

Book Review

Supersizing the Mind:
Embodiment, Action and Cognitive Extension

Andy Clark
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Supersizing the Mind sets out a dazzling and bewitching account of Andy Clark's Extended Mind Theory. (EMT thereafter) The book begins as a manifesto, with a précis aimed at summarising Clark's more recent achievements. It goes on with a defence of the claim that mind, body and world intermingle in the service of adaptive success, thereby arguing against some recent critical attacks, and ends with a solid and balanced portrayal of the new embodied perspective. It consists of 3 parts, each of which contains cogent statements and compelling explanations chaperoned by witty and wisecracking critiques of potential opponents. The volume is further divided into 10 chapters, sorted with a specific purpose: to make the extended mind thesis a revolutionary hypothesis and a theoretical framework for cognitive science. Clark defends a conception of the mind that dares one to abandon virtually every vestige of the comfortably Cartesian standpoint. Cartesianism postulates, among other things, the superiority of the mind to the body. Mind and body are wholly separated and incommensurably opposed. The mind must be a non-bodily entity, a mental substance (*res cogitans*) isolated from the world which dominates the physical from above. Clark challenges such a view and does a striking job in presenting a vision of cognition in which the organism and its interactions with the environment takes center stage; an original portrait in which dynamic couplings with the milieu chaperon internal representations. This account promises to reconfigure our understanding of the relationship between brain, body and world. Minds are not encapsulated in the head nor are

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they exclusively embedded in the milieu; rather they emerge through the plastic, constitutive and dynamical ties which reciprocally and proactively interconnect them with the world by means of the lived body.

The EMT is a view about the location of the physical mechanisms of thinking and thoughts that envisions the emergence of augmented cognitive systems through the coupled combination of externally located resources, bodily manipulations, and in-the-head processing. It allows for distributed representations to extend into the environment and to transcend the boundaries of the cognitive architecture of the biological cognizer through dynamical couplings and cognitive loops. The EMT radically differs not only from any orthodox approach to cognitive science, but also from any embedded account of mind. It individuates certain circumstances under which thinking and thoughts (or better, the material vehicles that realize thinking and thoughts) are spatiotemporally distributed over brain, body and world, in “a such a way that the external (beyond-the-skin) factors concerned are rightly accorded fully-paid-up cognitive status” (Wheeler, forthcoming), and cognitive systems are taken «as reaching beyond individuals into their physical and social environments» (Clark and Wilson 2009). Accordingly, the main thesis of the book is that our thinking doesn’t solely happen in our heads by virtue of certain, undefined intracranial processes; rather it occurs in the dynamical and holistic interplay between neural structures, body and world as this reciprocal interaction constitutively moulds, shapes and augments our skills. As Clark pointed out “certain forms of human cognizing include inextricable tangles of feedback, feed-forward and feed-around loops: loops that promiscuously criss-cross the boundaries of brain, body and world”. Cognition ain’t all in the head; rather it embraces bits of the extracranial body and items in the world beyond. *Supersizing* thus offers an unremitting argument in favour of a view that sees cognition as a transcranial activity; an organism centred occurrence.

This lead us to the analysis of one of the main themes of the book. That is, the relationship between the EMT and functionalism. According to the canonical formulation of functionalism, “what makes something a mental state of a particular type does not depend on its internal constitution, but rather on the way it functions, or the role it plays, in the system of which it is a part” (Levin 2008). Classical functionalism therefore provides both a theoretical framework and a solid basis for the claim that creatures, whose minds happen to be scaffolded out of bio-physical constrains, may still be cognizers. The

EMT relies on such a view and fully embraces this perspective. One of the main arguments used in the literature to argue for the EMT is the Parity Principle. The Parity Principle forges a strong connection, an inextricable bond between functionalism and EMT by providing a well established platform for securing the multiple realizability thesis. That is, the thesis that same mental property can be implemented by different physical properties. The Parity Principle runs as follow:

If, 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 recognizing as part of the cognitive process, then that part of the world is (so we claim) part of the cognitive process. (Clark and Chalmers 1998, p. 222)

Clark now revisits and further specifies its range:

it was meant to engage our rough sense of what we might intuitively judge to belong to the domain of cognition—rather than, say, that of digestion—but to do so without the pervasive distractions of skin and skull. (Clark and Chalmers 1998, p. 114)

Many objections have been raised against functionalism some of which also apply to the EMT. Rupert (2004, 2009) and Adams and Aizawa (2001, 2008) have consistently engaged the EMT, challenging Clark on many fronts. Many of these objections will be familiar to people who have kept abreast with the critical literature directed at the EMT in the past decade. These are, the worry about the causal-constitution conflation which generates the need for a mark of the mental (mark of the cognitive thereafter). The worry that there couldn't be a science of the extended mind and the question about how to individuate functional roles. Let me spend a few lines on each of these objections trying to summarize Clark's replies.

Adams and Aizawa have highlighted that it is not sufficient for genuine and authentic cognitive extension that thinking be spatially and dynamically distributed over brain, body and world in the sense that applies when some instance of intelligent behaviour is revealed to be causally dependent on the bodily exploitation of certain external props or aids. They have argued that the hypothesis of extended cognition confuses the claim that some problem solving behaviour is causally dependent on a part of the external environment for the claim that a part of the external environment can form a part of a cognitive process. Such a causal-constitution conflation would entail, on their account, the need for a mark of the cognitive to distinguish factors that are genuinely

parts of a cognitive system from factors that are only making a causal contribution. They have insistently argued that there must be such a mark in place prior to efforts to justify extended cognition. Without such a mark there wouldn't be any possible defence for the claim that cognition extends. But do we really need a mark of the cognitive? While, Wheeler in his forthcoming book (*The Extended X*, forthcoming) embraces such a perspective and believes that we must deploy a mark of the cognitive to argue for the EMT, Clark is quite suspicious about this claim. In the first instance, he shows that Adams & Aizawa tell us very little about non-derived representations and then he poses the following question: «Do Adams and Aizawa really believe that the cognitive status of some target process requires that process to exhibit all the idiosyncratic features of terrestrial neural activity?» (p. 93). In other words, to embrace their' view would cause us to scale new heights of anthropocentrism and neurocentrism. What is truly needed is, on the contrary, the constitutive dependence of mentality on external factors, the sort of dependence that Wheeler calls ontological distribution. «To demand identity of fine-grained causal role is surely to set the cognitive bar too high and way too close to home» (p. 93).

The second objection concerns the nature and «feasibility of the scientific enterprise implied by taking so-called transcranialism seriously» (p. 93). In its simplest form it says that «science tries to carve nature at its joints» (Adams and Aizawa 2001, p. 51). Adams and Aizawa have argued that transcranial extended processes, (such as those prescribed by the EMT) are unlikely to give rise to interesting scientific regularities. Out of the three this is certainly the weaker worry and Clark himself doesn't spend too much time in replying to it. His response is sharp and run as follows:

The argument from scientific kinds is doubly flawed. It is flawed by virtue of its rather limited conception of what makes for a proper scientific or explanatory enterprise. And it is flawed in its assessment of the potential for some form of higher level unification despite mechanistic dissimilarities. It is, above all else, a matter of empirical discovery, not armchair speculation, whether there can be a fully fledged science of the extended mind. (p. 96)

The last objection pertains to memory and is closely related with the first. Detractors of the Extended Mind have argued that a Parity Style Argument cannot be deployed to describe Otto's relationship with his notebook because the cognitive routines embracing biological memory significantly differs from those involving external stores of information. In particular, Adams and Aizawa

have argued that certain phenomena (such as that of negative transfer) would not exist for notebook entries, as these are distinctively developed in the bosom of biological memory. Moreover, Otto's "remembering" involves perception whereas Inga's memory does not. According to such critics, Otto's relation to the notebook wouldn't be identical to the relation a normal person would have to its reminiscences; likewise the notebook wouldn't be able to process genuine memory. Such a conclusion, on Adams and Aizawa's view, would substantiate the aforementioned scepticism, casting mighty doubts on the validity of the EMT. Clark replies as follows:

[the] claim was not that the processes in Otto and Inga are identical, or even similar, in terms of their detailed implementation. It is simply that, with respect to the role that the long-term encodings play in guiding current response, both modes of storage can be seen as supporting dispositional beliefs. It is the way the information is poised to guide reasoning [...] and behaviour that counts. (p. 96)

In other words, Clark denies the need of a fine-grained correspondence. What matters in his account is the coarse similarity between Otto and Inga. This coarse similarity is then exploited 1) to show that Otto's mind extends in his notebook; 2) to demonstrate that there is no logical base to distinguish between inner and outer contributions; 3) to deny the need for a mark of the cognitive.

Many accounts of mind take the body as a fixed entity, an immutable and unalterable entirety. Clark challenges such a mindset by picturing the body as a flexible, boundless and fully "negotiable" unit; thereby offering a fresh and challenging view aimed at describing the role of embeddedness for cognitive agents in cultural environments. The idea of scaffolding minds in the milieu becomes crucial and it guides us through the notions of incorporation and transparency. With these ends, *Supersizing* substantiates what *Natural Born Cyborgs* (2003) had only envisioned. According to Clark, cognitive agents alter their environments in an effort to enhance their cognitive capacities. The dynamical coupling with embedded interactive features (such as sensory substitution devices) via cross-modal multisensory integration, directly exploits our innate neural opportunism, opening us to augmented processes of deep biotechnological symbiosis. Such symbiotic processes are carried out by means of incorporation. Incorporation of non-bodily artefacts into body representations involves radical changes both in motor and perceptual capacities. Such diachronic inclusions profoundly alter our peripersonal space,

allowing our body schema to extend along the wielded tool and incorporate it. Once the apparatus becomes incorporated, tool-use results into a feeling of transparency in which the contrivance itself co-enables a new form of experience. In other words, such couplings exploit the plasticity of our brain to couple with highly modular, portable, adaptive and non-invasive interfaces (Clark suggestively calls such interfaces “mind enhancing tools”), so as to give rise to significant somatosensory and cognitive extension.

In the third part of the book, Clark tries to restrain the ambitions of those who have pushed the embodied perspective beyond its limits. Primary object of his critique is Alva Noë. Clark believes that Noë went wrong in attributing too much dependence of perceptual experience on features of the body. In a number of co-authored papers written with Susan Hurley and Kevin O’Regan, Noë has promoted the idea that perception is a function of (implicit) knowledge of sensorimotor contingencies. This claim has been further developed both in *Action in Perception* (2004), and in the more recent *Out of our Heads* (2009). Here Noë puts forward the idea that the qualitative character of an organism’s experience is determined by its particular sensory organs. Such a qualitative character is identified with specific sensorimotor contingencies. Differences in sensory apparatus give rise to differences in sensorimotor contingencies. Therefore, on Noë’s view, differences in sensory apparatus yield differences in qualitative experience. On Clark’s account, Noë is guilty of *sensorimotor chauvinism*, as he «holds, without compelling reason, that absolute sameness of perceptual experience requires absolute sameness of fine-grained sensorimotor profile» (p. 177). And Clark continues:

strong sensorimotor model of perceptual experience do us a service by foregrounding embodied skills and eschewing appeals to qualia as traditionally conceived. But they fail to do justice to the many firewalls, fragmentations, and divisions of cognitive labour that characterize our engagements with the world our senses reveal. (p. 195)

So, why not replace this common sensorimotor currency, with a more complex picture which allows certain organisms with dissimilar perceptual capabilities, or different modes of interacting with the world, to have analogous perceptual occurrences? In other words, why not assume that some perceptual experiences are impassive or unresponsive to differences in sensorimotor contingencies?

The last two paragraphs lead us to the final section of this review, in which I briefly analyse the possibility for Extended Consciousness and cast some

doubts on Clark's view. *Supersizing* contains the seeds of a bounded intracranial account of Consciousness. Such an account has been further argued for by Clark in a recent article (Clark 2009), where he has explicitly denied the existence of extended conscious experience. The argument he provides to corroborate his claim is strictly functionalist and, as far as I am concerned, a little too conservative. Consider in this context sensory substitution devices. Clark accepts that SSDs could realise new kinds of experience, but he holds that the machinery of consciousness remains pretty much in the head. Clark is committed to the possibility of SSDs contributing to the realisation of new kinds of experiences because such a possibility 1) promises to stretch and further enrich our understanding of cognition; 2) would in turn corroborate his active externalist account. (The view that sees cognition as continuous with processes in the environment). He nevertheless believes that «it seems far from plausible that consciousness extends outside the head» (p. 223). New kinds of occurrences can only be experienced because of the constitutive contribution of the organism. In other words, the naked brain taken on its own could perfectly do the job without the need of any external resource. The couplings with the technological domain wouldn't therefore significantly affect the machinery of consciousness. I want to say something slightly different and perhaps push Clark's claim a little bit further. Through the coupling with such devices, the agent acquires novel sensorimotor contingencies; he develops new somatosensory connections, masters new skills and experiences new occurrences in a way that would have been impossible without them. Sensory Substitution thus stretches the bounds of cognition, as well as those of perceptual awareness. We put forward the idea that "if perceivers using sensory substitution devices do count as extended cognitive systems, the experiences they enjoy should also be counted as extended conscious experiences" (Kiverstein and Farina, in progress).

Where Clark sees only an alteration of the content underlying conscious experience, we envision an extension of the machinery of consciousness itself. We therefore postulate an alteration of the mechanism underlying conscious experience.

Supersizing sets, in a masterly manner, the stage for the next round of theoretical speculations in this area, fabulously interweaving lots of different disciplines in the service of philosophical Truth. Highly accessible, judiciously written and visionary conceived, it will turn you "into a smarter, deeper and more insightful person" (Chalmers, preface). The book is written for academic

professionals and deals with sophisticated topics, but Clark's admirable style makes it very enjoyable reading. Enlightened reasoning, stylish arguments, intense prose and witty digests make it well worth your time. Rigorous and pragmatic as Dewey, bright and sharp as Feyerabend, visionary and demiurgic as Merleau-Ponty; Clark will passionately enthuse new generations of thinkers. A philosophical masterpiece.

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