The Limits of Cognitive Reach: Why the Mind is Not a Seamless Web

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*The Extended Mind[2]*is a new concept that aims to fundamentally change our view of the world, brain and even our own identity. Introduced by Clark and Chalmers, it uses the parity principle, coupling and active externalism to support the idea that the mind is not bounded by skin and skull and can extend into the world and into the objects we use to aid our cognitive processes.

The Extended Mind idea already has a multitude of critics, most notable being J. Fodor, F. Adams, K.Aizawa and R. Rupert. While this new view may be truly revolutionary, its argumentation seems inconsistent and lacks the power to support it. This essay aims to identify and analyze specific conceptual gaps within the functionalist framework of the Extended Mind. It is important to note that the goal of this essay is not a disproof of the notion of *The Extended Mind* —a task that may be premature given the evolving understanding of neurobiology. Rather, this critique focuses on the logical inconsistencies of the framework itself. F. Adams and K. Aizawa cynically said in their *"The Bounds of Cognition"*[1]:

> In this paper, we propose to defend common sense. (Adams, Aizawa, 2001, p. 46)

1 The Parity Principle: A Rhetorical Sleight of Hand

1.1 Tetris

The Parity Principle is a concept of fairness that is very often met in Law to ensure that "like cases should be treated alike". This is a tool that can be effectively employed in philosophical debate, as Clark and Chalmers demonstrated in their examples. They start by proposing a thought experiment inspired by the game Tetris:

> (1) A person sits in front of a computer screen which displays images of various two-dimensional geometric shapes and is asked to answer questions concerning the potential fit of such shapes into depicted ”sockets”. To assess fit, the person must mentally rotate the shapes to align them with the sockets.
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> (2) A person sits in front of a similar computer screen, but this time can choose either to physically rotate the image on the screen, by pressing a rotate button, or to mentally rotate the image as before. We can also suppose, not unrealis- tically, that some speed advantage accrues to the physical rotation operation.
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> (3) Sometime in the cyberpunk future, a person sits in front of a similar computer screen. This agent, however, has the benefit of a neural implant which can perform the rotation operation as fast as the computer in the previous example. The agent must still choose which internal resource to use (the implant or the good old fashioned mental rotation), as each resource makes different demands on attention and other concurrent brain activity. How much cognition is present in these cases? We suggest that all three cases are similar. Case (3) with the neural implant seems clearly to be on a par with case (1). And case (2) with the rotation button displays the same sort of computational structure as case (3), distributed across agent and computer instead of internalized within the agent. If the rotation in case (3) is cognitive, by what right do we count case (2) as fundamentally different? We cannot simply point to the skin/skull boundary as justification, since the legitimacy of that boundary is what is at issue. But nothing else

seems different. (Clark & Chalmers, 1998, p. 1)

While Clark and Chalmers argue these scenarios are computationally similar, Adams and Aizawa consider that significant differences have been omitted. Scenario (1) involves non derived-content in the form of mental representations, whereas the scenario (2) makes use of an electrical circuit that actually rotates the shapes, not some representations.

Moreover, the choice available in the second scenario is an artificial way of bridging the gap between the two, by creating a sense of closeness. It is a totally separate cognitive process that does not interfere with the other, thus, for a clear and fair representation, it could have been omitted.

Scenario (3) differs from the second only in terms of location. Now, the tool the person can use is placed inside their body, taking the form of an implant. It is easier to agree that these two cases are very similar in terms of the cognitive process being employed. However, there is no strong evidence of the rotation in the third scenario being cognitive. The actual thought process may consist of the following steps: the person decides that they want to rotate the shape, the effort of rotating the shape is delegated to the implant, which produces an output. Then, the person makes another decision based on observing that output. Now, if we consider the effort done by the implant to be cognitive, then we ought to also admit that other electrical circuits used for a task are cognitive.

Even when the tool is reliably available and automatically endorsed, it lacks what Adams and Aizawa call 'intrinsic content'. A such notebook still needs an external interpreter that assigns meaning to it, while a biological brain does not. By ignoring this distinction, The Parity Principle mixes information processing with cognitive experience.

1.2 The Notebook

The second thought experiment proposed by Clark and Chalmers introduce two characters. Inga and Otto both of whom want to visit the Museum of Modern Art, found on 53rd Street. In order to achieve this, they need to know where to go, so Inga consults her memory. Otto, suffering from Alzheimer's disease, consults his notebook, where at some point he wrote down the address. The

argument made here is that in both cases, the belief of where the museum is located is identical, no matter whether is internalised or externalised and exists before Inga accesses her memory, respectively Otto his notebook.

To demonstrate the conceptual fragility of this parity, we must examine the architecure of these two examples. If Otto suddenly loses his sight he can no longer "remember" the address. If we follow this logic, we are forced to conclude that the eyes are more than sensory organs, but parts of the cognitive process of the retrieval of information. In the same manner, if the notebook had been written in Braille, the same logic would require us to conclude that the tactile receptors are "cognitive"

A more realistic explanation of the initial Inga and Otto scenarios is that the notebook, like the memory, is a source of information. It is not necessarily tied to cognition, it just acts as a tool. Whether our biological memory is part of the cognition is another topic, but, for the sake of our argument, the answer should not matter. Otherwise, we could conclude that every source of information is cognitive.

2 The Parasitic Nature Of Tools

It seems that Clark and Chalmers confuse *Coupling* with *Consitution*. This was best described by Adams and Aizawa (2001).

To summarize the idea, coupling is the bringing together of multiple systems to solve a task —like a diver using an oxygen tank. While the diver and the oxygen tank form a "coupled system", it would be erroneous to say the oxygen tank is part of the diver's biological respiratory system.

To add a new face to this issue, it can be argued that the use of tools, while helping in the immediate, may harm the agent in the long term. This suggests a parasitic rather than a symbiotic relationship. The most recent example is the use of Large Language Models (LLMs). As observed in *Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task* [5], the group that used LLMs to write an essay were able to correctly quote 11%

of the time, while the control group 78%. In case of Inga, if she stopped using her memory and started relying solely on a notebook, her capacity to remember information would drop over time.

Another example is the use of GPS for navigation. While Clark and Chalmers would argue that a GPS device serves as an external cognitive resource, empirical evidence suggests the relationship is subtractive. Habitual GPS use has been shown to reduce activity in the hippocampus—the area of the brain responsible for spatial memory (Dahmani & Bohbot, 2020, [3]).

If the GPS were truly a "constituent" of the mind, the agent's total navigational capacity should remain constant. Instead, we observe a "use-it-or-lose-it" effect: as the tool takes over the cognitive load, the biological abilities weaken. This supports the "parasitic" hypothesis: the tool does not expand the mind's boundaries; it replaces its core functions, leaving the agent in a state of cognitive dependency. While this can still be seen as an improvement over the biological mind alone, we ought to acknowledge the diminishing returns of the use of some. external aids, while also becoming less autonomous.

3 Challenging Bioprejudice

An *Extended Mind* proponent would likely argue that the "parasitic" critique offered in the previous section is rooted in bioprejudice —a preference for biological neurons over technological equivalents. Andy Clark often uses the analogy of a prosthetic limb that, even though causes muscle atrophy, is still considered as part of the motor system because it performs the exactly same function as its biological counterpart. From this perspective, the atrophy of the hippocampus is an efficient reallocation of resources.

However, this objection does not consider the problem of derived intentionality. While the prosthetic might be fully functional, it does not create meaning, as the movement is completely dependent on the biological motor cortex.

This lead to a critical counter-argument: if we consider the tool as being part of the mind, we must also accept a state of absolute dependency that differs from the biological memory. Even if

Inga temporarily forgets the address, the neural pathways representing that concept are still present. On the other hand, if Otto loses his notebook, the information is irreversibly erased. The difference between the capacity to think and the storing of information must be acknowledged, the biological mind being the only one capable to 'understand'.

4 Fragility and the Legal Collapse

As Fodor identified, this interpretation of the mind creates a slippery slope toward cognitive bloat[4] —and potentially panpsychism—the notion that the world itself becomes the mind. While many examples suggest this, even more arise when we apply this logic to the legal and digital domains.

Consider the assumption that if a notebook serves the same functional purpose for Otto as biological memory does for Inga, then both must be viewed as constitutive parts of their respective cognitive systems. Following this logic, Otto losing his notebook is functionally equivalent to Inga suffering a traumatic brain injury. If a third party caused these situations, should a thief be prosecuted for battery or "mental interference" rather than mere property theft? Furthermore, if a thief reads Otto's "thoughts" in the notebook and commits a crime, who bears the responsibility? Whose cognition does the notebook belong to in that moment?

In case of a process, there is a clear distinction between "testimonials" and "physical evidence". One cannot be a witness against himself. If we believe the notebook to be part of Otto's mind, then that cannot be used as evidence, as it would be a violation against the right of self-incrimination.

This becomes even more pressing with the increasing use of Artificial Intelligence. From the perspective of Clark and Chalmers, these models are integrated into our cognition. But this raises a "persistence" problem: if the server hosting the AI crashes, is the user suffering a temporary cognitive disability? If we accept the *Extended Mind*, then internet access and server uptime become fundamental human rights.

5 Consequences

At stake in this *Extended Mind* debate is the very definition of the human identity. By removing the line between the biological self and technological tools, we risk to diminish the value of the internal cognitive effort. We lose our thinking independency and start outsourcing every mental process. Autonomous critical thinking becomes synonymous with an agent that uses external interfaces. Moreover, instead of us being the agents and technology being the tool, the roles reverse and we become nodes in an enourmous *cognitive network*.

Out understanding of morality becomes blurred, as seen in the theft and Artificial Intelligence example. The laws that govern societies, built upon morality, are challanged. Only because the *Mind* starts to mean eveything and nothing at the same time.

6 Conclusion

While the *Extended Mind* thesis proposes a new, innovative vision of the boundaryless mind, a detailed analysis reveals a framework that is built on inconsistencies. By saying that the tools used by the cognitive processes are equal to the congnitive systems that employ them, we risk the dilution of the term *Mind*. As presented previously, The Parity Principle often relies on rhetorical exercise that ignore fundamental differences between biological organism and artificial mechanisms. Furthermore, the transition from "coupling" to "constitution" is more than a philosophical debate. It has profound implications on what we consider *indentity*, *agency*, and even the underlying mechanisms of our current societies. Recent discoveries demonstrate that the tools we use are not even always an extension of our minds, but replacements, which have the ability to weaken our autonomy. Utlimately, the *Extended Mind* does not just expand the mind, it dissolves the individual. Humans become a temporary collection of tools and neurons and critical thinking loses its locus.

References

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