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When Minds Won’t Stay Put:

A Review of Andy Clark’s Book *Supersizing the Mind:*

Embodiment, Action, and Cognitive Extension

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Abstract

This essay critically reviews Andy Clark's new book *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, in which he argues that there are circumstances in which the mind, properly considered, is found to supervene on not only the brain, but the body and the external environment as well. This review summarizes Clark's major contributions to this viewpoint for the general reader, and then raises a few critical points that help to contextualize Clark's claims, aims, and methods, while highlighting the book's strengths and weaknesses.

Keywords

Cognitive extension, embodied consciousness, mind, functionalism, cybernetics

Ask your neighbor: "If you had to locate your mind, where would you point?" In all likelihood, the overwhelming response will be a finger on the cranium. Ask Andy Clark, a professor of Philosophy in the School of Philosophy, Psychology, and Language Sciences at Edinburgh University in Scotland, and you might see him point to his mouth, his hands, and even occasionally to objects in the world such as pencils and notebooks. By way of explaining this seemingly odd behavior, Clark might shrug and hand you his newest book, *Supersizing the Mind: Embodiment, Action, and Cognitive Extension* (Clark, 2008).

In this work (StM), Clark attempts to flesh out (pardon the pun) the thesis that minds are not located *simply* or *solely* in the brain (or even the brain and central nervous system). Rather, minds are "adaptively potent mashups extruded from a dizzying motley of heterogeneous elements and processes," (Clark, 2008) which include – at least in some circumstances – the body and parts of the environment as well. StM presents Clark's most concentrated case to date for this theory, which he calls EXTENDED, and fills a place in the literature as an important step in the ongoing development of how we think about the mind.

In a no-holds-barred approach, Clark weaves together a multilayered patchwork quilt from a vast array of sources and perspectives, building up a complex and multileveled space of overlapping themes into which the claim of extended, embedded cognition slides like a hand into a glove. The consistent density of the text, Clark's frequent but skillful usage of specialized terminologies, and his occasional forays into what seem almost like one-on-one debates with other authors in the field, call for readers to extend not just their minds but their attention as well. Readers may occasionally feel like they have bought a ticket on an intellectual roller-coaster as they move through the very detailed and often intricate arguments supporting his thesis, and

although not an easy read, working through StM is both rewarding and mind-expanding – literally.

Clark's basic proposal, arising out of his 1998 article with David Chalmers (Clark & Chalmers, 1998), and which is kindly reproduced in its entirety as an appendix to the present book, is that

> the actual local operations that realize 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. The local mechanisms of mind, if this is correct, are not all in the head. Cognition leaks out into body and world. (Clark, 2008 p. xxviii)

This talk of feeding loops shows Clark's debt to cybernetics and dynamical systems theory, and provides him with a basis from which he can develop a series of complex arguments for keeping the mind complex. He wants to free the study of mind from its over-reliance upon neuro-centric representationalism and computationalism by showing that minds are more resilient and adaptable in their functional instantiation than cognitive science and the philosophy of mind generally like to consider. It is understandable that such a push meets with opposition, if only because it necessarily involves the (re)introduction of layers of complexity that are difficult to identify and deal with experimentally (and even conceptually as well). The subtleties at work in the interaction of cognitive processes that continuously and adaptively span brain, body, and environment offends a sensibility that wishes to clearly and unequivocally locate cognition: it is perhaps simply easier to think that the mind is nicely locked-up in the brain.

Clark offers a useful analogical tool, originally proposed in his article with Chalmers and now officially called the Parity Principle, which states that

> If, as we confront some task, a part of the world functions as a process which, were it to go on in the head, we would have no hesitation in accepting as part of the cognitive process, then that part of the world is (for that time) part of the cognitive process. (Clark & Chalmers, 1998)

A number of subtleties are revealed here. First is that Clark's proposal is one which rests almost entirely upon functional considerations. By placing a functional view at the forefront of considerations about the mind, all the debate about the particulars of its material basis as either in or in and beyond the brain become less interesting, even, dare I say, almost trivialized. If mind can be reduced to functional relations, it isn't a major leap to consider that any number of physical situations involving non-biological components with functional equivalence (or even just close-enough similarity) provide for the emergence of characteristics that rightfully could be called 'mind'.

Despite his careful and appropriate use of technical terminology, it is the more general terms like 'mind', 'agent', or 'experience' which ultimately cause more trouble. Clark's arguments don't consistently respect the difference between speaking about mind (and its phenomenology) and speaking about the physical basis for mind. This is the case even though Clark recognizes a distinction between the 'content' of the mind and its explicitly material 'vehicles', giving rise to his wise claim that "we conflate vehicles and contents … at our philosophical and scientific peril" (Clark, 2008 p. 76). Unfortunately, Clark sometimes falls short of this in practice, using language that subtly ignores or obfuscates the question of the actual nature of the mind (and not the nature of concordant physical processes). This is not necessarily a failing unique to Clark, and characterizes the approach of anyone who is comfortable reducing the mind to physical-goings-on. Yet Clark himself doesn't explicitly make a claim in this regard

one way or the other; he certainly wants to allow for a materialist view of mind, but his work also seems to leave the door at least slightly open for a view of mind which is more subtle, complicated, and phenomenologically interesting.

In any case, functionalism is already a strange beast: what do appeals to function reveal, and more importantly, conceal about the nature (and not just operation) of the mind? In a pinch, I can use my fingernail, functionally, *as* a screwdriver. Does this mean my fingernail, in that moment, *is* a screwdriver? If we say 'for all intents and purposes they are functionally equivalent', then we should be clear about the ontological positioning of such a statement. If we follow Clark's conclusions, then questions about the ontology of what we call (and *experience as*) mind can be answered with appeals to the complex behavior of functional systems. Thus, in reading StM, we actually find relatively little talk about the mind, and much more about cognitive processes, morphological computation, distributed functional decomposition, cognitive niche construction, deictic coding, and so forth. If you have the feeling that, despite the obvious erudition and power of Clark's presentation, something essential is missing, then you may be right: the essentialist view of the mind is not in scientific vogue, and even if it was, functionalist, materialist, and essentialist views all meet with similar difficulties in trying to explain how mind and matter meet.

Given this difficult situation, Clark's book is very beneficial to the field in that he demonstrates how to think about mind (…cognition? cognitive processes? mental states? agents? – let's leave this question on the back burner for now) in a way that tries to keep as many explanatory doors open as possible, even while tacitly avoiding or slipping past any ontological commitments. He explicitly and admirably wishes to show that "*computational, representational, information-theoretic, and dynamical approaches* [are all] *deeply*

complementary elements in a mature science of the mind." (Clark, 2008 p. 24, emphasis in original). Clark's sensitivity to the complexity of the issues well-positions him to avoid overbearing reductions in favor of a non-trivially integrated approach which has its roots in many fields, potentially yielding fruit more tasty and diverse than can be offered by the major approaches taken singly.

Most criticisms laid at the feed of EXTENDED by those who wish to locate cognition squarely in the brain are met with one of Clark's most useful and direct analogies. The brain, the most complex and informationally dense object known in the universe, is by no means a simple, singular whole, but is comprised of a plethora of diverse structures and areas, contributing to both specific and global processes. Proponents of brain-only minds (a theory Clark calls BRAINBOUND) have to carefully consider how they answer questions about the location of cognition within the brain. It is obvious that all areas of the brain do not equally share in the esteem of being the physical basis for cognitive processes - some areas do more, some less. BRAINBOUNDers, if they don't wish to fall prey to the reductio ad absurdum of shoving mind into only certain parts of the brain, and ultimately into singular neurons, have to contend with the unavoidable functional interconnectedness of different brain regions. But once they admit that cognitive processes span a wide variety of different specialized brain areas, they find themselves having to answer to the exact same criticisms they level against EXTENDED's attempts to show the brain adaptively and even promiscuously uses whatever strategies it can, regardless of whether they take place inside or outside of the brain.

Indeed, a large part of the arguments in StM are aimed at bringing to light the specific nature and qualities of the various modes of interconnectedness which lie at the root of cognitive processes, and which (granted the functionalist position) in no way intrinsically require or rely

upon the specifically biological meat of the brain for their physical basis. As Clark more elegantly puts it,

> where ongoing human cognitive activity is concerned, there are usually many boundaries at play, many different kinds of capacity and resource in action, and a complex and somewhat anarchic flux of recruitment, retrieval, and processing defined across these shifting, heterogeneous, multifaceted wholes. To identify the bounds of cognition with the bounds of the brain/CNS, or even with those of the biological organism, is to elevate just one or two of these many boundaries and interfaces to permanent cognitive glory at the expense of all the rest. (Clark, 2008 p. 138)

It is perhaps Clark's interest in artificial life, robotics, and the 'technical' side of intelligence and cognition that keeps him from including considerations and connections provided through a phenomenology of experience - consistently lacking in StM. But luckily, the active reader can help fill this gap. One of the benefits of reading StM lies in the way that its arguments reflect directly on our own lived experience of cognition, giving us a very different way to think about our thinking. Upon reflection, many subtleties of everyday experiences support Clark's thesis: the feeling of cognition through speech, gesture, and tool use helps illuminate his points from a more directly human perspective. It is unfortunate that this aspect is missing from StM (which is arguably already crowded with concepts), but such criticism applies more generally to the field of cognitive science and even the philosophy of mind as a whole, which have a very difficult time doing justice to the extremely wide range and depth possible in human experience. Cognition notwithstanding, there is much more to human experience, and although the role of the body is explored (although not its phenomenology), it seems that

rightfully considered, a 'mature science of the mind' must also integrally include gross emotions, subtle feelings, as well as ecstatic, meditative, and other so-called alternative states. For this, we must look elsewhere.

Clark's fascinating (and well-cited) forays into the role of language, the use of sensorimotor loops that cross the brain/body/environment barriers in the performance of epistemic actions, the role of morphological computation in dynamic systems, artificial intelligence, and robotics, (to name only a few) all deserve attention, and he does such a good job in his explorations that it is quite easy to overlook his implicit glorification of cognition over other aspects of mind, the inclusion of which would add flavor and even more complexity to the discussion. However, Clark can't be faulted for this, given the staggering amount of research he has condensed into about 250 pages, although some sort of brief statement explicitly recognizing the realms he does not consider would be welcomed.

All told, Clark brings to the table a well-reasoned call not just in favor of the embodied, embedded, extended mind, but for the powerful tools offered by complex, dynamic systems theory and cybernetics, which offers a robust treatment of the kind of loopiness that appears to link brains, bodies, and environments in continuously reciprocal causative recursions. He asks us to consider the integral role of systems, their functions, processes, relations, and relations between relations as more intrinsically important in considerations of the mind than any particular physical substrate, and in this sense, he frees the mind from the brain, giving us the impression that (whatever it is), mind, much like life, shows up eagerly and readily wherever conditions permit.

References

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