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## The Cognitive Complexity Thesis: Refuting Multiple Objections to the Extended Mind Thesis

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### **ABSTRACT**

Extended mind theorists claim that cognition is not bound to the brain, or even the individual, but can extend into the environment. There have been many objections against the extended mind theory, such as the coupling-constitution fallacy, the argument from the explosion of knowledge, the objection from the authority of first person beliefs and the argument from epistemic credit. I argue that one error common to the above objections is a failure to consider the cognitive complexity thesis: that cognition is attributable to complex systems consisting of one or more individuals together with external factors. Many externalists (those who accept the extended mind theory) are committed to the cognitive complexity thesis, but the objections above begin from the assumption that the cognitive complexity thesis is false, and thus that cognition can only be attributed to an individual brain or an individual person. Externalists and their critics therefore disagree on what kinds of belief-attributions one can make, which in turn impacts their disagreement over the extended mind theory. Objections to the extended mind theory do not consider the deeper role of the cognitive complexity thesis. In order to succeed in refuting the extended mind theory, those objections must address the cognitive complexity thesis.

### **KEYWORDS**

Extended Mind, Extended Cognition, Externalism, Coupling-Constitution Fallacy, Philosophy of Mind, Philosophy of Cognition

Extended mind<sup>1</sup> theorists argue that cognition is not bound to the brain, or even the individual, but can extend into the environment. Since it was pioneered by Clark and Chalmers in 1998 it has risen to be arguably the most dominant position in philosophy of mind and cognitive sciences. But, throughout its rise to popularity, critics have raised many objections. In this paper I try to identify an error that is common to these objections. This error is the failure to recognize the cognitive complexity thesis, which states that cognition can be realized not only by an isolated individual person, but also by more complex systems such as groups of people, people embedded in culture and people equipped with machinery.

The structure of this paper is as follows. In the first section I set the scene for my arguments by introducing the theory of extended cognition. I briefly introduce the position as it was pioneered by Clark and Chalmers in 1988, but I quickly move on to more contemporary accounts of extended cognition. These contemporary accounts substitute the parity principle that was initially adopted by Clark and Chalmers with the notions revolving around integration of both internal and external factors in cognitive processes.

In the second section I discuss what the proper bearers of beliefs are in a framework of extended cognition. I give three possible positions and argue that externalists reject one of these, but are free to adopt either of the remaining two remaining positions. This chapter is not meant to give an adequate historical description of what Clark and Chalmers (or any subsequent externalists) took to be the proper bearers of belief. The aim is only to characterize what theoretical options are and are not available to the externalist. This section should make clear that any externalist theory is committed to the cognitive complexity thesis.

In the third section I explore the consequences of the cognitive complexity thesis. I argue that many of the influential objections against externalism arise from a failure to recognize this thesis. Most notably, the infamous coupling-constitution fallacy raised by Adams and Aizawa (2006) can be understood as motivated by a failure to recognize this thesis (or perhaps even a reluctance to accept it). Furthermore, arguments revolving around an explosion of knowledge (Ludwig 2014), the authority of first person beliefs and epistemic credit (Preston 2010), can be similarly understood.

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1. In this paper I use 'extended mind' and 'extended cognition' more or less interchangeably.

I conclude that many of the objections raised by critics of externalism are ineffective, because they are based on a failure to recognize the cognitive complexity thesis. Future critics of externalism need to consider this thesis carefully when formulating their objections.

### **THE EXTENDED MIND**

The extended mind hypothesis was first put forward by Clark and Chalmers (1998) in their canonical paper *The extended mind*. They argued by means of two thought experiments that cognition is not bound to the brain but can be extended into the environment. In order to illustrate the arguments I make in section two and three it is useful to cite the most famous of these two experiments here:

Now consider Otto. Otto suffers from Alzheimer's disease, and like many Alzheimer's patients, he relies on information in the environment to help structure his life. 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 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. (Clark and Chalmers 1998, 13-14)

Clark and Chalmers argue that Otto believes, even before he consults his notebook, that the museum is 53rd street. Their argument in this article relies on the parity principle. This is the intuition that if we would have no hesitation calling a process cognitive if it were done in the head, then we should not hesitate to call that process cognitive if it is done outside of the head either.

The parity principle is highly disputed. Critics of externalism have objected that the parity principle describes a criterion that is too weak to demarcate cognition and that it neglects the mark of the cognitive (Adams and Aizawa 2001; Adams and Aizawa 2010; Adams 2010). And even proponents of externalism have argued against the parity principle, primarily because it suggests a misleading picture of the motivation behind externalism (Menary 2010a, 6-7). Their worry is that the parity principle can be read as stating that an external process is cognitive

if it is sufficiently similar to internal cognitive processes, where it is up to the reader to interpret the appropriate meaning of 'similar'. This ambiguity has spawned literature that, in an effort to refute externalism, argues that Otto's looking at his notebook is very dissimilar to Inga's remembering (Rupert 2004). However, externalists explain, the goal of externalism was never to point to similarities between internal and external processes. Rather, it was to point out that cognition should not be understood as existing only in individuals (let alone brains), but instead as being a process in which both cognitive agents and their environment are integrated. The parity principle merely serves as a tool that asks us to think of cognition as processes with a particular function, rather than a particular location (Menary 2010a, 6-7). By no means was the parity principle intended to describe a necessary or a sufficient condition for identifying cognitive processes.

Contemporary externalists (or second wave externalists (Sutton 2010)) therefore focus on what Menary has called the integration of internal and external processes in cognition (Sutton 2010, 20). The idea is that cognition can consist of internal and external factors that mutually influence each other and are complementary in constituting the processes that we deem cognitive. According to contemporary externalists, Otto remembers where the museum is, but not because his notebook is similar to Inga's memory. Rather, it is because the notebook and Otto's remaining memory is a whole in which the integrated parts mutually influence and complement each other.

### **EXTERNALIST BEARERS OF BELIEF: THE COGNITIVE COMPLEXITY THESIS**

In this section I explain what I call the cognitive complexity thesis. This is what critics of externalism typically fail to recognize (or perhaps better: are reluctant to accept). Consider the following statement: "Otto walked to 53rd Street because he wanted to go to the museum and believed (even before consulting his notebook) that it was on 53rd Street." (Clark 2010, 45; Clark's emphasis in italics, my emphasis in bold).

In this statement it is claimed that 'Otto believed' that the museum is on 53rd street. But the meaning of 'Otto' in this phrase is ambiguous. There are at least three different ways to interpret 'Otto' here, and thus three different entities that we could be ascribing belief to when we assert this statement:

1. Otto, i.e. Otto as an individual isolated from his notebook, believed that...

2. The complex cognitive system containing both Otto and his notebook believed that...
3. Otto, i.e. the complex cognitive system containing both Otto (as an individual isolated from his notebook) and the notebook, believed that...

The first option is clearly different from the second and third options, as it makes no mention of the notebook. The second and third options are similar, but make slightly different claims regarding the nature of the self and the proper bearers of belief. The second option strictly speaking does not seem to support the claim that Otto believes the museum is on 53rd street. Rather, the cognitive system of which both Otto and the notebook are part believes this. The third interpretation of the statement does support the claim that Otto believed the museum is on 53rd street, and incorporates the notebook into the notion of Otto. I say more about the theoretical consequences of these different interpretations later.

First, and this is the crucial part, it is a mistake to attribute the first interpretation to externalists. Externalists would never say that Otto, as an isolated individual without his notebook, remembers where the museum is. It is easy to see why. Externalism is the attempt to argue that cognition integrates internal and external processes. It illustrates how this is the case by showing that in some cases, external factors complement our cognition. In these cases, our cognition is also dependent (to some degree) on these external factors. Trivially, if in these cases we take away these external factors, the cognitive process that depends on them is destroyed. That is to say, if we take Otto's notebook from him, he would not remember where the museum is anymore. At this point, it may seem so clear that the first interpretation should not be attributed to externalists that I might be suspected of arguing against a strawman. But in section three we see that many objections to externalism are in fact dependent exactly on ascribing the first interpretation to externalism.

Then, regarding interpretations two and three. Both interpretations can fit an externalist framework of cognition. The second interpretation ascribes belief to a complex cognitive system consisting of a cognitive agent and external factors. The drawback of this interpretation is that this may seem counterintuitive, as we usually think of beliefs as belonging to individuals rather than systems (although I present some reasons to challenge this thought near the end of this section). The upshot is that it is compatible with a traditional notion of the nature of the self, in which a self is confined to the limits of an individual body. The third interpretation

gives up on this traditional picture. It replaces this with a notion of the self as an integrated whole of an individual body and (parts of) its environment. The upshot is that by adopting this untraditional notion of the self, it can preserve the traditional idea that beliefs only belong to individuals. So in the second interpretation we adopt an untraditional notion of what the proper bearers of beliefs are and preserve a traditional notion of the self, and in the third interpretation we adopt an untraditional notion of the self but preserve a traditional notion of belief bearers.

Both the second and the third interpretation support the externalist idea that cognition is not confined to an individual body, but can instead be attributed to more complex cognitive systems. I call this essentially externalist tenet the cognitive complexity thesis: cognition can be attributed to complex systems consisting of one or more individual bodies and external factors. It is only the first interpretation, which insists on ascribing cognition to an individual body, which fails to adhere to the cognitive complexity thesis.

At this point we should fix some notation for the rest of this paper. When I want to refer to the first interpretation of 'Otto believed' (or a position that could adopt this interpretation) I say the cognitive simplicity thesis. This is meant to be the denial of the cognitive complexity thesis. Further, I take both the second and the third interpretation of 'Otto believed' to be variants of the cognitive complexity thesis. If I want to refer to the second interpretation I talk about the cognitive complexity thesis with regards to systems, whereas if I want to refer to the third interpretation I talk about the cognitive complexity of persons. These terms are meant to explicate what is thought of as being a complex and cognitive, a system or a person. In section three, when I address objections to externalism, I generally start my rebuttals with an appeal to the cognitive complexity of systems and then show how my rebuttal can be modified to suit the needs of those who adopt the cognitive complexity of persons.

The aim of this paper is not to defend (any variant of) the cognitive complexity thesis. It is merely to point out that many objections to externalism fail to recognize it. Nevertheless, it should be stressed that the cognitive complexity is widely accepted in (social) cognitive sciences. Scientific studies show that theories assuming group cognition or collective cognition (i.e. cognition that belongs not to an individual but to a group of individuals) can explain various social processes that cannot be explained without the assumption of cognitive complexity (Barnier et al. 2008; Sutton et al. 2010). Further, scientists argue that

cognitive processes that can be ascribed to individuals can generally also be ascribed to groups of individuals (Theiner, Allen, and Goldstone 2010). Of course, this is not a definitive argument for the cognitive complexity thesis. For one thing, the social cognitive sciences generally accept groups of people as bearers of cognition, but complexes consisting of individuals and inanimate environment are not (yet) explicitly accepted as such. But, the usefulness of (parts of) the cognitive complexity thesis in science does suggest that it should not be rejected without argument.

### **CONSEQUENCES: DEBUNKING MULTIPLE OBJECTIONS TO EXTERNALISM**

In this section I argue that many of the objections to externalism are based on a failure to recognize the cognitive complexity thesis. This results in incorrect belief attributions. These objections take these incorrect belief attributions to discredit externalism. Whereas in fact the incorrect belief attributions do not stem from externalism, but from the failure to recognize the cognitive complexity thesis. If this thesis is properly recognized, the incorrect belief attributions are resolved, and so are the alleged objection to externalism. In what follows I refute the following objections: the coupling-constitution fallacy, the objection from an explosion of knowledge, the objection from the authority of first person beliefs and the objection from epistemic credit.

#### The Coupling-Constitution Fallacy

Adams and Aizawa (in)famously argue that externalism commits the fallacy of confusing the coupling of element A to cognitive agent B with the constitution of cognitive agent B by element A (Adams and Aizawa 2010; Aizawa 2010). Clark responded to this objection elaborately and to my mind convincingly (Clark 2010). Instead of reciting this discussion of the coupling-constitution fallacy, I would like to investigate the motivation behind this objection. Adams and Aizawa open the article in which they introduce this fallacy with the following pun: "Question: Why did the pencil think that  $2+2=4$ ? Clark's answer: Because it was coupled to the mathematician." (Adams and Aizawa 2010, 1).

I think this pun is very helpful in tracing the motivation behind the coupling-constitution fallacy objection. Adams and Aizawa think that when a mathematician uses a pencil to complement her cognitive process, the externalist considers

the pencil (or that what is written with it) to be a part of the cognition of the mathematician. But, they reason, then the externalist has no basis to deny that the mathematician (or his cognition) is a part of the cognition of the pencil. They conclude that externalists are committed to the view that if a pencil is used in a cognitive process, this pencil can be attributed cognition.

However, Adams and Aizawa fail to recognize the cognitive complexity thesis. Because in fact the externalist does not consider the pencil (or that what is written with it) to be a part of the cognition of the mathematician, if the mathematician is interpreted as an isolated individual. This would be to assume the cognitive simplicity thesis. Rather, externalists would say that the pencil (or that what is written with it) is a part of the cognition of the complex cognitive system consisting of both the pencil and the mathematician (in accordance with the cognitive complexity of systems). Or, that the pencil (or that what is written with it) is a part of the cognition of the mathematician, but the mathematician is actually an integrated whole containing the pencil (in accordance with the cognitive complexity of persons).

For externalists that accept the systematic cognitive complexity theses, it is strictly wrong to suggest that a pencil thinks that  $2+2=4$ . Rather, a pencil can be part of a complex cognitive system that thinks that  $2+2=4$ . For those that accept the personal cognitive complexity thesis, it can even be true that the pencil thinks that  $2+2=4$ , as long as we consider the pencil to be an integrated whole containing also the mathematician (although this would constitute a very unconventional conception of penhood). In either case, the coupling-constitution fallacy is not an effective objection against externalism.

To make this same point while abstracting away from the pun above: the coupling-constitution fallacy objection claims that externalists confuse the coupling of element A to cognitive agent B with the constitution of cognitive agent B by element A. But this is a mistaken picture of the externalists' view. Rather, externalists claim that if an element A complements the cognition of cognitive agent B, A and B together constitute a wider cognitive system C (which can be interpreted as a system or a person, depending on which variant of externalism is adopted). Adams and Aizawa adopt this mistaken view of the externalists' view because they fail to recognize the cognitive complexity thesis.

### The Explosion of Knowledge

This objection concerns individuals who use google maps in a manner similar to how Otto uses his notebook (Ludwig 2014). That is to say, whenever they want to find the location of a museum, they remember that such information is stored in google maps, access google maps and find the correct location. The objection concludes that according to externalism, these people know the location for every museum, even of museums in countries they have never visited. This explosion of knowledge is deemed implausible and thus a bad feature of externalism.

This objection is somewhat problematic because it is not clear that google maps and the mentioned individuals are integrated into a system in the sense required to establish cognition according to externalism. For example, this does not seem to be a case of mutual manipulation or internal and external factors that complement each other. Rather it seems to be the case that google maps complements these individuals, but not the other way around.

But even if we allow this problem, this objection fails because it does not recognize the cognitive complexity thesis. This is evident from the fact that the objection judges it to be problematic that individuals have extraordinarily large amounts of knowledge. But externalists would agree that it is problematic if individuals, isolated from google maps (i.e. in accordance with the cognitive simplicity thesis) have extraordinarily large amounts of knowledge. However, it is much less problematic if a cognitive system consisting of an individual and google maps has extraordinarily large amounts of knowledge though, because google maps contains extraordinarily large amounts of information. So the explosion of knowledge can only lead externalism to an implausible solution if it assumes the cognitive simplicity thesis. But since externalism rejects this thesis, is not hurt by an explosion of knowledge. Rather, it provides a framework to understand in which sense today certain companies, sciences and humanity as a whole have so much knowledge even though no isolated individual has much more knowledge than individuals living a century ago.

### The Authority of First Person Beliefs

This objection relies on the authority that people have over their own beliefs.

My claim, then, is that people do have a limited but real first-person authority about what it is they believe. (...). However, the sorts of real-world resources and processes which, according

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to the extended mind thesis, can partly constitute one's beliefs aren't ones about which we can have first-person authority, on pain of our being authoritative about contingent matters of fact concerning the "external world." Consider the contents of Otto's notebook, for example. Of course, upon being asked, Otto is the authority on whether what's written in his notebook is indeed what he believes. But he isn't authoritative about the contents of the notebook before he has consulted it. (Preston 2010, 360)

The worry expressed by Preston is that the authority that pertains to first person beliefs does not pertain to the sort of beliefs that externalism ascribes to Otto and his notebook. I argue that this is not a problem, and it is easy to see why. In accordance with the systematic cognitive complexity thesis, externalism does not ascribe beliefs regarding the content of the notebook to the person Otto. It ascribes beliefs to the complex cognitive system containing Otto and his notebook. Since this system is not a person, the beliefs it has are not first person beliefs. So even if we accept that a person always has authority over his first person beliefs, we should not expect that every system has authority over its beliefs.

Externalists that adopt the personal cognitive complexity thesis need to be slightly more elaborate to refute this objection. They should say that although a person has authority over some of his first person beliefs, but not all of them. They might suggest that a person only have authority over their isolated/non-integrated beliefs, i.e. those beliefs that she has solely in virtue of being an isolated individual. Then, Otto has authority over the beliefs he has in virtue of being himself, but not over the beliefs he has in virtue of being an integrated whole containing his notebook.

### Epistemic Credit

Finally, the objection from epistemic credit.

One of these [everyday psychological practices] is simply that the abilities and achievements in question are credited to people (or other organisms), not to brains, and at best only derivatively to the arrangements in which organisms and their brains are embedded. (Preston 2010, 367)

This objection claims that if an individual uses an external arrangement (such as a calculator) to perform an epistemic action, we give credit to the individual, not to the device.

The first response to this argument must be that in giving credit to people, the arrangements in which they are imbedded actually play a huge role. The amount credit we give to someone who calculated the square root of 47 depends heavily on whether or not she used a calculator. The second response is that this objection does not challenge externalists that accept the personal cognitive complexity thesis. According to them we do indeed credit an individual for the abilities she has in virtue of her embedding, because the individual (partly) is her embedding.

## CONCLUSION

In this paper I argued that many objections directed at externalism stem from a failure to recognize the cognitive complexity thesis. This is to say that these objections mistakenly assume that within a framework of extended cognition, individual bodies are the only appropriate bearers of cognition. A proper understanding of externalism shows that cognition is not limited to such simple entities but can in fact be attributed to complex entities consisting of one or more individuals and external factors. Critics of externalism should recognize the cognitive complexity thesis when formulating objections to extended mind theory.

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