artist can uncover new perceptions in what they have drawn or sketched.

Clark argues that both the Chambers and Reisberg research and the Van Leeuwen et al research demonstrate that “human thought is constrained, in mental imagery, in some very specific ways in which it is not constrained during online perception” (2001:147). This leads Clark to conclude that when we think of the artist and their sketchpad, we should recognise that “the use of the sketchpad is not just a convenience for the artist, nor simply a kind of external memory, or durable medium for the storage of particular ideas. Instead, *the iterated process of externalising and re-perceiving is integral to the process of artistic creation itself*” (2001: 149, emphasis not in original).

Clark’s argument is that since the interaction between the artist and their sketchpad is integral to the process of artistic creation (as follows from the Van Leeuwen et al research), then the interaction should be viewed as cognitive and hence as a constitutive part of the cognitive processing of the artist. In which case, the vehicles responsible for the cognition of the artist will extend to include that interaction. If this is correct, then the cognitive processing of the artist will, under these particular circumstances, extend into the world.

We now have our two examples of the Extended Mind Thesis. If Clark and Chalmers are right about Otto, and Clark is right about the artist<sup>6</sup>, then both examples are instances of EMT. That is, mental states (in the case of Otto) and cognitive processes (in the case of the artist) can both be partly constituted by material vehicles (notebooks and sketchpads) outside the agent’s body. For the purposes of this paper, it will be assumed that these analyses of the examples are correct and these examples do indeed demonstrate how the mind and cognition can extend into the world.

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<sup>6</sup> Others also argue that the artist is an example of EMT, for example, Sutton (2002) and Kiverstein and Farina (2011).

### Otto and the artist

“Two examples of extended mind” introduced and outlined two examples of the Extended Mind Thesis – Otto and his notebook and the artist and their sketchpad. However, there is an important difference between the two examples and it is this difference that brings us to the central concern of this paper. This difference is that in the Otto example there is a clear separation of cognition and consciousness but in the artist example there is no such clear separation.<sup>7</sup>

In the Otto example, there is a clear separation between Otto’s mental state and his conscious experience. For although the vehicles responsible for Otto’s belief about the museum extend to include the contents of his notebook, his extended belief is not a conscious one. As Clark and Chalmers make evident, Otto’s extended belief is non-occurrent and dispositional. Thus, even though the vehicles of Otto’s mental state extend to include the contents of his notebook, these vehicles are not linked to Otto’s conscious awareness. Thus, there is a clear separation between cognition and consciousness in the Otto example and this separation ensures that even though the Otto example is one of EMT, it does not provide a further argument for consciousness extension.<sup>8</sup>

However, things are not so clear-cut when it comes to the artist. In this example, there is no separation between cognition and consciousness. To recap: the example builds on research indicating that by externalising an image an agent can manipulate and/or transform that image in ways that they could not do by internal means alone.

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<sup>7</sup> This claim is based on Clark and Chalmers original formulation of the Otto example (1998). Rowlands (2010) might argue that once we understand the Otto example in terms of his mark of the cognitive, there is no such separation between cognition and consciousness in Otto. However, given that Clark rejects claims about the need for a mark of the cognitive as well as claims about consciousness extension, I think it is doubtful that he would accept Rowlands’ reading of Otto. I leave it to the reader to decide who is correct.

<sup>8</sup> Clark (as it is reprinted in Menary, 2010: p45-46) states: “we allowed that (as far as our argument was concerned) conscious mental states might well turn out to supervene only on local processes inside the head. But insofar as the scope of the mental is held to outrun the conscious, occurrent contents (to include, for example, my long-term dispositional beliefs as well as my current conscious believing) there was no reason to restrict the physical vehicles of such nonconscious mental states to states of the brain or central nervous system.”



It is this transformative potential that, according to Van Leeuwen, Verstijnen and Hekkert, demonstrates the crucial role of sketching since sketching enables the artist to uncover “multilayered meanings” in their work. For Clark, this gives us an argument for why the artist’s interaction with the sketchpad plays a cognitive role, namely because “the iterated process of externalising and re-perceiving is integral to the process of artistic creation itself”. Since the interaction plays a cognitive role, then it forms a constitutive part of the cognition of the artist and hence it extends the cognitive processing of the artist.

Yet, if you accept all of the above, then this has an interesting consequence. This is because if the artist’s interaction with their sketchpad is a cognitive process, then it becomes pretty clear that it must be a conscious process as well. This does not mean that the artist must self-reflectively acknowledge their interaction with the sketchpad as a conscious process. Conscious experience is not limited to self-reflective awareness. It simply means that to the extent to which the artist is acting consciously during their back-and-forth with the sketchpad, then this back-and-forth will be a conscious process.

This fits with claims made by Van Leeuwen, Verstijnen and Hekkert who remark that “at the moment synthesised mental products are externalised, the unanticipated new information that can be taken from the sketch, comes much to the surprise of the artist. Also, in experimental settings (Vertijnen et al, submitted) many subjects reported this kind of *AHA-experience*” (1999:213, emphasis not in original).

This suggests that the artist’s interaction with the sketchpad is a conscious process. Importantly, this would also apply to those moments when the artist is so fully immersed in the artistic process that the back-and-forth between them and their sketchpad or canvas can be best characterised as a “flow”.<sup>9</sup> Even during such “flow” moments, the artistic process remains a conscious one, even if not an explicitly self-reflective one.

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<sup>9</sup> Thanks to Erik Myin for this point.

These considerations support the idea that there is no clear separation between cognition and consciousness in the artist example. That is, if you accept that the artist's interaction with their sketchpad is a cognitive process and hence a constitutive part of the cognition of the artist, then you should also accept that this process is a conscious process and hence also a constitutive part of the consciousness of the artist. In other words, if you accept that the example is one of EMT, then you should also accept that it is an example of consciousness extension.

This then marks a key difference between the Otto example and that of the artist. In the Otto example, there is a clear separation of cognition and consciousness. However, in the artist example, there is no such separation and if the cognition the artist extends to include their interaction with the sketchpad or canvas, then the conscious experience of the artist extends as well. Hence, the artist is an example of consciousness extension.

#### Clark and consciousness extension

Despite everything that Clark says about cognition, he maintains that claims of extension do not apply to consciousness. For Clark, the material vehicles responsible for conscious experience must, as a matter of contingent fact, remain confined to the head of the agent. Thus, if the position of this paper is correct and the artist is an example where the consciousness of the artist is extended, then Clark must be wrong to think that consciousness must be internal to the agent. As this section will hopefully demonstrate, this is indeed the case.

Clark (2009) argues that there are empirical reasons as to why the vehicles responsible for cognitive processes and those responsible for conscious experience must remain separate. This is because it is possible that "conscious awareness is special among cognitive functions in so far as it requires (in us humans at least) certain information-accessing and information-integrating operations whose temporal scale makes neural (brain/CNS) processes (just as a matter of contingent fact, in us humans) the only adequate 'vehicle'" (2009:983).

Clark draws together two points in support of his claim. The first is to do with the body as a low-pass filter. The second is to do with neural synchronicity and temporal binding in the brain. Clark argues that these points support the claim that the only adequate vehicle for conscious experience is neural (brain/CNS) processing.

The first point is based on work by neuroscientist and philosopher, Chris Eliasmith (2008). Eliasmith argues that bodies have mass and act like “low-pass filters” in that they slow down the transfer of information. This ensures there can only ever be low bandwidth information transfer between brain and body. If, as Clark claims, consciousness depends on high bandwidth information processing, then Eliasmith’s work supports the idea that such processing cannot, as a matter of empirical fact, occur between brain and body. As such, high bandwidth processing must be confined to the brain.

Clark then argues that there is evidence (for example, Singer 2003) that demonstrates that consciousness does indeed depend on such high bandwidth processing. It is argued that this evidence indicates that fine time-scale synchronies of neural firing patterns are the means by which the brain binds together neurally represented information.

These points lead Clark to claim that “[i]f indeed the physical machinery of conscious experience requires fast timescale operations and processing, and the non-neural body acts as a low-pass filter preventing external (and internal, muscular etc) signals from directly entering into such operations and processing, then such signals are fit to play only a causal role, driving the neural systems within which the right kinds of fast binding and processing can occur” (2009: 986).

Clark’s argument then is that the neuroscientific evidence demonstrates that the link between brain, body and world for consciousness can only ever be causal; it cannot be constitutive. That is, the brain may causally depend on its interactions with the body and world to produce conscious experience. Nevertheless, the actual machinery that constitutes conscious experience – the adequate vehicle - must, for empirical reasons, be found in the brain. If Clark is right, then even if the artist is an example of EMT, it cannot also be an example of extended consciousness.

However, there are reasons to challenge Clark's argument. Notice that if internalism about consciousness is true – what Noe (2004) refers to as the “consciousness in the head” model - then neural (brain/CNS) processing must be both necessary and sufficient for conscious experience. That is, the brain must be necessary in that there is no conscious experience without a brain and the brain must be sufficient in that it is the brain that constitutes your conscious experience (even if the brain depends for its proper functioning on being embedded in a living body).

Internalism about consciousness must demonstrate a necessary and sufficient relation between neural processing and conscious experience. This is because if neural processing is simply necessary for conscious experience, then the externalist can argue that brain-body coupling (Cosmelli and Thompson, 2010), or even brain-body-world coupling (Thompson and Varela, 2001), are also required for conscious experience. If internalism is to rule out these possibilities, then it must demonstrate a necessary and sufficient relation. The problem for Clark, as we shall see, is that the mechanisms he appeals to – synchronicity and binding – do not demonstrate such a relation. In which case, they cannot be used to support an internalist claim about consciousness.

Consider the following evidence. Revonsuo and others (Revonsuo et al 1997; and Revonsuo, 1999) tested the hypothesis that 40-Hz synchronisation of neural populations was associated with the binding of visual precepts into coherent wholes.

<sup>10</sup> In one experiment, they used scalp EEG measuring to test subjects perceiving the same stimulus (generated by a random dot auto-stereogram) in one condition as an incoherent collection of random dots and in another condition as a coherent, symmetrical three-dimensional gestalt.

What they found was that “[c]ontinuous viewing of the same stimulus in the incoherent vs coherent condition was not associated with significant differences in 40-Hz synchronisation.” (1999: p183). That is, although there were large changes at the level of the subject's visual awareness i.e. the transition from incoherent image

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<sup>10</sup> Thanks to an anonymous reviewer for bringing this data to my attention.

to a coherent image, these changes in perceptual experience did not correspond to changes in high bandwidth synchronicity in the brain.

In a further experiment, subjects were asked to “free fuse” the random dot stereogram image and push a button as soon as they saw the three-dimensional gestalt. It was found that although an increase in 40-Hz synchronicity was detected at occipital and right parieto-temporal scalp electrodes, this increase occurred *before* visual awareness of the coherent percept was reported. Revonsuo states “40-Hz synchronisation thus seems to participate in the construction of the unified percept, but not in the continuous viewing of the same stimulus once it has been constructed and persists in visual awareness” (1999: 183).

This data suggests that there is not a necessary and sufficient relation between high-bandwidth synchronicity and perceptual experience. In the first experiment, there were changes in visual content without changes in 40-Hz synchronicity. In the second experiment, such synchronisation seemed to participate only in the construction of the visual content and was not a direct neural correlate for that content. This suggests that there is only a necessary relation between high bandwidth synchronicity and visual content - you need the former to have the later. But there is not a necessary and sufficient relation since changes in one could occur without changes in the other. This data then indicates that neural mechanisms like that of synchronicity and binding do not rule out the possibility that factors beyond the brain, such as brain-body coupling, or brain-body-world coupling, are also necessary conditions for conscious experience. In other words, such brain mechanisms cannot be used to demonstrate internalism about consciousness.

Of course, nothing said so far rules out other brain mechanisms from being both necessary and sufficient for conscious experience. All that has been shown is that the neural mechanisms Clark appeals to do not demonstrate such a relation. But if such mechanisms do not demonstrate such a necessary and sufficient relation, then Clark’s claim that the only adequate vehicle for conscious awareness is neural (brain/CNS) processing looks to be unsubstantiated. Crucially for this paper, Clark

cannot then exclude the possibility that the conscious experience of the artist can also extend to include their interaction with their sketchpad or canvas.

### Conclusion

Consider the following quote from the abstract expressionist painter Jackson Pollock: “When I am in my painting... I try to let it come through. It is only when I lose contact with the painting that the result is a mess. Otherwise, there is pure harmony, an easy give and take, and the painting comes out well.”<sup>11</sup> If the example of the artist is one of EMT, then this example supports an argument for consciousness extension. That is, the example supports the idea that the material vehicles of conscious experience can, under certain circumstances, extend beyond the head to include the body and its interaction with an environment. This challenges Clark’s view of consciousness but, as we have seen, there are reasons to doubt the veracity of Clark’s view. All of which means when we consider the above quote from Pollock, we should recognise that it perhaps describes not only his creative process but also how this process could extend his conscious experience into the world around him.<sup>12</sup>

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<sup>11</sup> Possibilities, Vol. 1, no. 1 Winter 1947-48, p79; as quoted in Jackson Pollock, Elizabeth Frank, New York. 1986, p68.

<sup>12</sup> This also raises a question that I have not explored in this paper. Could the interaction between artist and sketchpad help explain the therapeutic value of art in art therapy? For example, if patients can access new perceptions through drawing or painting - perceptions that they could not access by internal imagery alone - then perhaps it is this accessing that affords them better understanding of their own problems. If this were true, then cognitive and conscious extension could be important to understanding the therapeutic value of art in art therapy.

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