

# All the (Many, Many) Things We Know: Extended Knowledge\*

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## Abstract

In this paper we explore the potential bearing of the extended mind thesis—the thesis that the mind extends into the world—on epistemology. We do three things. First, we argue that the combination of the extended mind thesis and reliabilism about knowledge entails that ordinary subjects can easily come to enjoy various forms of restricted omniscience. Second, we discuss the conceptual foundations of the extended mind and knowledge debate. We suggest that the theses of extended mind and extended knowledge lead to a bifurcation with respect to the concepts of belief and knowledge. We suggest that this conceptual bifurcation supports a form of pluralism about these concepts. Third, we discuss whether something similar can be said at the metaphysical level.

**Keywords:** extended mind thesis, extended cognition, extended beliefs, reliabilism, knowledge, extended knowledge, conceptual bifurcation, pluralism about belief, pluralism about knowledge.

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# 1 Introduction

Do I know all the capitals in the world? Do I know the final standings of all European football leagues over the past 24 years? Do I know the birth dates of all past American presidents? Most of us would answer “no” to each of these questions. But if our arguments in this paper are right, most of us could easily answer “yes”. The explanation is simple and surprising: most of us can easily acquire a vast body of knowledge about matters such as geography, sports, and history. That is, we can easily know many, many things that we do not ordinarily seem to know.

In this paper we explore the potential bearing of the extended mind thesis—the thesis that the mind extends into the world—on epistemology. More specifically, for the sake of the argument, we assume the truth of the extended mind thesis and reliabilism about knowledge. We argue that the combination of these two theses entails that ordinary subjects like us can easily come to enjoy various forms of restricted omniscience. Roughly, a restrictedly omniscient subject has complete, or close to complete knowledge about a particular, fairly specific subject matter—say, the final standings of all European football leagues over the past 24 years. The paper is organized as follows: In section 2, we present the extended mind thesis from Clark and Chalmers (1998). In section 3, we present reliabilism about knowledge. In section 4, we combine the two theses in what we will call the “Extended Knowledge Argument”. The argument shows that we can easily come to enjoy various forms of restricted omniscience. In section 5, we suggest that extended mind and extended knowledge lead to a conceptual bifurcation with respect to belief and knowledge. We tentatively suggest that this conceptual bifurcation supports a form of pluralism about the concepts of belief and knowledge. We continue to suggest that something similar applies at the metaphysical level. In section 6, we our work within the larger picture of extended epistemology. We compare three paths to extended knowledge—one going through extended cognition, another through extended mind, and a third going through the combination of the two. In section 7, we conclude.

## 2 The Extended Mind Thesis

In their (1998) paper, Clark and Chalmers argue that the mind extends into the world. The central idea is that beliefs can be partly constituted by features of the external environment when these features play the right sort of role in driving cognition. Clark and Chalmers make this idea vivid through the case of Inga and Otto:

First, consider 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 see it. 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.

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.<sup>1</sup>

We do not hesitate to attribute a standing or non-occurrent belief about the museum's location to Inga prior to her consulting her memory. Clark and Chalmers' contention is that we should not hesitate to do the same in the case of Otto: Otto has the same standing belief about the museum's location, although his belief sits in the notebook—an external resource—rather than in his biological memory. If this is so, the mind extends into the world.

Clark and Chalmers support their contention by appealing to the functional role that beliefs and desires play in explaining action. We explain Inga's going to the MOMA by citing her desire to do so and her belief that the MOMA is on 53rd Street. Given that Otto performs the same action and has the same desire as Inga, Otto's notebook seems to play the same role as Inga's biologically stored belief in explaining action. To motivate this, suppose that Inga's belief about the MOMA was removed from her biological memory. Presumably, she would then not have gone to 53rd Street. Similarly, if we were to delete the address of the MOMA from Otto's notebook, he would presumably not go to 53rd Street either. Functionally, the information in

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<sup>1</sup> Clark and Chalmers (1998), pp. 12-13.

biological memory and in the notebook plays the same explanatory role. If the former is regarded as yielding belief, then, by parity of reasoning, so should the latter. So we have an argument that shows that Otto's belief is partly constituted by external features of the environment—in this case the notebook. Thus, the mind extends into the world.

### 3 Knowledge Reliabilism

We now turn to epistemology and focus on the perhaps most widely held theory of knowledge: *reliabilism*.<sup>2</sup> We can characterize a simple version of knowledge reliabilism as follows:

**(Reliabilism)**

A subject  $S$  knows that  $p$  if

- (i)  $S$  believes that  $p$ ;
- (ii)  $p$  is true; and
- (iii)  $S$ 's belief that  $p$  is formed or sustained by a reliable process.

This is only a rough characterization of reliabilism. In particular, it incorporates the simplifying assumption that reliabilists do not distinguish between different kinds of reliable belief-forming processes. Yet, since nothing in our arguments hangs on this simplification, the assumption is innocuous.<sup>3</sup> Further, reliabilism is usually formulated solely in terms of reliable belief-forming processes. Given the emphasis on belief-*formation*, one might worry that the standard reliabilist framework does not straightforwardly apply to non-occurrent beliefs. To sidestep this potential worry, condition (iii) is formulated disjunctively. Roughly, a belief-sustaining process is reliable if most of the beliefs sustained by the process are true. For example, many of Otto's non-occurrent beliefs are sustained via the notebook, and since most of them are true—or so we may assume—this way of sustaining beliefs is reliable.

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<sup>2</sup> While we focus on reliabilism in this paper, we trust that our main line of argument will generalize to other externalist theories of knowledge.

<sup>3</sup> Following Goldman (1979), it is standard to distinguish between belief-dependent and belief-independent processes as well as conditionally and unconditionally reliable ones.

## 4 Extended Knowledge

So far we have talked about the extended mind hypothesis and knowledge reliabilism separately. We now connect the two in the following argument:

### *The Extended Knowledge Argument*

- (1) If subject  $S$  has a belief that  $p$  (whether extended or not) that is formed or sustained by a reliable process and is true, then  $S$  knows that  $p$ .
- (2)  $S$  has a true, extended belief that  $p$  that is sustained by a reliable process.
- (3) Therefore,  $S$  knows that  $p$ .

The Extended Knowledge Argument shows that the extended mind thesis in conjunction with reliabilism yields extended knowledge, or knowledge that involves extended belief. Whereas Premise (1) is just reliabilism, premise (2) gets its support from the extended mind thesis and considerations that we will offer in section 4.2.

The Extended Knowledge Argument leaves open two important issues. First, which conditions must external resources satisfy to support extended beliefs? Second, what is the scope of the Extended Knowledge Argument? Our claim is that most ordinary subjects can easily enjoy very extensive extended knowledge. We will support this claim by arguing that premise (2) in the Extended Knowledge Argument can easily be true of many ordinary subjects in a wide range of cases. Together with premise (1), this can yield an explosion of knowledge for many ordinary subjects.

### 4.1 Conditions on External Resources

Clark and Chalmers discuss which conditions an external resource need to satisfy to support extended beliefs. Initially, they consider the following three conditions:

- $C_1$ . *Typical invocation*: the resource should be readily available and typically invoked.<sup>4</sup>
- $C_2$ . *Automatic endorsement*: any information retrieved from the resource is more or less automatically endorsed.

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<sup>4</sup> We use the locution ‘readily available’ instead of ‘reliably available’ (Clark and Chalmers’ usage) to avoid ambiguity between reliable access to an external resource and the reliability of sustaining beliefs via that resource.

C<sub>3</sub>. *Easy access*: the information contained in the resource should be easily accessible as and when required.<sup>5</sup>

Otto's notebook satisfies C<sub>1</sub> to C<sub>3</sub>. The notebook is a constant in Otto's life, and he relies on it in his everyday life. When he retrieves information from the notebook, Otto immediately endorses it—or accepts it as true—and does not hesitate to act on it. Following Clark, we understand endorsement epistemically.<sup>6</sup> In part this means that when a subject endorses a piece of information retrieved from an external resource, she takes the resource to be trustworthy and exempt from critical scrutiny. Lastly, the notebook is readily available when Otto needs it—or at least so we can assume.

Clark and Chalmers seem to take seriously the idea that any external resource that satisfies conditions C<sub>1</sub> to C<sub>3</sub> supports extended beliefs. But they also consider including a fourth condition:<sup>7</sup>

C<sub>4</sub>. *Past endorsement*: the information in the external resource has been consciously endorsed by the subject at some point in the past and is contained in the resource as a result of this endorsement.

Notice that this additional condition is satisfied in the case of Otto, if we assume that he is the only person entering information into the notebook. As he does so, he consciously endorses each piece of information and it is in the notebook as a result of this endorsement.

If we include C<sub>4</sub>, it is clear that more is demanded of an external resource before it can be said to support extended beliefs. Clark and Chalmers themselves harbour reservations about the fourth condition because they are open to the possibility of belief-acquisition through subliminal perception or memory tampering.<sup>8</sup> However, below we include C<sub>4</sub> to make our main conclusions as strong as possible.

## 4.2 Easy, Extensive Extended Knowledge

Suppose then that external resources must satisfy conditions C<sub>1</sub> to C<sub>4</sub> to support extended beliefs. By reflecting on the case given below, we can see that premise (2) in the Extended Knowledge Argument is plausible for a wide range of beliefs belonging

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<sup>5</sup> Cf. Clark and Chalmers (1998), p. 17.

<sup>6</sup> Cf. Clark (2010), p. 46.

<sup>7</sup> Cf. Clark and Chalmers (1998), p. 17.

<sup>8</sup> Clark and Chalmers (1998), p. 17.

to ordinary subjects. In turn, the Extended Knowledge Argument yields that most of us can easily enjoy various forms of restricted omniscience.

Here is the case:

*Cut and Paste*

Lone spends a month cutting and pasting information from various reliable online resources into a document that she saves on her computer. The information is organized in explicitly labeled sections according to subject matter. This makes the document easily searchable. Lone cuts and pastes from reliable online resources such as encyclopedia, news reports, and scientific journals—that is, from resources that contain a high proportion of true pieces of information. As she cuts and pastes, Lone consciously endorses each piece of information. After a month of cutting and pasting, Lone has cut and pasted a vast amount of information. It is all included in the document that she keeps on her laptop to which she has easy and ready access. She has endorsed each piece of information that it contains, and indeed, each is there as a result of this endorsement. She frequently relies on the document in her everyday life, automatically endorses the information that she retrieves from it and does not hesitate to act on it.

As seen, Cut and Paste is explicitly designed to ensure that Lone's document satisfies conditions  $C_1$  to  $C_4$ . Moreover, Lone's reliance on the document parallels in all relevant respects Otto's reliance on the notebook. Lone relies often on the document for information, and the information plays a central role in explaining her actions. For instance, historical and geographical facts can help explain Lone's actions when she travels the world or participates in quizzes. We can also imagine that Lone cuts and pastes a wide range of recipes, bus plans, phone numbers, and restaurant guides into the document. These pieces of information can then serve Lone in her everyday life.

Now, there might well be much information in the document that Lone rarely, if ever, relies on when she acts. This might make one doubt whether such information really supports extended beliefs. But notice that Lone and Otto are on a par in this respect: Otto's notebook might well contain information that he rarely, if ever, uses after inputting it. What matters is not that each individual piece of information is often invoked or relied on, but rather that the resource as a whole is. It might also

be objected that Lone does not rely as crucially on her document as Otto does on his notebook. She does not *have* to rely on the document for information. Lone, for instance, may lose access to the document but nevertheless still have easy access to the relevant information from other resources—in particular, from the resources that she cut and pasted from initially. But there is nothing that prevents a similar extension of Clark and Chalmers’ original Otto case. Otto does not *have* to rely on the notebook for information. He may lose access to his notebook but nonetheless still be able to retrieve easily the same information in other ways. For example, we can imagine that Otto always records information in two ways—by writing in his notebook *and* by speaking into a dictaphone. In that case he may lose access to the notebook but still have easy access to the dictaphone. This puts Lone and Otto on a par.

The document gives Lone many extended beliefs about a wide range of subject matters. Insofar as the information in the document is extracted from reliable resources, the information in the document is mostly true. And this is to say that the process of sustaining extended beliefs through the document is a reliable one. Among Lone’s beliefs, all the true ones hence satisfy premise (2) in the Extended Knowledge Argument. Given premise (1), we can then infer that all these beliefs qualify as extended knowledge.

What is the scope of Lone’s extended knowledge? Suppose Lone spends just 10 minutes cutting and pasting the list of all capitals in the world into the document. In this case, the Extended Knowledge Argument yields that Lone knows all the capitals in the world. Suppose Lone spends a bit of time cutting and pasting all birthdates of American presidents and past Academy Award winners into the document. In this case, the Extended Knowledge Argument yields that Lone knows all birthdates of American presidents and past Academy Award winners. Suppose finally that she spends some time cutting and pasting the final standings of all European football leagues for the past 24 seasons, the recorded monthly average temperature of Copenhagen for the past 100 years, and the first 10,000 prime numbers. In this case, the Extended Knowledge Argument yields that Lone knows all of these things—as well as all other true pieces of information that she can cut and paste into the document in the course of a month’s work. In short, Lone knows many, many things. Indeed, she knows way more things than we ordinarily seem to know.

More generally, what we get is:

*Easy, Extensive Extended Knowledge* (EEEEK)



For any subject  $S$ ,  $S$  knows each true piece of information contained in a reliable external resource that satisfies conditions  $C_1$  to  $C_4$  relative to  $S$ .

Insofar as ordinary subjects can stand in a relationship to the kind of external resource that (EEEEK) describes, ordinary subjects can easily come to enjoy the kind of restricted omniscience that Lone enjoys. Clearly, most of us do not spend a month cutting and pasting pieces of information into a document on our computer. So most of us are not *actually* omniscient in the way that Lone is. But the point remains that we can *easily* become so by spending some time in front of the computer.

If we weaken the conditions on what it takes for an external resource to support extended beliefs, it becomes even easier for ordinary people to enjoy even greater omniscience. For instance, if an external resource need only satisfy conditions  $C_1$  to  $C_3$  to support extended beliefs—an option that Clark and Chalmers take seriously—then such beliefs are easier to come by and premise (2) easier to support. Suppose Lulu enjoys easy access through a smart phone to certain reliable online resources such as the *Encyclopedia Britannica*, *Reuters*, and *Nature*. Insofar as these resources satisfy  $C_1$  to  $C_3$ , they sustain a huge number of Lulu’s extended beliefs. Since there is no requirement of past endorsement, Lulu has an extended belief for just about every piece of information contained in these resources. As a result, she has an incredibly wide range of extended beliefs about geography, history, current affairs, and scientific discoveries. What is more, these extended beliefs are sustained reliably because the resources in question contain mostly true information. By the Extended Knowledge Argument, this means that each true extended belief sustained in this way counts as a piece of knowledge. The extent of Lulu’s knowledge is even greater than Lone’s, and Lulu’s knowledge is also much easier to attain. In fact, since most ordinary people in a modern society enjoy the easy access to various reliable online resources that Lulu does, their positions are similar in all relevant respects. For this reason, they too will end up with a huge number of extended beliefs that qualify as knowledge. And this time, no real work in front of the computer is needed.<sup>9</sup>

While extended and non-extended beliefs play much the same overall functional role in our epistemic economy, they can have very different scopes. As a rule, the amount of extended beliefs far exceeds the amount of non-extended beliefs, and

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<sup>9</sup> Rubert (2004) argues against the extended cognition thesis. Lulu-like cases play a role in the argument. Rubert’s verdict on such cases is that it is counter-intuitive to count them as knowledge. Strictly speaking, this take on the Lulu case and cases similar to it is consistent with our line of argument. Our argument, however, suggests that—assuming that only conditions  $C_1$ - $C_3$  apply—there is *theoretical pressure* to count the Lulu case and cases similar to it as knowledge.

similarly for extended knowledge versus non-extended knowledge. Often, as the Extended Knowledge Argument shows, we must ascribe far more knowledge to a subject than what we ordinarily seem warranted in doing. While the examples of restricted omniscience that we have discussed perhaps characterize what a few special individuals know in the non-extended way, the fact that this omniscience is easily attainable even by ordinary subjects points to a new and important dimension of our concepts of belief and knowledge. In particular, the theses of extended mind and extended knowledge suggest a bifurcation with respect to the concepts of belief and knowledge. We explore these issues in more detail in the next section.

## 5 Conceptual bifurcation, pluralism and naturalness

Given the extended mind thesis and extended knowledge, the concepts of belief and knowledge seem to bifurcate. In this section we tentatively suggest that this bifurcation supports a form of pluralism about these concepts. We go on to suggest that something similar can be said at the metaphysical level.

Given the extended mind thesis, notice first that the concept BELIEF bifurcates into two:

- The concept EXTENDED BELIEF subsumes beliefs that are partly constituted by external features of the believer's environment.
- The concept NON-EXTENDED BELIEF subsumes beliefs that are not constituted by external features of the believer's environment.

EXTENDED BELIEF and NON-EXTENDED BELIEF have different individuation conditions and different extensions, and so, are distinct concepts. However, why are both concepts subsumed under BELIEF—what unifies them? The answer is that EXTENDED BELIEF and NON-EXTENDED BELIEF are unified by the functionalist story told about BELIEF: what it takes for something to fall under BELIEF is for it to play the right kind of role in explaining action. And this is something that applies to both extended and non-extended beliefs—hence the unity.

Given extended knowledge, the conceptual bifurcation just highlighted seems to impact our concept of knowledge as well. Just like BELIEF bifurcates into EXTENDED BELIEF and NON-EXTENDED BELIEF, one might think that KNOWL-

EDGE bifurcates into EXTENDED KNOWLEDGE and NON-EXTENDED KNOWLEDGE. The rationale is straightforward. The latter bifurcation piggy-backs on the former. Belief is a necessary condition on knowledge, and any belief is either extended or non-extended. Now, if a belief is extended and qualifies as knowledge, it falls under EXTENDED KNOWLEDGE. If a belief is non-extended and qualifies as knowledge, it falls under NON-EXTENDED KNOWLEDGE.

A kind of conceptual pluralism results from these considerations. The picture we seem to get is this:

*BELIEF pluralism:*

There are three belief concepts: one overarching concept, BELIEF, and two subconcepts, EXTENDED BELIEF and NON-EXTENDED BELIEF. Neither EXTENDED BELIEF nor NON-EXTENDED BELIEF is reducible to the other. Both concepts are such that all of their instances fall under the concept BELIEF. More precisely: all instances of BELIEF are unified by a functional role that links BELIEF, DESIRE, and ACTION. Something falls under the concept BELIEF in virtue of falling under the concept EXTENDED BELIEF or the concept NON-EXTENDED BELIEF.

As before, it seems fair to say that the same point applies with respect to KNOWLEDGE.

The kind of pluralism we have suggested is located at the level of concepts. It is a further question whether this kind of pluralism has a metaphysical mirror image. That is, whether the distinction between BELIEF, EXTENDED BELIEF and NON-EXTENDED BELIEF—and the analogous distinction in the case of KNOWLEDGE—carves the world at its joints. This is not a trivial issue. For we cannot assume that successfully introducing a concept or successfully drawing a distinction always has metaphysical punch—that there is a property that answers to the concept introduced, or that there are properties to populate the sides of the distinction drawn.

To make this vivid, suppose that we introduce the concept BLAHBLAH as follows:  $x$  falls under the concept BLAHBLAH exactly if  $x$  falls under some one-place concept. By giving this characterization it would seem that we have successfully introduced the concept BLAHBLAH. In general, successfully introducing a concept  $C$  does not seem to require all that much. Presumably, it suffices to provide a characterization of  $C$  that is syntactically well-formed, makes sense, and gives a criterion of

application. (Here, by ‘criterion of application’, we mean a criterion that says when the concept does and does not apply.) Given this assumption, the proposed characterization successfully introduces the concept BLAHBLAH. The characterization is well-formed, makes sense, and provides a criterion of application.

Does BLAHBLAH latch on to anything in reality? It is not clear that it does. BLAHBLAH subsumes such diverse things as natural numbers, cars, electrons, political parties, cocktail parties, chairs, bears, and statutes. Sure, we can use ‘BLAH-BLAH’ as a heading under which to subsume these kinds of things (and many, many more). Even so, we might be reluctant to admit into our ontology the property of being BLABLAH, alongside the properties of having mass, being positively charged, being even, and other properties that we want to accommodate.

We have raised the metaphysical issue here to pursue the question whether the conceptual pluralism introduced earlier has a metaphysical counterpart. In contemplating the possibility that the conceptual and metaphysical levels come apart, a very unfriendly response to the idea of extended mind and knowledge comes into focus. Someone might look at the extended mind and knowledge debate and simply say that our ideology—or conceptual landscape—has become richer or more complicated, but that this tracks nothing interesting metaphysically speaking. While the concepts EXTENDED BELIEF, NON-EXTENDED BELIEF, EXTENDED KNOWLEDGE, and NON-EXTENDED KNOWLEDGE have all been successfully introduced, it is all just talk with no metaphysical substance. The concepts in question do not track properties that inhabit our ontology. In turn, the kind of conceptual pluralism described earlier is not mirrored at the metaphysical level.

To further our discussion it will be helpful to follow Lewis (1983) and (1986) and introduce the notion of *naturalness*. According to Lewis, the perfectly natural properties are a small class of elite properties that carve the world at its joints. Taken together these properties suffice for a complete, non-redundant description of the world. The degree of naturalness of other properties is determined by how far or close they are to the perfectly natural properties in terms of definability. This Lewisian notion of naturalness goes with a structured metaphysics where the perfectly natural properties constitute the most fundamental layer and less natural properties are distributed across less fundamental layers. Relations of definability, reduction, and explanation obtain between different layers—with more fundamental layers defining, reducing, or explaining less fundamental layers.

Earlier we presented the metaphysical issue as an all-or-nothing matter: the con-

cepts EXTENDED BELIEF, NON-EXTENDED BELIEF, EXTENDED KNOWLEDGE, and NON-EXTENDED KNOWLEDGE track properties that either are or are not in our ontology. However, running with a Lewisian notion of naturalness, it is better to reformulate the metaphysical issue in graded terms. Thus, the question we are asking is what degree of naturalness is possessed by the properties tracked by EXTENDED BELIEF, NON-EXTENDED BELIEF, EXTENDED KNOWLEDGE, and NON-EXTENDED KNOWLEDGE. This, in turn, will determine how fundamental these properties are definitionally, ontologically, and explanatorily.

Lewis had a reductionist agenda. Whether or not one shares this agenda, the property of being an extended belief and the property of being a non-extended belief are bound not to be among the perfectly natural ones, and so, bound not to be in the fundamental layer. At the same time, these properties feature in definitions and explanations. For example, extended belief is used to define extended knowledge, and non-extended belief is used to define non-extended knowledge. Additionally, extended beliefs and non-extended beliefs combine with desires to explain actions. While not perfectly natural, these observations suggest that the properties of being an extended and a non-extended belief are nonetheless more natural than certain other properties.

Does the conceptual pluralism tabled earlier—BELIEF pluralism—have a metaphysical counterpart? It does, at least in the sense that the concepts BELIEF, EXTENDED BELIEF, and NON-EXTENDED BELIEF track properties that are somewhat natural. The properties of being a belief, an extended belief, and a non-extended belief are properties that feature in definitions and explain phenomena we observe. In this sense, they would seem to track properties that are hooked into reality and can be reckoned as part of our ontology, even if not at the most fundamental level. A similar story can be told in the case of KNOWLEDGE, EXTENDED KNOWLEDGE, and NON-EXTENDED KNOWLEDGE. While the specifics will be different from those operative in the case of BELIEF, EXTENDED BELIEF, and NON-EXTENDED BELIEF, the basic idea is the same: KNOWLEDGE, EXTENDED KNOWLEDGE, and NON-EXTENDED KNOWLEDGE are concepts that track properties that are not perfectly natural, but nonetheless somewhat natural. These properties feature in definitions as well as explanations.

## 6 Three paths to extended knowledge

We have shown how the extended mind thesis in combination with reliabilism yields (extensive) extended knowledge. Other authors have likewise explored the possibility of extended knowledge. Examples include Palermos (2011), Pritchard (2010) and (forthcoming), and Vaesen (2011). These authors seek to extend knowledge through extended cognition rather than extended mind. Very roughly, the thesis of extended cognition is this: an agent's cognitive processes can include parts of the external environment—things that are not inside the skin of the cognizer (see, e.g., Clark and Chalmers (1998)). Importantly, as Clark and Chalmers (1998) point out, buying into extended cognition does not automatically commit one to buying into extended mind. While some cognitive processes extend into the environment, it may be that the beliefs that result from these processes are entirely within the skin and skull of the subject.

To locate our work within the larger picture of extended epistemology, we distinguish between three paths that lead to extended knowledge. Against the background of this three-way distinction we then offer a brief comparison of our work to that of Vaesen, Pritchard, and Palermos.

To fully address whether—and to what extent—knowledge is extended one must take a stance on extended cognition as well as extended mind. Suppose that we endorse the idea of extended cognition, but reject the idea of extended mind. This combination points to the following path to extended knowledge: knowledge can be extended in the sense that the relevant cognitive *process* extends into the environment of the knower. Now, it is an interesting—and substantial—issue whether one can plausibly buy into extended mind without also buying into extended cognition. However, suppose that it is at least conceptually possible to do so. This combination points to another path to extended knowledge: knowledge can be extended in the sense that the relevant *belief* extends into the knower's environment. Finally, suppose that we buy into both extended cognition and extended mind. This combination charts a third path to extended knowledge: knowledge can be doubly extended in the sense that both the relevant cognitive process *and* the belief that results from it extend into the knower's environment.

Bearing the above three-fold distinction in mind, let us now turn to the work of Vaesen, Pritchard, and Palermos. Vaesen (2011) argues against virtue-theoretic accounts of knowledge. The basic argument is this: according to virtue-theoretic

accounts of knowledge, knowledge requires cognitive achievement creditable to the knowing subject. However, argues Vaesen, certain cases of extended cognition generate knowledge and involve cognitive achievement, but achievement that is not creditable to the knowing subject. Hence, virtue-theoretic accounts of knowledge cannot be right.

Both Pritchard and Palermos push in the opposite direction. Pritchard argues that the idea of extended cognition fits well with a virtue-theoretic account of knowledge. When appropriately understood, Pritchard's main contention is, the idea of cognitive ability integral to virtue-theoretic accounts is quite amenable to cases of knowledge involving extended cognition (see his (2010) and (forthcoming) for details). Palermos (2011) agrees with Pritchard on this point, but further argues that the conditions that cognitive processes must satisfy to be knowledge-conducive coincide with those that advocates of extended cognition identify as the ones cognitive processes must satisfy to be part of the cognizer's system.

As should be clear, there are crucial differences between Vaesen, on the one hand, and Pritchard and Palermos, on the other. Vaesen thinks that cases of extended cognition serve to undermine virtue-theoretic accounts of knowledge, while Pritchard and Palermos hold the opposite view. Despite this fundamental difference, there is also a very important point of agreement. Vaesen, Pritchard, and Palermos agree that there are cases of knowledge involving extended cognition. As such, their work supports the idea of extended knowledge arrived at in the following way: in some cases, the knowledge-producing cognitive process is one that extends into the subject's environment.

Depending on their respective views on extended mind, Vaesen, Pritchard, and Palermos reach extended knowledge through the first or the third path described above. If the extended mind thesis is rejected, knowledge is extended solely through the relevant cognitive process. This is the first path to extended knowledge. Note that, while beliefs are the items that qualify as knowledge, what makes them instances of extended knowledge is their genesis—how they came about—rather than their nature considered as beliefs. If, on the other hand, the extended mind thesis is endorsed, 'externalization' occurs in two respects. The genesis of the belief involves a process that extends into the knower's environment, but so, too, does the belief itself. This is the third path described above—knowledge as doubly extended.

In their treatment of extended knowledge, Vaesen, Pritchard, and Palermos focus on extended cognition. Our argument makes a new contribution to the debate by

charting a route to extended knowledge that need not rely on the idea of extended cognition. If our argument is combined with a rejection of extended cognition, knowledge is extended solely through the mind. It is the nature of the relevant beliefs—the fact that they extend into the knower’s environment—that delivers extended knowledge. This corresponds to the second path described above. On the other hand, if we add to extended mind the idea of extended cognition, our overall commitments will take us to extended knowledge via the third path—yielding knowledge doubly extended.

We are inclined to think that it is not all that plausible to buy into the extended mind thesis without also endorsing the idea of extended cognition. As such, we are inclined to think that knowledge in at least some cases is doubly extended, i.e. extended both by way of the genesis of the relevant belief and by way of the nature of the belief itself. As noted, if Vaesen, Pritchard, and Palermos add extended mind to their mix, they would also end up with knowledge doubly extended. However, it remains to be seen whether this additional commitment is one that they are willing to take on board, or whether they want to extend knowledge along one dimension only.

## **7 Conclusion**

We have explored the potential bearing of the extended mind thesis on epistemology. The Extended Knowledge Argument shows that the combination of the extended mind thesis and reliabilism delivers the conclusion that true, reliably sustained, extended belief is knowledge. The argument leaves open which conditions external resources must satisfy to support extended beliefs. However, we have argued that even by the lights of the most demanding conditions on extended beliefs, the Extended Knowledge Argument shows in conjunction with Cut and Paste that ordinary subjects can easily come to have very extensive extended knowledge. If some of the conditions are dropped or weakened, as we have seen, the omniscience in question becomes more easily attainable. Having developed the Extended Knowledge Argument, we examined the conceptual foundations of the extended knowledge debate. We suggested that adherents of extended mind and knowledge can be regarded as being committed to a certain form of conceptual pluralism—pluralism about the concepts BELIEF and KNOWLEDGE. At the end of the paper we suggested a corresponding pluralism at the metaphysical level of properties.



## References

Clark, A. (2010). Memento's Revenge. In R. Menary (ed.): *The Extended Mind* (Cambridge, MA: MIT Press): 43–66.

Clark, A. (2008). *Supersizing the Mind* (Oxford: Oxford University Press).

Clark, A. and D. Chalmers. (1998). The Extended Mind. *Analysis*, 58: 7–19.

Goldman, A. (1979). What Is Justified Belief? In G. Pappas (ed.): *Justification and Knowledge* (Boston: D. Reidel).

Lewis, D. (1986). *On the Plurality of Worlds*. Oxford: Basil Blackwell.

Lewis, D. (1983). New work for a theory of universals. *Australasian Journal of Philosophy*, 61: 343–377.

Palermos, O. (2011). Belief-Forming Processes, Extended. *Review of Philosophy and Psychology*, 2: 741–765.

Palermos, O. and D. Pritchard. (Forthcoming). Extended Knowledge and Social Epistemology. To appear in *Social Epistemology Review and Reply Collective*, 8: 105–120.

Pritchard, D. (Forthcoming). Virtue Epistemology, Extended Cognition, and the Epistemology of Education. To appear in *Universitas: Monthly Review of Philosophy and Culture*.

Pritchard, D. (2010). Cognitive ability and the extended cognition thesis. *Synthese*, 175: 133–151.

Rubert, R. (2004). Challenges to the Hypothesis of Extended Cognition. *Journal of Philosophy*, 101: 389–428.

Vaesen, K. (2011). Knowledge without credit, exhibit 4: Extended cognition. *Synthese*, 181: 515–529.