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The Extended Mind Thesis: A Critical Perspective

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Abstract – It has been claimed that human beings' cognitive processes do not transpire all in the head. This view refers to the human organism as is linked with an external entity in a two-way interaction and creates a coupled system which can be seen as a cognitive system in its own right. It is also stated that the components in the system possess an active causal role, monitoring and controlling behavior in the same manner that cognition usually does. Such an argument has led to a strong debate among philosophers. Some support it but others reject it. It is also claimed that removing the external component will lead to the fact that the system's behavioral competence will drop, just as it would if some part of its brain is removed. Human being's brain may have been structured in such a way that enables the mind to be in sporadic interactions beyond the body. It could be stated that since the biological structure of the human brain sometimes encounters cognitive failures such as the disability to retain and retrieve information, the mind which is supported by the brain requires being in conscious interactions with the parts outside the human body. The article reviews the notion of the extended mind thesis and presents the criticism which has been leveled against it.

Keywords: The Brain; the Mind; the Extended Mind, the Extended Cognition; Language; Learning.

Introduction

Cognitive processes are alleged not to be all occurring in the head. It is alleged that the environment has an active role in driving cognition and cognition is at times made up of neural, bodily, and environmental processes. Such an argument caused conspicuous debates among philosophers and is supported and rejected as well. In line with the afore-mentioned proposition, it is stated that what is outside the body is outside the mind. Others suggest that the meanings of our words are not just in the head, and they are of the contention that this externalism about meaning move into an externalism concerning the mind. Clark and Chalmers take heed of an active externalism which is based on the active role of the environment in driving cognitive processes [5]. Regarding the human brain and the mind, Logan [9] states that psychologists make no distinction between the brain and the mind. They believe that the brain and the mind are synonymous and they are just two different words used to describe the same phenomena, one derived from biology, the other from philosophy. On the other hand, there are still others who claim that there is a difference between these two. Some define the mind as the seat of consciousness, thought, feeling, and will. Those processes of which human beings are not conscious, such as the regulation of the vital organs, the reception of sense data, reflex actions, and motor control, on the other hand, are not activities of the mind but functions of the brain.

Respecting the fact that whether there is some dichotomy between the mind and the brain, it should be stated that the difference between these two is controversial and it is demanding to accept or reject one or the other. Put simply, the extended mind depicts an idea claiming that the mind is something in the human head but it can also be separate from it. It highlights this hypothesis that the mind, body, and the environment are the individual parts but in constant interaction and in reality they constitute a highly interwoven whole. This idea is also acknowledged by Logan [9], alleging that there is no objective way to resolve these two different ideas. He remarks that a useful distinction can be made between the mind and the brain grounded upon the human dynamic systems model of language as the "bifurcation from concrete percept-based thought to abstract concept-based thought." Logan posits that it is the verbal language based on which the mind appears and hence the conceptual thought. Verbal language extended the effectiveness of the human brain and created the mind. Language is a tool which extended the brain and

made it more effective, thus creating the mind. Logan is of the contention that the human mind is the verbal extension of the brain, a bifurcation of the brain which vestigially retains the perceptual features of the brain while at the same time making abstract concept-based thought possible. He keeps on saying that the mind is the final dividing point of hominids from the archaic form of human beings into the completely developed human species. Thus, human beings are the only species to have ever experienced the mind. The earlier forms of hominids' thought patterns were purely percept-based and their brains functioned as percept processing engines operating without the benefit of the abstract concepts which only words can create and language can process [9].

Theoretical Background

The afore-mentioned views respecting the brain and the mind just commenced the idea that a human being's mind and associated cognitive processing are neither confined within the human head nor his body, but they extend into the human being's environment. In line with such a contention, it is claimed that the human body and the environment are actually the essential components of the human mind. To clarify the point, it should be stated that the mind operates and employs the body and the environment.

Traditional philosophers considered the biological brain and body of the humans as being the only physical substrates that make up the mind. This idea just pervaded the past decade from which on there appeared a theory of the mind which suggested that an agent's mind, particularly their mental states and cognitive processes, may at times extend into the environment that immediately surrounds their body. This thesis which is called the Extended Mind alleges that the parts located beyond the agent's body can serve as the material vehicles of the agent's mind and accordingly these relevant components should be viewed as constitutive parts of the mind. In this sense, contrary to what has been traditionally thought, extended mind claims that the mind extends beyond the body [16]. The extended mind attempts to redefine the very notion of what is internal or external to the agent.

Clark and Chalmers [5] provide two examples to depict their contention that the mind can extend into the environment. They first refer to a normal case of belief embedded in memory: Inga hears from a friend that there is an exhibition at the Museum of Modern Art, and decides to go there. She thinks for a moment and recalls that the museum is on 53rd Street, so she walks to 53rd Street and goes into the museum. It seems clear that Inga believes that the museum is on 53rd Street, and that she believed this even before she consulted her memory. It was not previously an "occurrent" belief, but then neither are most of our beliefs. The belief was sitting somewhere in memory, waiting to be accessed. Then, they refer to Otto who suffers from Alzheimer's disease, and like many Alzheimer's patients, he relies on information in the environment to help structure his life, and Inga's case as well. Otto carries a notebook around with him everywhere he goes. When he learns new information, he writes it down. When he needs some old information, he looks it up. For Otto, his notebook plays the role usually played by a biological memory. Today, Otto hears about the exhibition at the Museum of Modern Art, and decides to go and see it. He consults the notebook, which says that the museum is on 53rd Street, so he walks to 53rd Street and goes into the museum.

Otto walked to 53rd Street since he wanted to go to the museum and believed the museum was on 53rd Street. And just as Inga had her belief even before consulting her memory, it seems reasonable to say that Otto believed the museum was on 53rd Street even before consulting his notebook. For, in relevant respects the cases are entirely analogous: the notebook plays for Otto the same role that memory plays for Inga. The information in the notebook functions just like the information constituting an ordinary non-occurrent belief; it just happens that this information lies beyond the skin. Clark and Chalmers state that Otto has no belief about the matter until he consults his notebook. At best, he believes that the museum is located at the address in the notebook. But if Otto is followed around for a while, one will see how unnatural this way of speaking is. Otto is constantly using his notebook as a matter of course. It is central to his actions in all sorts of contexts, in the way that an ordinary memory is central in an ordinary life. The same information might come up again and again, perhaps being slightly modified on occasion, before retreating into the recesses of his artificial memory. To say that the beliefs disappear when the notebook is filed away seems to miss the big picture in just the same way as saying that Inga's beliefs disappear as soon as she is no longer conscious of them. In both cases, the information is reliably there when needed, available to consciousness and available to guide action, in just the way that one expects a belief to be [5].

Clark and Chalmers claim that Otto's notebook plays a similar functional role to Inga's biological memory. The state of Otto's notebook interacts with Otto's desires and other beliefs in a similar way to the way in which Inga's biomemory interacts with her desires and other beliefs. Exposure to new information causes Otto to modify the state of his notebook. Exposure to new information causes Inga to modify her biomemory. The current state of Otto's notebook causes Otto to stop at 53rd Street. The current state of Inga's biomemory causes Inga to stop at 53rd Street. The functional role of the stored information, its "functional poise", appears to be the same in both cases. Clark and Chalmers conclude that just as Inga has a belief that the museum is on 53rd Street, so Otto has a belief, with the same content, that extends partially into the environment ([13] pp. 506-7).

Clark's parity principle underpins the equal treatment between the internal and external cases. This principle states that if an extended process is relevantly similar to an internal cognitive process, save for having external parts, then that extended process should have an equal claim to be cognitive. Clark and Chalmers employed the parity principle to argue that if two processes are just like one another, save for one being internal and the other extended, then both have an equal right to be cognitive. The purpose of Otto/Inga case is to show that, in the actual world, there are extended processes just similar to internal cognitive processes; Otto's notebook is functionally just like Inga's biomemory [13]. However, the parity principle is accepted but Otto/Inga case is rejected. It is argued that the actual extended processes are not functionally like any internal cognitive process. The processes involved in Otto's notebook differ from any internal cognitive processes so they do not deserve to be called cognitive at all ([11], [1]).

Clark and Chalmers' evidence vividly reveals the fact that human beings' cognition is not just in the head and the environment has some active role in contributing to the cognitive processes of the human beings. It also shows that those agents with cerebral atrophy, a condition in which cells in the brain are lost or the connections between them are damaged, rely heavily on their environment to get engaged in their cognitive processing. An agent who reads, say, a book cannot commit to his memory all the materials included in the book. Cognitively speaking, he is not capable of taking in all those read materials. He takes in some information and he is also aware of the rest but his brain is not strong enough to retain all the information. So when he needs those pieces of information, he readily goes to the data base (his extended mind available in the environment, whether a book, an external memory that can be connected to a computer) and makes effective use of it. Therefore, the idea of the extended mind proves to be true at least in these cases. It should further be pointed out that the environment spurs the occurrence of the cognitive processes and contributes to the human mind.

The Extended Cognition

Clark and Chalmers [5] provide three cases of human problem-solving in their article to illuminate the extended cognition. In the first case, there is a person sitting in front of a computer screen displaying 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. The second case shows a person sitting in front of a similar computer screen, but this time he can choose either to physically rotate the image on the screen by pressing a rotate button or to mentally rotate the image as before. It can also be supposed, not unrealistically, that some speed advantage accrues to the physical rotation operation. In the third case, there is a person sitting 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.

They state that in these cases, the human organism is linked with an external entity in a two-way interaction and creates a coupled system that can be seen as a cognitive system in its own right. It is pointed out that the components in the system have an active causal role, monitoring and controlling behavior in the same manner that cognition usually does, and removing the external component will lead to the fact that the system's behavioral competence will drop, just as it would if some part of its brain is removed. It is claimed that this sort of coupled process counts equally well as a cognitive process, whether or not it is wholly in the head [5]. It should be stated that this active externalism is sharply different from passive externalism advocated by Putnam [10] and Burge [4]. Cognition is documented to be continuous with processes in the environment ([14], [3], [15]; [8]).

Our biological brain may have been structured in such a way that empowers the mind to be at times in interactions with the external world. It could be stated that since the biological structure of the human brain sometimes encounters cognitive failures such as the disability to retain and retrieve information, the mind which is supported by the brain requires being in conscious interactions with the parts outside the human body. Along the same line, Clark and Chalmers [5] assume that the biological brain may have evolved and matured in ways which include the reliable presence of an external environment that can be manipulated. Human beings may enjoy some capacities to make cognitive use of the environment to reduce the memory load and even to "transform the nature of the computational problems themselves." Thus, there is a cognitive give and take between the mind and the environment.

Clark and Chalmers' Argument

Clark and Chalmers [5] provide two arguments to show that the mind is extended: 1. the mind's cognitive processes can in part enjoy the processes which are performed by external devices. They underpinned their claim through exemplifying a computer that one can employ to rotate shapes when playing the game Tetris. They elucidate the fact that the computer's rotation of a shape plays the same kind of role, in one's cognitive economy, as the corresponding internal process (when one simply imagines how the shape would appear if it were rotated in various ways). For instance, the result of this process is automatically endorsed-one believes that the shape would look like that when rotated. And one uses this

information to guide their behavior, such as moving the joystick to position the shape in a certain place on the screen. They conclude that insofar as the internal process of imagining qualifies as one's cognitive process, so should the external computational process. 2. They hold that standing beliefs and desires can be partially constituted by factors external to the skin. Standing beliefs include stored memories and other beliefs that are not currently being entertained. The notion of a standing belief contrasts with the notion of an occurrent belief, which is a conviction that you are now entertaining. For instance, you probably have the standing belief that dinosaurs once roamed the earth. At the moment before you read that sentence, the belief was simply a standing belief; it was not occurrent (unless you happened to be thinking about dinosaurs at that moment). But now that you're thinking about the fact that dinosaurs roamed the earth, that belief is occurrent (Cited in [7]).

Critical Views to the Extended Mind

Clark and Chalmers [5] presented the extended mind and argued much for it. However, it has been criticized by some scholars. Adams and Aizawa [2] and Rupert ([11],[12]) argued against the extended mind, stating that its supporters have confused or elided the distinction between external causes of cognition and external constituents of cognition. Rupert [12] argues against both embodied and extended cognition in part by making a positive case for what he calls the "cognitive systems" view of the boundaries of cognition, and that this view suggests that cognition begins and ends in the brain. Vold [16] points out that if Rupert is correct, then cognition is neither embodied nor extended since both views are incompatible with an independently-motivated account of the brain-bound nature of integrated cognitive architectures.

Before criticizing the extended mind thesis, Gertler [7] reconstructs Clark and Chalmers' [5] argument:

1. What makes some information count as a standing belief is the role it plays.
2. The information in the notebook functions just like the information constituting an ordinary non-occurrent belief.
3. The information in Otto's notebook counts as standing beliefs.
4. Otto's standing beliefs are part of his mind.
5. The information in Otto's notebook is part of Otto's mind.
6. Otto's notebook belongs to the world external to Otto's skin, i.e., the external world.
7. The mind extends into the world.

Gertler [7] observes the extended mind from a different perspective. Gertler states that a subject can determine his/her own beliefs and desires by employing a method that others cannot use (to determine that subject's beliefs), and uses the term "introspection" to refer to this method. In this sense, introspection is necessarily a first-person method which reveals only the introspector's own states, and not the states of others. Introspection may not be faultless; it may be no more reliable than third-person methods. The claim is only that each of us has a way of gaining access to our own beliefs that is unavailable to others.

By focusing on introspection, Gertler refers to Clark and Chalmers who argue that the information in Otto's notebook partially constitutes some of his standing beliefs. Gertler wonders if Otto can introspect these beliefs. That is, can he identify these beliefs by using a method available only to himself? Gertler holds that Otto cannot. When Otto tries to figure out what he believes on a particular topic, he consults the notebook. To clarify the point, suppose that Otto wonders what he believes about the location of the museum. He will look in the notebook, concluding that "he believes that the museum is on 53rd Street." Gertler holds that someone other than Otto can determine Otto's beliefs in precisely the same way. By consulting the notebook, a friend can determine that Otto believes the museum is on 53rd Street. Apparently, if the entries in Otto's notebook partially constitute his beliefs, then Otto cannot introspect his beliefs. It might be argued that when Otto consults the notebook to determine what he believes about the location of the museum, he is "introspecting". Clark and Chalmers seem to suggest this when they say that treating Otto's access to the notebook as perceptual rather than introspective would beg the question against the claim that the notebook is "part of Otto's mind". Gertler argues that "introspection" refers to those necessarily first-personal processes, alluding to the fact that if Otto is introspecting when consulting the notebook, then it has to be revealed that Otto has a unique kind of access to the notebook or, perhaps, to the fact that the notebook entries play the relevant "belief" role in his cognitive economy. Gertler thinks that it is difficult to see how this access could be unique, so long as it was access to a feature external to Otto's skin [7].

Gertler's [7] criticism of Clark and Chalmers' [5] argument made attempts to reject the premise that "Otto's standing beliefs are part of his mind" and to limit the mind to occurrent, conscious states and processes. It is believed that some internal (standing) beliefs and (non-conscious) cognitive processes are non-mental. Gertler says "it is surprising to think that standing beliefs and non-conscious processes lie outside the mind, even if they are inside the brain. It is further stated that this conclusion seems less costly to intuitions and hence ultimately more credible than the claim that our mind can extend to notebooks, external computing devices, and others' minds [7]." However, Chemero and Silberstein ([6], p. 129) defend the extended cognition against several criticisms. They argue that the extended cognition does not derive from armchair theorizing and that it neither ignores the results of the neural sciences, nor minimizes the importance of the brain in the production of intelligent behavior. They also argue

that explanatory success in the cognitive sciences does not depend on localist or reductionist methodologies.

Language and the Extended Mind

Individuals make frequent use of their environment to help themselves with the cognitive processes. They take notes, write down names, check the things on the shopping list they have to buy, use computers to save many a file and data, etc. Human beings draw on their environment to contribute to their cognition in that they are not sometimes cognitively able to tolerate such cognitive loads on their mind. Suppose you are talking on the phone with a person who wants to give you a phone number and some address. You take a sheet of paper and jot down the number and the address. Such a case is normal and occurs almost everywhere. If you look at the phone book, you will see so many numbers you have put in it. Actually, the phone book is part of your extended mind. Language figures in all of these cases. This interaction between the mind and the environment is some communication of a linguistic-cognitive type. Those literate individuals who suffer from Alzheimer's disease employ the pen-and-paper tool to get engaged in their extended cognition. Our cognition can, therefore, extend into the world around us. Clark and Chalmers (1998) state that language appears to be a central means by which cognitive processes are extended into the world and language is supposed to have developed partly to enable such extensions of the cognitive resources within actively coupled systems. Another example is the case of an amateur pilot engaged in flying a plane but now has some problem landing it. Another pilot on a plane in a hangar tries to give directions how to land the plane. Since the pilot (on a plane in a hangar) has not committed the positions of the keys on a control panel to the memory, he attempts to give the instructions based on what he sees on the control panel. In fact, this pilot makes use of his extended mind to help the amateur pilot.

As for learning, Clark and Chalmers [5] point out that individual learning may have shaped the brain in ways that rely on cognitive extensions surrounding human beings as they learned. Language is paramount in such learning and the brain develops in a way that complements the external structures and learns to be active within a unified, densely coupled system. They further acknowledge that extended cognition is a core cognitive process, not an add-on extra since the role of the environment in constraining the evolution and development of cognition is of great importance.

Conclusion

Clark and Chalmers [5] spotlighted the idea that our mind can extend into the environment. They afforded some convincing examples to confirm their ideology concerning human mind. Their views to the extended mind have been supported by some. However, there are some critics who reject some aspects of the extended mind. As mentioned in this article, human beings rely much on the tools, whether electronic, non-electronic, or some other form, to contribute to their cognition. Clark and Chalmers state some individuals accept the fact of the demarcations of skin and skull, holding that what is outside the body is outside the mind, and others are impressed by arguments suggesting that the meaning of our words are not just in the head, and hold that this externalism respecting meaning constantly exists into an externalism about the mind. Clark and Chalmers believe in an active externalism based on the active role of the environment in driving cognitive processes. The evidence they provided refers to the fact that human beings' cognition is not just in the head and the environment is a contributing factor for the cognitive processes of the human beings. The extended mind expounds that those agents who have experienced brain atrophy depend much on their environment to get engaged in their cognitive processing. The idea of the extended mind proves to be true at least in some cases. It should further be pointed out that the environment could cause the occurrence of the cognitive processes and contributes to the human mind. It is argued that the actual extended processes are not functionally like any internal cognitive process. The processes involved in an agent's notebook are different from any internal cognitive processes so they do not deserve to be called cognitive at all.

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Vitae

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