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EXTENDED COGNITIVE SYSTEM AND EPISTEMIC SUBJECT

Abstract. The concept of an extended cognitive system is central to contemporary studies of cognition. In the paper I analyze the place of the epistemic subject within the extended cognitive system. Is it extended as well? In answering this question I focus on the differences between the first and the second wave of arguments for the extended mind thesis. I argue that the position of Cognitive Integration represented by Richard Menary is much more intuitive and fruitful in analyses of cognition and knowledge than the early argument formulated by Andy Clark and David Chalmers. Cognitive Integration is compatible with virtue epistemology of John Greco's agent reliabilism. The epistemic subject is constituted by its cognitive character composed of an integrated set of cognitive abilities and processes. Some of these processes are extended, they are a manipulation of external informational structures and, as such, they constitute epistemic practices. Epistemic practices are normative; to conduct them correctly the epistemic subject needs to obey epistemic norms embedded in the cultural context. The epistemic subject is not extended because of the casual coupling with external informational artifacts which extend his mind from inside the head and into the world. Rather, cognitive practices constitute the subject's mind, they transform his cognitive abilities, and this is what makes the mind and epistemic subject "extended".

Keywords: extended mind, cognitive system, epistemic justification, epistemic subject, knowledge, belief.

Introduction

In the second half of the 20th century, a new metaphor was coined in the philosophy of mind. The metaphor of *Mind as a Computer*, associated with the computational theory of mind, was challenged by the metaphor of *Mind as a Dance* between the brain, non-neural body resources, and environmental structures. This mind-as-a-dance metaphor was proposed by advocates of Situated Cognitio – an approach that, according to some, ushered in a new paradigm. Philosophers working within this new perspective are trying to develop a unified and fruitful interdisciplinary project aimed at shedding

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new light on cognition. Most theories within Situated Cognition appeal to the concept of an extended cognitive system, which, despite its many explanatory advantages, raises problems when confronted with the concept of epistemic subject. The question of the relation between these two concepts has given rise to a heated debate between the proponents of the idea of a distributed cognitive subject and those who take a more traditional view of knowledge, such as advocates of virtue epistemology.

The primary aim of this paper is to clarify the notion of an extended cognitive system in the context of Cognitive Integration, a position defended by Richard Menary. A second aim is to identify the main problems associated with the concept of epistemic subject in Cognitive Integration and in other accounts of extended cognition. The structure of the paper is as follows. In the first two paragraphs, I present a description of an extended cognitive system as provided by Cognitive Integration. I also place this position in the wider context of extended mind arguments and point to the main differences between Cognitive Integration, which constitutes the second wave of arguments for the extended mind thesis, and the famous argument by Clark and Chalmers (the first wave). In the three subsequent sections, I focus on the problem of epistemic cognitive agency of an extended cognitive system. In analyzing this issue, I draw on virtue epistemology as developed by John Greco.

1. An Extended Cognitive System and Cognitive Integration

According to Richard Menary's Cognitive Integration, a cognitive system is a relatively stable entity composed of interacting parts that may include neural, bodily, and environmental components (Menary, 2006, 2007, 2009, 2010, 2010a).[1] These parts are integrated by various reciprocal relationships and have to work properly if the system is to function successfully. What is essential to Cognitive Integration is that some components of a cognitive system can be located outside the organism. This external localization does not preclude the system from being cognitive as long as all its components are coordinated with one another to produce its global behavior (Menary, 2012). Due to this coordination between bodily processes and certain features of the environment, the organism can perform cognitive functions, such as remembering, perceiving, understanding or learning, more efficiently than if it relied on internal processes alone. Thus, one of the main theses of Cognitive Integration is that a cognitive system does not have a spatial boundary constituted by the brain or even the skin. But

what is the significance of this claim for studies into cognition, knowledge and epistemic subject?

Cognitive Integration incorporates the embodied mind thesis, which asserts that our bodily activity in the environment constrains what we perceive and know (Shapiro, 2011). As Menary explains: "A straightforward way of understanding the position of cognitive integration is in terms of bodily engagement with vehicles in the extra-bodily environment, in such a way that they are integrated into a whole" (Menary, 2007, p. 5). Hence, an extended cognitive system functions through the manipulation of stable and available linguistic or other external representations by the body.[2] What is needed at this point is an explanation of how and why bodily resources manipulate the external environment in the way they do. In order to provide such an explanation, one should recognize that the extended system is embedded in culture, which means that our bodily manipulations of external representations are deeply normative (Menary, 2007, pp. 5–6). The main challenge is to show how internal and external representations and processes are integrated in the completion of a cognitive task – a challenge that cannot be met without investigating the system's social and cultural context. Manipulation of an external representation, aimed at completing a cognitive task, constitutes a cognitive practice. Humans learn cognitive practices by assimilating cognitive norms (Menary, 2007, p. 138). As Menary points out: "Cognitive practices are just these culturally endowed bodily manipulations of informational structures. The practices are normative, there are right and wrong ways to do them, and they are often encoded as rules or procedures to be followed" (Menary, 2012, p. 150).

2. Cognitive Integration as an extended mind thesis

What precisely does the thesis of cognitive extension mean? To a first approximation, it means that exercising a certain cognitive ability essentially relies on processes that extend beyond the cognizer's body. Moreover, the processes in question must be integrated into the processing routines aimed at completing the cognitive task. Menary (2012, p. 151) explains:

> The relationship is not merely one of contingent causality – the process merely aids in completing a cognitive task. It is a relationship of cognitive integration: part of the core set of processing routines that directly lead to completing a task.

Hence, extended cognitive abilities should not be confused with cognitive

outsourcing, which occurs when something or someone simply does cognitive work for us, or with the process of offloading complex cognitive processes to the world. Such strategies are examples of embedded, not extended cognition, for embedding allows that cognition is sometimes supported by aids in the environment, not that they extend it (Menary, 2012, p. 151). Still, what does it mean that cognitive processes are extended rather than merely embedded?

Menary proposes two distinct ways of understanding cognitive extension – causal coupling and enculturated cognition. The idea of causal coupling is presented by Andy Clark and David Chalmers in "The Extended Mind" (Clark & Chalmers, 1998). At the beginning of the article, the authors show examples of epistemic actions that alter the world so as to aid and augment cognitive processes such as recognition and search. One of the examples is the computer game Tetris:

> In Tetris, falling geometric shapes must be rapidly directed into an appropriate slot in an emerging structure. A rotation button can be used .... Kirsh and Maglio (1994) go on to present compelling evidence that physical rotation is used not just to position a shape ready to fit a slot, but often to help determine whether the shape and the slot are compatible. The latter use constitutes a case of what Kirsh and Maglio call an "epistemic action". (Clark & Chalmers, 1998, pp. 7–8).

Clark and Chalmers suggest that in cases of epistemic actions the human organism is linked with an external entity in such a way that they create a coupled cognitive system that governs behavior. "Our thesis is that this sort of coupled process counts equally well as a cognitive process, whether or not it is wholly in the head" (Clark & Chalmers, 1998, p. 8). Hence, the authors of "The Extended Mind" maintain that the concept of cognitive process needs to be extended to include the active role of the environment in driving cognition.

To make this claim more intuitive, Clark and Chalmers introduce the thesis which is known as the parity principle:

> If a part of the world functions as a process which, were it done in the head, we would have no hesitation in recognizing as part of the cognitive process, then part of the world is part of the cognitive process. (Clark & Chalmers, 1998, p. 8)

This principle is not an argument in favor of the extended mind thesis; it is rather a picture inducing us to concede that we should not deny a process cognitive status just because it is external. Yet, even if we accept that cognitive processes could be extended, we could still maintain that mental states

are internal. What does "extended mind" mean? Clark and Chalmers argue that there are mental states which can be constituted partly by features of the environment. To illustrate the thesis that the mind extends into the world they present the example of Otto, who possesses an external belief:

Inga hears that there is an interesting exhibition at the Museum of Modern Art. She decides to go there, so she retrieves the location of the Museum from her biological long-term memory. Otto has Alzheimer's and depends for information storage on his notebook. When he hears about the exhibition and decides to go there, he retrieves the address of the Museum from his notebook. For Otto, the notebook plays the same role as biological memory does for Inga. Information in the notebook functions just like the information that constitutes ordinary non-current beliefs, only its location is different (Clark & Chalmers, 1998, p. 12). To sum up, it is not only the inside-the-head part of the system that is cognitive; thus, the traditional picture of mind as an input-output sandwich with cognition as a filling should be abandoned (Hurley, 1998).

The extended mind thesis as presented by Clark and Chalmers was widely criticized by proponents of the internalist conception of cognitive processes. Here, I am going to discuss two objections against Clark and Chalmers' thesis, both presented by Fred Adams and Ken Aizawa (Adams & Aizawa, 2001, 2008, 2010).[3] Firstly, Adams and Aizawa argue that the authors of "The Extended Mind" commit the coupling-constitution fallacy when they pass from the claim that some process is coupled in some way to a cognitive agent to the conclusion that this process constitutes part of the agent's cognitive system. In other words, Clark and Chalmers seem to ignore that: "the fact that object or process X is coupled to object or process Y does not entail that X is part of Y" (Adams & Aizawa, 2010, p. 68). The second argument is closely related to the first. It relies on the assumption that we need to draw the line between the cognitive and the non-cognitive. Adams and Aizawa argue that cognition is constituted by causal processes that involve intrinsic, non-derived content. It means that all of an individual's cognitive states must be constituted by non-derived representations (Adams & Aizawa, 2010). These critical arguments motivated Clark to the exhaustive and convincing answers which clarify his position (Clark, 2005, 2010, 2010a).

Richard Menary observes that internalist critiques of the extended mind are targeted mostly at the parity principle, which should not be understood as an argument in favor of the extended mind thesis but rather as an intuition pump 'inflating' the idea of cognitive extension (Menary, 2007, pp. 55–59). Unfortunately, the parity principle could lead to the misleading

interpretation of the extended mind thesis as an externalizing of internal processes. Moreover, critics often infer from the parity principle that the extended mind thesis classifies some external processes as cognitive because of their similarity to internal processes. Consequently, they argue that if internal processes are actually different from external ones, for example due to the fact that internal processes involve intrinsic content while external ones do not, then external processes and representations are not cognitive in character (Adams & Aizawa, 2010). Menary argues that a cognitive status of external processes and vehicles of representation is not determined by the fact of their similarity to the uncontroversial internal cognitive processes. As a proponent of Cognitive Integration, he accepts the differences between internal and external processes, yet he does not conclude that extended processes are not cognitive.[4] He does not consider the parity principle to be a reason for the extended mind thesis: it is the manipulation thesis that motivates the second wave of extended mind arguments, not the parity principle. Manipulation of the external vehicles of representation is not cognitive because it is similar to internal processes, but because it is performed by an integrated system for holding and manipulating information during the performance of complex cognitive tasks by the embodied agent (Menary 2007, p. 59).

The distinctive feature of Cognitive Integration is its normativity. The notion of manipulation, which is crucial for this position, encompasses normative factors not found in arguments from causal coupling. To complete a cognitive task, an agent manipulates external vehicles of representation such as written language or mathematical symbols. To do this correctly, he has to obey epistemic norms governing proper manipulation of these representational systems. Thus, Menary places casual coupling between internal processes and external vehicles of representation in a wider normative context (Menary, 2007, pp. 57–59). He goes further than Clark and Chalmers, for he explains how manipulation of external vehicles of representation becomes a normative cognitive practice.

Once we understand such processes as remembering, planning, or making inferences in terms of cognitive practices, the fact of cognitive extension becomes more intuitive, and the question concerning localization of mind not so contrived. A common interpretation of the extended mind thesis takes external devices such as telephones, computers, and calculators to be cognitive in character simply because we use them to complete cognitive tasks. This is misleading. A more plausible reading of extended cognition is provided by the position of Enculturated Cognition which explains extended cognitive processes in terms of normative manipulation of external

vehicles of representation in order to accomplish a cognitive task. As a result of such manipulations, human cognitive abilities are enculturated: they are transformed by cognitive practices to perform new, cultural functions (Menary, 2012, pp. 151–152). Hence, it is not that external artifacts become cognitive through causal coupling with the cognitive agent so that the mind extends from inside the head and into the world. Actually, "the extended mind" is not the most accurate name for the phenomenon. Mind is not extended, for it has never been internal. Rather, cognitive practices constitute the mind, hence it essentially exceeds the cognizer's body.

3. Extended mind and the problem of epistemic agency

Proponents of extended cognition analyze the cognitive capacities of supra-individual information-processing systems that involve socially organized interactions between humans and artifacts. The primary unit of research can be extended from the individual to the collective level in order to study the dynamics of collaborative work. Is the idea of an extended cognitive subject consistent with Cognitive Integration? Before answering this question, I will clarify the idea of distributed cognition.

A broadly known example of distributed cognition is provided by Edwin Hutchins in *Cognition in the Wild* (Hutchins, 1995). Hutchins presents an ethnographic study of the process of ship navigation during its coming into a port. The whole process of navigation is so complex that it must be conducted by a wide cognitive system composed of humans, instruments, and the socio-physical relations between them. Who, then, is the cognitive agent fulfilling the task? Are there as many agents as people engaged in the task or maybe there is one agent – a wide cognitive system – and cognition is distributed among its parts? Siding with the latter position, Hutchins goes beyond collective cognition. It is not only that completing the task requires the coordinated action of several people. He shows that parts of the cognitive process occur in instruments rather than in anyone's head (Giere, 2004, pp. 286–288). That is why the cognitive system includes not only humans but also artifacts and the social context in which they are embedded.

Karin Knorr-Cetina argues in favor of a similar position using the example of an experiment conducted as part of the High Energy Physics (HEP) program at CERN. She argues that the experiment is so complex, as far as time and number of participants are concerned, that it cannot be controlled by the traditional individual subject (Knorr-Cetina, 2009, pp. 167–168). The whole cognitive process is distributed between humans and external

vehicles of representation, so it is the extended system which is the agent of the cognitive action and the subject of knowledge, and as such, it has to have a mind – a group mind or distributed mind.

The idea is not without its critics. Proponents of extended cognition often introduce the concept of a super agent that possesses some kind of a distributed mind, belief, knowledge, or even consciousness. But, according to Ronald Giere, instead of providing theoretical advantages, these *innovations* lead to confusion (Giere, 2004a).[5] While Giere agrees that an extended cognitive system produces a cognitive outcome in a distributed way, he sees no need to attribute to it all the essential properties of a human subject. The standard view in modern philosophy is that the epistemic subject is an individual human being and instruments are just aids to cognition, which takes place only in a person's head. This position presupposes that a cognitive subject has beliefs and memories, is capable of making plans, is responsible for his actions, and possesses knowledge of some sort. Hence, humans are what provide intentional, cognitive agency to a distributed cognitive system. This traditional position is a productive framework which can be shared by cognitive scientists working in various fields – philosophy, psychology, sociology, anthropology, history, etc. (Giere, 2004a, pp. 770–772).

In answer to such arguments, advocates of the extended mind thesis wonder why it is so hard to accept the idea that cognition literally extends beyond the brain into the body and world? Georg Theiner, a proponent of Cognitive Integration, explains that it is the subtle but lasting legacy of Descartes' mind-body dualism that determines the materialists' assumption that there must be an indubitable "mark of the mental" – a metaphysically primitive, essential property of mental states. This assumption divides the world into two kinds of things: mental and non-mental (Theiner, 2011, p. 234). It is an accurate diagnosis, yet narrowing down the concept of epistemic subject to the human component of a cognitive system is widespread among contemporary researchers on cognition and knowledge. Adams and Aizawa explain this situation by showing that extended cognitive processes are not frequent objects of scientific investigations, for they are not likely to give rise to interesting scientific regularities covering humans and their tool use. Cognitive psychology is a science of processes that happen to occur intracranially (Adams & Aizawa, 2001, pp. 60–62).[6] This is the internalist standpoint, yet the dualism between the subject, which acquires and possesses knowledge, and external informational sources is so deeply rooted in contemporary thinking that even proponents of the extended mind thesis place the human subject in a central epistemic position within the extended cognitive system. For example, one of Clark and

Chalmers' four conditions imposed on an extended belief, seems to privilege internal processes. Specifically, the authors assert that in order to be a belief, information has to have been consciously endorsed at some point in the past (Clark & Chalmers, 1998, pp. 17–18). Adopting this criterion undermines what is supposed to be one of the most important theoretical implications of the extended mind thesis: that there is no reason to assign special cognitive status to the boundary between organism and environment. If, however, extended belief requires conscious endorsement, then the organismically bounded subject of cognition is still privileged. Hence, there is less reason to view external objects as anything more than tolls used by the cognitive subject, as opposed to parts of the cognitive process. Robert Ruper, a proponent of embedded cognition argues that Clark and Chalmers' fourth condition provides internal consciousness with the ultimate source of cognitive authority. This leads to the traditional concept of a thinking subject as using external resources rather than incorporating them into the one cognizing unit (Rupert, 2009, pp. 28–29).

Mark Rowlands faces a similar problem with his fourth condition of the cognitive process, which can be called the condition of ownership: "A process P is a cognitive process if: ... 4. P is a process that belongs to the subject of that representational state" (Rowlands, 2010, pp. 110–111). Rowlands explains that a cognitive process belongs to the subject to the extent that it is appropriately integrated into states and processes possessed by the subject. What is important, ownership of a cognitive process should not be interpreted as a spatial containment within the organism. It should rather be understood in terms of the function of that process with respect to whom it is fulfilled. Still, there must be someone (or something) that could be credited for possessing knowledge. Argumentation in terms of cognitive practice; diligent, normative manipulation of cognitive vehicles; or ownership is related to an intentional individual who has an interest in getting knowledge. He is the core of cognition, which means that he manipulates external vehicles and performs cognitive tasks. I agree that this way of thinking assumes an epistemic subject/epistemic object dualism which is hard to overcome, for it is central to the concept of knowledge.

Opponents of the extended mind thesis often argue that it has radical epistemological implications. Attributing beliefs, memories, the capability to make decisions, knowledge, or epistemic responsibility to a cognitive system composed of many people and instruments leads to a shift in the meaning of the corresponding concepts, such as "belief". Although Clark and Chalmers do not intend their use of "belief" to reflect the common usage, the changes that they introduce threaten to break the connection between

the new, wider content of "belief" and the phenomenon which they plan to explain. John Preston, an internalist about cognitive states, indicates that, traditionally, belief possesses one essential property – its owner has first-person authority in utterance. In other words, one has epistemic authority over what one believes and no one can undermine it (Preston, 2010, pp. 359–361). However, external resources, which, according to the extended mind theory, can partly constitute a subject's belief, are not ones over which said subject has first-person authority. Before consulting his notebook Otto is not authoritative about its contents, hence he does not possess belief about the address of the Museum. He has to find out in the external world what he believes. Preston argues that in ordinary situations, humans simply do not find out what they believe. It is, nevertheless, debatable whether there is a relevant difference between Otto's and Inga's case in respect to authority. Before remembering the address of the Museum, Inga is, as well as Otto, incapable of saying what she believes, and she has to retrieve the information from her biological memory. In any case, proponents of the extended mind thesis can respond to the argument for first-person authority along two lines: they have to show that extended cognitive systems can have not only beliefs, but also the ability to express them with authority, or they can refute the argument itself (Dennett, 1991), which leads to an extensive philosophical discussion on the nature of belief and its subject.

In the next section, I will discuss some problems concerning the idea of a distributed cognitive subject which suggests that the idea may be at odds with the normative conception of knowledge based on the notion of responsible epistemic action.

4. Virtue Epistemology and the Extended Mind

Proponents of distributed cognition focus mainly on the process of acquiring knowledge, not on the problems of its nature. If, however, they introduce the concept of a distributed cognitive subject, they have to account for knowledge, for its definition determines the essential properties of a subject. Contemporary accounts often adopt the definition of knowledge formulated within virtue epistemology.[7] According to virtue epistemology, knowledge is a kind of epistemic achievement for which a subject deserves credit. In other words, it is a success stemming from her cognitive ability (Greco, 2010, pp. 3–7). As such, knowledge possesses a normative status: it is something more than the product of mere chance. Accordingly, epistemology should be considered as a normative discipline. Proponents of this

position have to provide an account of epistemic normativity. One of the most interesting is John Greco's position of agent reliabilism.

Greco suggests that reliabilism is a powerful view that explains our intuitions regarding knowledge, provides elegant solutions to skeptical problems, and gives an account of the relation between justification and truth. This position is, however, often accused of being not normative enough, for it does not account for the special status of knowledge as something valuable, as opposed to a merely true, reliably formed belief. Hence, there must be some restriction placed on reliable processes giving rise to knowledge (Greco, 2010, p. 7). Such restrictions are supplied by virtue epistemology, which narrows down the class of reliable knowledge-conducive processes to those that are grounded in the subject's cognitive abilities. This strategy provides reliabilism with a normative dimension, rendering it a full-blooded epistemological position.

Reliabilism is a species of externalism, which asserts that knowledge depends on certain relations between the subject's cognitive abilities, the environment, and epistemic success. Greco notices that the subject's reliability is an important condition as far as epistemic normativity is concerned, and he indicates that the subject possesses knowledge if she believes the truth on the basis of her intellectual abilities. Because Greco explains these abilities in terms of reliable person-level dispositions, his account is a version of agent reliabilism. When investigating whether the subject possesses knowledge, we do not examine the reliability of an isolated belief-forming process, but rather the overall reliability of the subject as an integrated cognitive system of belief-forming processes. Contrary to internalism, virtue reliabilism does not explain epistemic normativity in terms of factors internal to the subject. In other words, knowledge does not entirely supervene on internal states. Internalism is inconsistent with virtue epistemology, as the latter accounts for epistemic normativity in terms of causal, externalist properties (Greco, 2010, pp. 10–11).

Is the virtue theory of knowledge consistent with the extended mind thesis? This is a matter of heated debate (Clark, Prichard & Vaesen, 2012). Can we use the notion of cognitive integration to combine virtue reliabilism with the extended mind thesis, in order to formulate a joint position concerning the epistemic subject? This seems to be a challenge, yet there are philosophers who consider this association as very promising. Greco incorporates the notion of cognitive integration into epistemological research, yet he does not approach the problem of cognitive extension. He argues that a cognitive process leads to knowledge acquisition only when it is sufficiently integrated with another subject's cognitive dispositions, so as to count as a part of his

cognitive character (Greco, 2010, p. 152).[8] Orestis Palermos, among others, suggests that it is not only internal processes that could be integrated with a subject's cognitive character but also external ones that consist of manipulation of external informational structures (Palermos, 2013).[9] Palermos shows that both views – virtue epistemology and the extended mind thesis – rely on the same notion of cognitive integration. This promises fruitful cooperation between epistemologists who define knowledge as the product of cognitive ability and philosophers of the mind who reveal which processes count as cognitive abilities. What would be the advantages of merging virtue reliabilism with the extended mind thesis? Most importantly, a combination of these views would enable us to account for cases where knowledge is a product of interaction between a subject's internal processes and an external artifact, like in the case of Otto, who obtains knowledge by virtue of his cognitive character extended by his notebook (Palermos, 2013).

Now, how does Palermos understand cognitive extension? He claims that:

> Given that virtue reliabilism makes no specifications as to whether knowledge-conducive cognitive abilities should be located within the agents' head, then, provided that the condition of cognitive integration is met, the epistemic agent may extend his knowledge-conducive cognitive character beyond his organismic cognitive abilities by incorporating epistemic artifact to it (Palermos, 2013, pp. 20–21).

Hence, although Palermos uses the notion of cognitive integration, he seems to advocate the first wave argument for the extended mind thesis supported by the parity principle. According to Menary:

> The "Extended mind" and the parity principle encourage us to think of an internal cognitive system that is extended outwards into the world. Hence it implicitly endorses a picture of a discrete cognitive agent, some of whose cognitive processes get extended out into the world. (Menary, 2007, p. 56)

In the previously quoted passage Palermos seems to be presenting *a picture of a discrete cognitive agent*: the subject's cognitive character is originally internal, yet it could be extended out into the world by incorporating external epistemic artifacts to it. Palermos writes about a cognitive agent who extends his cognitive character beyond his organismic cognitive capacities. Does this mean that the epistemic agent is extended? What is the relation between the epistemic subject and his epistemic character? Does the latter constitute the subject's defining quality, given that we would not even treat the two as identical? If we answer affirmatively, we could claim that the

epistemic subject may include external artifacts, at least if Palermos is cogent. However, this conclusion is both counterintuitive and at odds with the commonsensical and scientific concept of epistemic agency. In cases where an extended cognitive system includes only one human, it seems that the epistemic subject is not extended in this sense. Epistemic subjectivity has to be attributed to an individual who can be credited for epistemic success and burdened with epistemic responsibility. External artifacts could constitute parts of an extended cognitive system, yet they are not incorporated into the subject's cognitive character.[10] Now, what about an epistemic group agent? This is a group of mutually interacting people who gain knowledge by virtue of a distributed cognitive ability that cannot be reduced to the cognitive abilities of its individual members (Palermos, 2013). Can such a group be responsible and credited for knowledge? Does it share a cognitive character which constitutes a cognitive subject? These are matters of heated debate which needs a separate analysis.

5. Cognitive Integration and the Cognitive Subject. Final Remarks

Proponents of virtue epistemology claim that knowledge is constituted by true belief formed by virtue of a subject's cognitive ability. How do we recognize, in a particular given situation, that a subject possesses knowledge? A reliable belief-forming process should be integrated with the subject's cognitive character; that is, with an integrated set of stable and reliable belief-forming processes. Such integration assures that cognitive success is not a product of mere chance, but results from the subject's cognitive agency. Now, it is important for our considerations to show how "cognitive agency" should be understood. Duncan Prichard offers two construals of cognitive agency:

> (COGA WEAK): If S knows that p, then S's true belief that p is the product of a reliable belief-forming process which is appropriately integrated within S's cognitive character such that her cognitive success is to a significant degree creditable to her cognitive agency.
>
> (COGA STRONG): S knows that p iff S's true belief that p is the product of a reliable belief-forming process which is appropriately integrated within S's cognitive character such that her cognitive success is primarily creditable to her cognitive agency. (Pritchard, 2010, p. 136)

A strong account of knowledge demands a very close relationship between cognitive success and cognitive agency, whereas a weak definition

allows other factors to be relevant to the subject's acquisition of knowledge. Now it would be interesting to see what the paradigmatic case of extended cognition tells us about cognitive agency. Otto's cognitive success satisfies the weak condition of knowledge, for his manipulation of the notebook is integrated with his cognitive character and his cognitive success could be creditable to a significant degree to his cognitive agency. If we agree on this, we can accommodate the extended mind thesis into the virtue theory of knowledge. If, however, we insist on the strong version of cognitive agency, which demands that the subject's cognitive success be primarily creditable to his cognitive agency, we would not be so sure that Otto has knowledge. We can admit that in the case described by Clark and Chalmers Otto is solely responsible for setting-up and maintaining his notebook. Pritchard however invites us to imagine the variation of this case where Otto's wife helps him get set-up with this device, and plays an important role in ensuring that it functions effectively. Adding this new variable to Otto's case does not prevent him from satisfying the weak condition of cognitive agency. His cognitive success is significantly creditable to his cognitive agency, even despite the involvement of a third-party in this regard. The involvement of Otto's wife prevents him however from satisfying the strong condition of knowledge, since in this case his cognitive success is not primarily creditable to his cognitive agency (Pritchard, 2010, p. 149). Hence, proponents of the extended mind thesis argue that the weak condition is enough for knowledge and they emphasize the importance of integration of a reliable process into the subject's cognitive character. If an extended knowledge-conducive process is properly integrated with a set of a subject's stable and reliable belief-forming processes, cognitive success could be credited to this subject's cognitive agency.

What is the relation of Cognitive Integration (Enculturated Cognition) to conditions of knowledge elaborated by virtue epistemology? Otto's case of gaining knowledge could be nicely explained in terms of this position. Otto manipulates the external informational vehicle in order to perform the process of remembering. His cognitive success is due to his diligent maintenance of the information stored in the notebook. Hence, he is epistemically virtuous. He learns to inspect, test, and correct the informational structure in the environment, hence he is responsible for having true beliefs and deserves credit for it. Contrary to Clark and Chalmers' extended mind thesis, Cognitive Integration emphasizes that a subject does not simply rely on the reliability of the external source of information. Rather, she updates and controls its reliability. She does not have to do it consciously through careful application of some instrumental norms. Manipulation of an informa-

tional structure is so fully integrated into the subject's cognitive character that she need not continuously think about it: cognitive diligence becomes proceduralised (Menary, 2012, pp. 155–157).

Humans very often outsource cognitive abilities to artifacts, but it is not a case of extended cognition. When someone simply off-loads the solution of a cognitive task onto an external device, it is an example of embedded or scaffolded cognition. In such a case the production of an output by an external tool may be the result of a process that is unintelligible to an individual, hence she bears little or no responsibility for it. Here, I present a case of embedded, not extended cognition, taken from Roberts (2012). A novice who *blindly feeds digits* into a computer may ultimately produce identical representational outputs to those produced by an expert mathematician. Since the workings of the computer are opaque to the novice, it should not be counted among the proper parts of her cognitive system (Roberts, 2012, p. 134). The computer's problem-solving procedure is beyond the responsibility of the subject. It means that the subject does not countenance the norms governing the representational manipulations of the computer, she does not exercise cognitive faculty, and she cannot be truly credited with its achievement. Roberts argues that only when the subject grasps the norms that govern the problem-solving behavior of the whole system does she bear responsibility for each of its parts. Yet, if she simply outsources her cognitive work into an external device, whose norms she has not grasped, she has not taken responsibility for the cognitive activity.

The case of off-loading cognitive work onto external devices should be contrasted with the case of Otto. The notebook itself is a passive device that must be actively manipulated during the processing of the cognitive task of remembering. Such manipulation is not simply a case of outsourcing, rather it is an instance of extended cognition. The ability to manipulate the notebook constitutes an extended cognitive process, yet the notebook itself is not a part of Otto's cognitive character (Menary, 2012, p. 161). The integration of an artifact with a subject is understood in terms of a causal-coupling relation and, as Menary points out, causal coupling is not the relation central to the idea of extended cognition. An extended cognitive system involves the organism and external artifacts which interact with one another in various ways. The subject's cognitive character determines this interaction – it is an essential part of the system – yet there are components of the system – artifacts, norms, cultural context, other people – which are beyond it. Cognitive character involves the integration of cognitive abilities and reliable cognitive processes. Some of these processes are extended; they involve manipulation of external cognitive artifacts. As such a subject's cognitive character is

enculturated; it is transformed by normative manipulation of the external informational structure embedded in a cultural and social context. Hence, it is cognitive practice which is incorporated into cognitive character and not an external artifact, and this is the way in which the extension of mind and the epistemic subject should be understood.

NOTES

[1] Another cognitive integrationist is Mark Rowlands. In his "The New Science of Mind" he endorses the thesis of the Amalgamated Mind. Cognitive processes are an amalgam of neural, bodily and environmental structures and processes. At least some cognitive processes extend into the cognizing organism's environment in that they are composed partly of actions performed by that organism on the world around it. The actions involve manipulating, exploiting, and transforming external structures that carry information relevant to completing a given cognitive task. These actions are parts of the process of cognition (Rowlands, 2004, 2010).

[2] Examples of external vehicles or representation include, among others, written language and mathematical symbols. Such systems are governed by cognitive norms.

[3] For other arguments against the extended mind thesis see: R. Rupert (2009).

[4] Clark also rejects this interpretation of the parity principle (Clark, 2007).

[5] See also Rupert (2009).

[6] Also Robert Rupert shows that successful cognitive psychology is based on the embedded mind thesis; hence, it is internalist as far as cognitive processes are concerned. See also Rupert (2007, pp. 37–59).

[7] Contemporary proponents of virtue epistemology include: Ernest Sosa, John Greco, Linda Zagzebski, David Owens, Matthias Steup, Duncan Prichard Lorraine Code, James Montmarquet.

[8] Cognitive integration is precisely a function of cooperation and interaction or cooperative interaction with other aspects of a cognitive system. For the idea of cognitive integration in epistemology (see also Pritchard, 2010).

[9] For the argument in favor of the compatibility of virtue epistemology with the extended mind thesis (see also Pritchard, 2010).

[10] An interesting issue is whether there are artificial epistemic subjects. A robot, for example, constitutes an epistemic system and it possesses epistemic character – a set of integrated cognitive abilities and processes. Can it be credited for epistemic success and burdened with epistemic responsibility? One can think of a positive answer only if such an artificial agent conduces epistemic practice and if its cognitive character is so flexible that it could be transformed by cognitive practices in order to effectively fulfill an epistemic task. Moreover, it should be able to control the reliability of its epistemic character.

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