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EXTENDED MIND AS A DIFFERENT WAY TO REALIZE COGNITION

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Abstract: The main claim of the famous paper “*The Extended Mind*”, written by Clark and Chalmers (CC), is that the mind could literally extend into the external world. Among the many opponents of this claim, Robert Rupert has raised two main objections against it. The first, depending on the acceptance or denial of the possible 4th feature the hypothesis of extended cognition (HEC) is either insignificant or implausible and the second, external cognitive states are so immensely different from internal ones that they should be counted as distinct. In this paper, I will not only answer Rupert’s criticisms through system-respond and differences in R-properties, but I will, in the end, also respond to the criticisms on extended mind, which are based on the observation that it is not as groundbreaking as it first appeared to be, and claim that even if that is the case, it doesn’t posit a problem to its significance.

Keywords: Extended Mind, Multiple Realization, Functionalism, Embodied Cognition, Mind

BİLİŞİ GERÇEKLEŞTİRMENİN FARKLI BİR YOLU OLARAK GENİŞLETİLMİŞ ZİHİN

Öz: Clark ve Chalmers (CC) tarafından yazılan meşhur “Genişletilmiş Zihin” makalesinin ana iddiası, zihnin, kelimenin tam anlamıyla dış dünyaya yayılabileceğidir. Bu iddianın birçok muhalifi arasında, Robert Rupert buna karşı iki ana itirazda bulunmuştur. İlki, aşağıda tartışılacak olan olası 4. özelliğin kabulüne veya reddine bağlı olarak, genişletilmiş biliş (HEC) hipotezinin ya önemsiz ya da mantıksız oluşu ve ikincisi, dış bilişsel durumların içsel olanlardan çok farklı olmasına bağlı olarak onlardan ayrı sayılmasının gerekliliğidir. Bu yazıda, sadece Rupert’in itirazlarına sistem-cevabı ve R-özelliklerinin farklılıkları ile cevaplamakla kalmayacak, aynı zamanda, son olarak, genişletilmiş zihin iddiasının ilk başta düşünüldüğü kadar çığır açıcı olmadığı gözlemlerine dayanan eleştirilere değinecek ve durum böyle olsa bile, bunun tezin önemine dair bir sorun teşkil etmediğini iddia edeceğim.

Anahtar Kelimeler: Genişletilmiş Zihin, Çoklu Gerçekleştirilebilirlik, İşlevsellik, Bedenlenmiş Biliş, Zihin

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1. Introduction

The infamous paper of Clark and Chalmers (CC, thereafter), *"The Extended Mind"*, starts with a question; "Where does the mind stop and the rest of the world begin?" (Clark & Chalmers 1998, 7). At the core of the idea of the extended mind lies functionalism. Functionalism is the thesis that claims mental states should be defined by their job descriptions instead of their physical properties. According to that, and through the parity principle, if something is claimed to be cognitive when it happens inside the brain, then it should have done so if it were to happen outside of the brain as long as the states in both scenarios have the same function. Anything that is able to fulfill the functional role of a given mental state, regardless of its physical properties and location, should count as that mental state. Just because something is placed outside of my mind doesn't justify the denial of mental states to external states.

According to CC's most known example of the hypothesis, Inga, one day, hears that there is an exhibition in the Museum of Modern Art, which is on 53rd Street. She remembers where the museum is and heads out there to see it. It is clear that Inga has the belief that the MoMA is on 53rd street before she recalls her memory that contains the address of the museum. Likewise, Otto, an unfortunate patient of Alzheimer's, also hears about the exhibition. He checks the address from his notebook on which he has written down his memories that are accessible to him at all times and sets off on his way to see the exhibition. Here, Otto's notebook plays the same functional role as Inga's belief does. According to the parity principle, the notebook contains the belief about the location of MoMA just like Inga's memory. The belief state, in that case, is placed outside of Otto's brain. The notebook physically realizes the belief state (ibid, 13-15).

Even if we accept that external objects could play the same functional role as internal ones, there are still issues the hypothesis of the extended mind (HEC, thereafter) needs to overcome. One of them is the problem of how to demarcate cognitive states from non-cognitive ones. In what regard will the environmental features count as genuinely cognitive ones? CC establish three main features that need to be fulfilled;

F1 – The object should be a constant in the subject's life.

F2 – The object should be directly available to the subject.

F3 – Upon retrieval, the subject should endorse the information contained in the object.

Still, even with those features, it is pretty easy for anything to become cognitive. We could think of many objects that are placed outside of me and my brain that fulfill those three features. For example, a phone with an internet connection and through that, all the information that is available on the internet. Since it would be unbelievable to claim that, I know how to change a tire just because I have a phone connected to a wireless and know that the necessary information is available to me on the internet, which upon retrieval I will automatically endorse. To overcome such issues, CC considers adding, but not very decisive on, the 4th feature. We will see the problems around this feature in detail later.

F4* – The subject must consciously endorse the information contained in the object in the past.

We see the sentence about the whereabouts of MoMA in Otto's notebook fulfills all those features, and therefore that sentence, as well as all the other ones in Otto's notebook, are all mental states. They play the same role as mental states in the brain. Otto's notebook, as an external object, fulfills CC's all four features for it to be counted as cognitive.

F1' - The notebook is a constant in Otto's life

F2' - Information in the notebook is directly available to him and without difficulty.

F3' - Upon retrieving the information, Otto endorses it automatically.

F4*' - The information in the notebook has been consciously endorsed by Otto in the past.

2. Objections Against the Hypothesis of the Extended Mind

Even though CC claims that we don't have enough reason to deny cognitive states to external objects, it is clear that their claim is counterintuitive. How could a mental state be outside of a brain? When I'm looking at a sentence in Otto's notebook, am I looking at a belief state? Still, being against intuition isn't a strong argument to make since many counterintuitive things are true nonetheless. For example, don't pour water on a grease fire, or a tomato contains 7000 more genes than a human being, or brushing your hair dry is healthier than doing it when it's wet. Counterintuitiveness isn't enough to prove things incorrect. Luckily, for the opponents of CC, this isn't the only objection that could be raised against HEC.

Among many, Robert Rupert has raised two main objections against HEC. The first one depends on the acceptance or denial of the possible 4th feature. When accepted HEC is insignificant, when denied HEC is implausible. The second one claims that external cognitive states are so immensely different from internal ones that they should be counted as distinct. Rupert will try to show this through memory – a specific kind of cognitive state and try to show how features that belong to internal mental states vanish when it comes to the external ones.

In this paper, I will answer these two main objections with the help of Miyazono and Rowlands and their versions of HEC, and with the help of multiple realization. I will first show that the external mind works within a system, and second, the lacking features of external states don't make them different from the internal ones. In the end, I will also mention the criticisms of the extended mind, which are based on the observation that it is not as groundbreaking as it first appeared to be, and claim that even if that is the case, it doesn't posit a problem to its significance.

3. First Objection

Rupert attacks HEC, first, through the vague 4th feature. According to him, one finds himself in a dilemma when it comes to the inclusion or denial of this feature (Rupert 2004, 404). If one were to accept it, then one also should accept the privilege of internal states since conscious endorsement takes place inside the head (which was the reason why CC was hesitant to accept this feature). If one were to reject it, however, then one opens the door to the cognitive bloat problem since the remaining three features are highly abstract according to them anything can be a cognitive state since they are fairly easy to fulfill (which is the reason why CC was hesitant to reject this feature).

To see the seriousness caused by the denial of the 4th feature think of the following example. I have access to my phone constantly (P1). My phone has a very reliable internet connection at all times and through that so do I (P2). One day, my plumbing is broken. Luckily, there are many videos on the internet that, upon retrieving I automatically endorse (P3). The said information on the internet walks me through the process of repairing my plumbing. According to CC, since my phone fulfills all three features to count as an external mental state, I hold my knowledge of how to repair plumbing in hand and even before looking it up on the internet.

Accepting the 4th feature would save me from this odd, and implausible, conclusion. Otherwise, one has to include many things she interacts with within her environment as parts of her cognitive states. So denying 4th feature wouldn't work for an HEC theorist. However, if I were to include the 4th feature, I would be rendering HEC insignificant. Parity principle would be denied – I expect conscious endorsement when it comes to external cognition and not from internal one – and internal states would still have a privileged position that external ones lack since conscious endorsement is done inside the head. The inclusion of the 4th feature would be, in a sense, denying HEC. Regardless of what we do, include or exclude the 4th condition, we would be putting HEC in an odd position.

4. Extended Mind as a System (Answer to 1st Objection)

The reason why these objections come into existence is because of a misconception regarding what HEC actually is. It's something slightly different from what CC first claimed it to be. Yet this slight difference will change how the whole mechanism works. In this paper, this revisioned version of HEC will be accepted.

What really happens in the case of Otto, and so in HEC, is that it is the Otto-Notebook system (O-N), rather than the notebook itself, that realizes the belief (Miyazano 2015, 3)^{1,2}. How could the revision that is made on HEC by turning it into the O-N system

¹ Rowlands also claimed that what is extended in the HEC is the cognitive *process*, such as remembering. In that sense, there isn't any environmental object with mental states (Rowlands 2010, 66-67)

² O-N system also seems to be realized by CC since they talk about the coupling of Otto and his notebook. In fact, they appear to be using the O-N system having external beliefs and Otto's notebook, in isolation, having so interchangeably. Therefore, in some contexts, it is not clear what they really mean by the extended mind. This also seems to be the reason why Rowlands (2010; 64) and Miyazano (2015; 3) weren't convinced that CC really means it's Otto's notebook that has the physical realization of the belief state rather than the O-N system.

help an HEC theorist to respond to the objections mentioned above? Shifting the focus on a system is taking processes into consideration rather than states, which might render our job a bit easier since extended processes seem more plausible than extended states. In that, it is more plausible to claim that there is a coupled system conducting the mental processes rather than there is something outside of my brain that is a mental state.

The first objection raised by Rupert against HEC is about how the 4th feature causes a dilemma for the HEC theorist. By converting Otto's notebook's mental state to the O-N system's mental process, we are not only getting rid of this dilemma but also getting rid of all of the other remaining features since there are no external-internal boundaries within the O-N system anymore. To clarify, the attention is now on the O-N system rather than on Otto's notebook alone. The remembering (now that we shift to the processes, belief states are, most plausibly, turned into the process of remembering (Rowlands et al., 2020)) is done by the system and not carried by an isolated external object. What does it mean to get conducted by a system for a mental process? It should indicate that without one of the participants the cognitive process should malfunction – even if it is temporarily. It means that without his notebook, Otto isn't able to recall the location of MoMA, and likewise, without Otto, the notebook isn't able to conduct any cognitive process. This is the reason why HEC theorists insist that external objects are constitutive and not contributive to the mind (the second claim belongs to the hypothesis of embedded cognition (HEMC, thereafter)).

Being contributive means using external objects to reduce the amount of energy the mind has to use without the said objects contributing to cognition. For example, using gestures while conversing would lessen the burden being put upon one's mind while thinking. It would take less time and energy (Steffensen 2009, 682). Some philosophers, like Adams and Aizawa (2001), accuse HEC theorists of confusing contribution (HEMC) with constitution (HEC). However, they are missing the point. Organisms exist in an environment within their bodies, and their cognitive processes will naturally depend on these broader bodily structures. This is already a given, even for the most traditionalist view of the mind (Rowlands 2010, 68). Furthermore, dependence is not equal to constitution, which means cognitive processes aren't coupled with these structures when processing cognitively. "Frost is something that happens to photosynthesis, rather than something that happens with photosynthesis" (Shapiro, 2019: 18). Environmental features to mind are like frost to photosynthesis (HEMC) while they have to be the sun to mean the same thing as HEC theorists claim. Cognition in the former sense would continue to process as always, without the inclusion of embodied features. It might be done so in a more complicated way and take more time but it would still work (Meriç 2021, 19). There would be no malfunction. So there is no confusion as Adams and Aizawa claimed. For something to be an extended mind system, the external feature needs to be something irreplaceable to that system. For example, between the late 16th and early 17th century, a leading theatre actor approximately had been having seventy different roles – fifty of them newly learned. Accordingly, actors needed to get creative in order to reduce the immense workload on their memories. As it turned out actors actually used the decors, the balconies, and the traps, as well as the placements of stage doors on the stages to

remember their lines (Tribble 2005, 143). This seems to be a case of HEC, even if people like Rupert and Adams, and Aizawa, would probably claim that this is an example of HEMC. Their objection might have been valid if the claim here was the actors would still remember their lines, in that instant, even if the said décor wouldn't be in its place. Yet it's seemingly a case in which it is the system created by the actor and the décor that is doing the remembering. This is not to say that there is no such possibility for the actor to remember his lines by himself, internally, eventually. However, during the play, when the actor is in need to remember a particular line, his environment creates a system with him and at that exact moment, and hence, it is the system of actor and décor doing the remembering. Imagine the décor, unbeknownst to the actor, has been replaced or misplaced. Without this particular feature, his cognition would malfunction (maybe for a short amount of time before his internal memory kicks in and makes him remember – though there is also a possibility that he might not remember as well). Still, however short it might be, the reason for this malfunction is caused by the fact that his mental process was extended to a system very much like the O-N system, and without one of the essential parts of this system (the environmental feature), the mental process wasn't going to be fulfilled. This malfunction implies the constitutive element of the environmental feature, which is the claim of HEC, not HEMC.

To clarify further this revised version of HEC, and how it resolves the inclusion of 4th feature, think about the following example³. It is possible to conceive that there is a Martian with a memory made up of ink who stores new information by the creation of new inks in its storage system and recalls information by activation that makes mental images of ink marks appear in its visual system. In addition to retrieving beliefs through its senses, the Martian also has some innate beliefs. It hasn't examined those innate beliefs since there was no cause to employ them yet (Miyazono 2015, 6). One of those beliefs is "Sun is bigger than Mars". Assume now I don't know anything about the solar system. One day I go to a library and pick up a book containing the information "Sun is bigger than Mars". The only difference between the Martian and I is the fact that it has this belief innate while I read it from a book. His cognitive process is internal while mine is external. Since Martian has that belief even before he employs it, from the parity principle so should I. Then I come to believe that "the Sun is bigger than Mars" the moment I pick the book up. The 4th feature was important for cases like this. I didn't consciously endorse the content of the book in the past, so it is not my belief. However, claiming this is to give internal processes a privileged place. Yet, in a system, we don't have to deal with conscious endorsement, the 4th feature, any longer since we are no longer talking about environmental features having cognitive states in isolation but rather the system of I and environmental feature having a mental process. When the system includes the subject of consciousness, conscious endorsement loses its meaning. To summarize the revised HEC;

³ The following example is raised by Miyazono against Sprevak to show that there is no functional difference between innate memory stores and external ones. The example itself might not necessarily be of HEC (although it might be as well). However, it is a good example to show how the 4th feature isn't necessary anymore.

1 – HEC is a thesis claims that environmental features play a constitutive role, not a contributive role, to the mind, in which, were environmental features ruled out, cognition wouldn't work the same.

2 – HEC is a hypothesis that has functionalism at its core, and this will mean more than it first appears to do so.

According to all these, when we are talking about an extended system like O-N, if the environmental feature in the system were to be removed, the system should malfunction (1). And this system has functionalism at its core (2). The first objection is therefore thwarted. With this revision and those clarifications in mind (1-2), I'll proceed to the second objection.

5. Second Objection

Although the external mind as a system reply resolves the first objection, the same cannot be said for the second one since Rupert was already aware of the distinction between processes and states and didn't appear to be bothered by it (Rupert 2004, 405-407). In that case, the second objection, which is the claim that external cognitive states are so different from the internal ones that they should be counted as distinct, is still valid. While building his second objection, Rupert chooses memory as his model example and states that since external cognitive states lack some psychological effects that internal ones have, such as negative inference or generation effect, they cannot be counted as the same kind. Against the claims that working memory consists both of internal and external stores, plus the processes that operate in these stores, Rupert claims while conversing we don't use external stores⁴. When short-term memory is appreciated within a larger system of working memory, like conversing with one another, internal working memory appears to be a very valid resource. Additionally, he turns to another kind of empirical result and gives examples from interference effects in paired-associates experiments.

In paired-associates experiments, subjects learn assigned associations between pairs of items, with subjects' recall of these associations tested in various ways and at various time intervals. A particular form of interference effect called negative transfer appears when past learning affects subjects' capacity to learn and remember new associations in a negative way. Subjects are directed to memorize associations between pairs of words on a list – let's say that this list consists of names of men, and names of their female spouses. This first list of pairs is called the 'A-B' list. A-words used at the recall stage, while B-words must be the ones that are recalled. The subjects memorize those pairings, only to be told that everyone on the A-B list has divorced and remarried. In the next step, subjects are asked to learn new pairs, on what is called the 'A-C' list. As a result, experimenters discover that subjects learn new associations given on the A-C lists significantly more slowly than they do so in the A-B list's associations (or than that they learn associations on a list made up of entirely new names). It appears that subjects have difficulty blocking old associations given in the A-B list and learning new ones. This is the negative transfer effect. Rupert claims it doesn't make sense to expect

⁴ To see counterclaims on this regard – Steffensen, 2009; Love, 2004.

the negative transfer effect when a subject relies on an external store for one could simply consult on their notes in which they wrote the given pairs down, and recite the given association when given the name. In fact, not only is there no negative transfer, but there is also no typical learning curve for paired associates. The subject in this case 'learn' immediately.

Similarly, there are no external stores exhibiting the generation effect. The generation effect is a mnemonic advantage that appears when one generates her own meaningful connections between pieces of material when learning. According to the experiment run by Bobrow and Bowel, a group of subjects who were given a list of paired associations to read performed poorly compared to the group that made their own associations – in addition to reading them. Think about it from HEC's side now, an experimenter enters a list of associated names and gives it to the subject to read in one case, and the experimenter enters a list of the subject's own associated names and gives it to the subject to read. In either cases, there is no reason to expect the subject to perform differently while reading the given notes.

Rupert then proceeds to ask, even if there are some parallels that exist between external stores and internal ones, why are learning curves and inference effects optional in the former while necessary and unavoidable in the latter? Internal and external stores, in that sense, have enough differences between themselves that require different labeling.

6. Extended Mind as an Alternative Way to Realize Mind (Answer to Second Objection)

Since Rupert acknowledges the existence of the O-N system and external processes in his paper, I will adapt his objection to the revised version of HEC. In that case, he now claims, external cognitive processes should still be significantly different from internal cognitive ones since the negative inference and generation effect are optional in external cognitive processes while necessary in internal ones.

One possible response to this objection could be given from our Martian example. There could be a Martian whose internal cognitive processes work without any negative inference or generation effect. It would be absurd to claim that the Martian isn't cognizing. Moreover, there might be people in whom those inference effects aren't as prominent as they do in others. Claiming the negative inference and generation effect are necessary for cognition to take place would then even hinder us to label some humans as cognitive. Stating that someone isn't cognizing because they don't experience inference effects would be an odd claim. Those psychological effects then don't seem to be necessary for cognition to take place since they might not even appear in internal ones.

However, there is an even better answer to this objection. HEC is a functionalist theory, and so should be counted as an alternate way to realize cognition. It could be claimed that HEC and traditional cognition are two different realizations of the same type since they realize cognitive processes via different mediums (the former uses a system while the latter depends on internal features only). This means when it comes to HEC, we

come face to face with multiple realization of cognition. How is this so and why is this important? According to Shapiro, there are two types of multiple realization: significant and trivial. Trivial cases shouldn't count as genuine cases of multiple realization since they could be encountered anywhere. But what is trivial multiple realization? Think about waiter's corkscrews that were produced to be the same, in the same factory, and side by side. When looked up at a microscopic level they would differ in atom counts, masses, etc., in a sense they won't be exactly identical/same as each other. They might even have different colors. But if those sorts of differences are enough to make two waiter's corkscrew different then a white waiter's corkscrew is more similar to a white air pump corkscrew that has the same color, mass, and atom count than a blue waiter's corkscrew that has a different color, mass and atom count. Clearly, that shouldn't be the case. Regardless of those features, a waiter's corkscrew is more similar to another waiter's corkscrew than an air pump one. Then these differences aren't enough to make two things different in type. These two waiters' corkscrews are still tokens of the same type. This is an example of trivial multiple realization, and when it comes to the realization of the mind we need genuine multiple realization.

The similarity and difference judgments of realizers then should be relativized to the properties that make a difference in how a functional kind functions. Those properties are known as R-properties and they could be found through functional analyses. The functional analyses of an R-property should provide us with what makes a causal contribution to the relevant functional capacity. The change of R-properties will cause the realizers to be different in type, which will make something a genuine multiple realization of a type. In the case of corkscrew, for example, the R-property should be something that causally contributes to the cork removal (Shapiro 2004, 52-53). That is why color, mass, etc. are not R-properties and why even if two waiter's corkscrews differ in those properties are still counted as the same type, and why air pump one is counted as different from them. The air pump corkscrew has a sharp needle and a pump, which enables its user to pump air into the bottle to remove the cork. Air pressure makes the causal contribution while removing the cork (hence its R-property). A waiter's corkscrew, on the other hand, is different from a double-lever one since the mechanism it embodies is different. You need to puncture the spiral into the cork, work the spiral in, and then with the help of the levers, raised the cork up. In order to be counted as a different type of realization of something then the operation that the mechanism embraces should be different from any other type.

As was mentioned genuine multiple realization cases, according to Shapiro, play a key role when it comes to the realization of the mind. Imagine someone replacing a neuron in my brain with a silicon chip. This chip continues to do the job of a neuron it has replaced and everything continues undisturbed. Next, all the neurons in my brain are replaced with silicon chips that are doing the exact same job as what my neurons were doing before the replacement. Such a case would surely show us the multiple realization of the mind (Pylshyn 1980, as cited in Shapiro 2004). What makes this silicon chip brain to be a different realizer of the mind than neurons? Material composition is not sufficient to claim the difference between realizers since they are not R-properties. Shapiro invites us to suppose that both the neuron's and silicon chip's R-

property is their electrical property since it plays a causal role to achieve the function of realizing the mind. In that case, the difference between a neural and a silicon-chip mind would be a trivial one since they are sharing the R-property. If that is the case then there is no reason for one to differentiate these two realizations as different since the difference between them is trivial. Mechanisms should embody different operations to count as genuine realization. This has the implication that even if the end game is the same since the mechanism employs different operations there will be different powers in play on those operations, and those powers might be susceptible to different side effects. For example, we establish that waiter's and air pump corkscrews are different realizers of the same type. In that sense, while I need more muscle strength in the former (I need to bear down on the levers to pull the cork) I don't need much in the latter. I simply pump air into the bottle via a handle. Similarly, different powers affect the sustainability of these objects. While oxidation will hinder the effectiveness of the waiter's corkscrew, it will have no such effect on the air pump one.

Since HEC and traditional cognition are two different realizations of the same type (they appear to use different mediums to achieve the same end) there should be different powers in play for their operations. Accordingly, those powers will be susceptible to different side effects. First, we need to make sure HEC and traditional cognition are really different. In order to count as different realizers, the R-properties of HEC and traditional cognition should be different which means they should employ different operations while trying to reach the same end. In the case of memory, traditional cognition relies on the brain, neurons, and nervous system and the necessary firings between them to achieve remembering. HEC, on the other hand, relies on all these and additionally on an environmental object. No doubt, the brain and nervous system are still playing an important part in cognition in HEC as well but the operations HEC employs will be missing without an external object unlike in traditional cognition (and hence the formula of cognition will fail). Imagine it through the Otto example. While Inga is cognizing only within her head, Otto is in need of something outside of his head to do the same. Upon looking at the information contained in his notebook, Otto achieves the cognitive end of remembering something that is not inside of his head. If operations are different when something additional is included in the formula then internal and external cognition have different R-properties while realizing cognitive processes.

It might be claimed the object that contains information that is constitutive to cognition might exist externally but how this external object is any different from the prefrontal cortex which working memory heavily relies upon? Would the operations in place when it comes to the prefrontal cortex be that different from the ones when it comes to external objects? The answer seems to be yes, because the information isn't inside my brain, and hence the brain uses fewer operations to conduct a cognitive act. For example, using pen and paper while calculating, vs. doing it only within the brain without any accessories seem to employ different operations. I'm not taking the numbers and letters on the paper in my memory in HEC while I have to do so in traditional cognition. Think about this through mathematical shortcuts. Multiplying 100 with 50 is the same as adding 100 to each other fifty times. The former is the shortcut to doing the said calculation, it involves fewer steps to reach the result, and

hence the operation in place is different from the letter. Likewise, HEC is a shortcut to cognition, it doesn't involve some essential parts (like having numbers in memory) that are required by traditional, internal cognition and therefore it has different operations. Since that is the case, HEC and traditional cognition are two different realizers of the same kind that has different R-properties. This means there might appear different side effects depending on the powers in play upon their operations, like how oxidation is a side effect of waiter's corkscrew but not for air pump corkscrew. Likewise, the same effects don't have to appear when cognition is done by externally and traditionally. The cases that involve HEC might be without a learning curve or inference effect, however, this isn't because the system is so different from the internal ones that it should be counted as a distinct type, meaning the lack of those learning curves or inference effects is because the system isn't doing the remembering. Instead, the lack of those features is because the system remembers in a different way, which embodies different operations that will have different side effects, than the internal ones.

In that sense, Rupert's second objection, based on external and internal cognitive progress should count as distinct kinds because the differences between them, doesn't apply. As long as the system is able to cognize it doesn't matter if any of those psychological effects exist. External processes are distinctly realizing the same kind as internal ones do.

8. Conclusion

The revision and the functionalist side of HEC have thwarted the objections raised by Rupert. A subject creates a system between herself and the environmental features, what is extended then is not the mental states but mental processes themselves. The first objection based on the 4th feature claims that upon accepting, HEC will become insignificant, upon denial it will become implausible. However, this dilemma is ruled out since within a system there is no longer internal-external demarcation. Hence, there is no need to consciously endorse a piece of information in the past. The second objection based on the differences between external and internal cognitive systems (so they should count as different) has been thwarted since the mechanisms of HEC are functionalistic and at the core of functionalism is multiple realization. For something to be a genuine realization of a mental kind, it needs to embrace a different operation than the others do. These operations naturally will have different powers play upon them and those powers will be susceptible to different effects that might appear uniquely for them. In that sense, it is expected that different effects will come out from different operations (like inference effects appearing in internal cognition but lacking in HEC).

As I come to the end of this paper, I would briefly like to mention the criticisms HEC gets since it is not as revolutionary as it was first claimed to be. Miyazono asserts that functionalists have already known HEC through the Chinese Room system⁵ which is a response raised by Searle to his own Chinese Room argument. Imagine there is someone that knows nothing about Chinese. This person is put into a room full of books that instruct him to reply in certain Chinese characters upon seeing some other

⁵ An answer to the Chinese Room objection raised by Searle toward the functionalist claims on strong AI.

certain Chinese characters. Then, someone outside the room slips a paper written in Chinese asking for an answer. The person in the room applies the rules in the books, writes something back in Chinese, and slips the paper out. Clearly, the person doesn't know Chinese. So functioning the same way as a Chinese-knowing person doesn't make anyone understand Chinese. Searle considers a possible response that claims the room as a system (the person plus the guidance books) understands Chinese. This response resembles very much what HEC claims, and hence HEC isn't this shiny new way of seeing how cognition works as it first appeared to be.

Even if that is the case, and philosophers already had been aware of HEC before CC resurrected it again, I don't believe that this would render HEC insignificant. If nothing, CC by restating HEC evokes psychological awareness among philosophers and cognitive scientists. The debate around HEC had increased after CC. Moreover, it might not be a piece of new knowledge but in the past, the same has been said for the knowledge supplied by deduction. Yet decades after people had named it as what it was, deduction has started to be used in scientific methods such as falsification, or the D-N model. Even if we use deduction decades later its discovery, there is no denying its significance and the progress made through. It proved itself fruitful. The same very well could be valid for HEC as well. In that sense, even if HEC didn't say anything new when first proposed, its significance hasn't been undermined.

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