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## Pragmatism, Embodiment, and Extension

**Abstract:** While pragmatism and the so-called 4E program may form a united front against methodological individualism, classical cognitivism, traditional internalism, and the like, the 4E approach is not without its own internal tensions. One such tension, between Embodied and Extended, is brought to light by Clark (2008), who argues in favor of the latter. Dempsey and Shani (2013) reply that Clark's functionalism undercuts what should be a more fundamental commitment to Embodied. With respect to this tension, Gallagher (2014) claims that "there may be resources in pragmatism that can help to adjudicate some of the current debate and to develop a more integrated perspective" (Gallagher 2014, 110). In this paper, I assess Gallagher's strategy and offer a critical perspective on the use of Deweyan pragmatism to resolve these tensions in the 4E program.

### Introduction: Jesuits, Nazis, and the sciences of the mind

Consider the following commonality between some 16<sup>th</sup> Century Spanish Jesuits and some 19<sup>th</sup> Century Germans who turned out to be influential members of the Nazi party: in establishing their respective settlements in Paraguay, both groups initially struggled to cultivate *Ilex paraguariensis*—better known today as yerba mate. *Ilex paraguariensis* is a small tree native to the humid woodlands of eastern Paraguay. Like coffee and tea, it contains caffeine as well as other psychoactive alkaloids such as theophylline and theobromine (Folch 2010, 9). Macintyre remarks that yerba "is drunk all the year round, all day, by everybody. It is also the main topic of conversation, the social glue that holds the country together" (Macintyre 1993, 42).

Macintyre describes the German settlement in Paraguay, Nueva Germania, as "good land for yerba [...] which all the German colonists had become addicted," and adds that the cultivation of yerba was "back-breaking work." He continues, "the Jesuits had known how to cultivate the tea, indeed they had established large plantations, but when they had been thrown out of the country [...] the secret had gone with them [...]. For some reason just planting yerba seeds didn't work—they steadfastly refused to germinate" (Macintyre 1993, 161). It took "six or eight years of tireless experimentation" before the secret was uncovered. For-

tuitously, one of the German colonists noticed that the areas where the birds roosted were the same areas that produced the largest quantities of yerba. “He deduced that the birds’ digestive system was acting on the seeds they had eaten and accelerating germination. He concocted a mixture of acid and charcoal, and, by seeping the yerba seeds in it, achieved the same result” (Macintyre 1993, 166). Indeed, Folch confirms that “according to common colonial wisdom seeds are encased in a shell so hard that germination is impossible unless the seeds have passed through the intestines of birds, where the acidity wears down the lining to allow the seeds to burst through the case” (Folch 2010, 11).

This is a nice story because (among other things) there is an important and instructive similarity between the cultivation of yerba and the scientific study of the mind: looking solely at internal structures and processes in the brain will not tell the whole story. There is nothing *inside* the yerba seed that would indicate it needed to be passed through the digestive tract of a bird in order to facilitate germination. To understand how to germinate the seed, the German colonists had to look to the wider context of the seed’s interactions with various parts of the environment—to structures and processes *external* to the seed itself.<sup>1</sup>

Arguably, this is an insight shared by classical pragmatist theories of mind and the so-called “4E” conception of the mind: the mind as Embodied, Embedded, Extended, and Enactive.<sup>2</sup>

In the Introduction to the special 4E edition of *Phenomenology and the Cognitive Sciences*, Menary notes that “one reason that the four E’s are grouped together is that they are all held to reject or at least radically reconfigure traditional cognitivism, coupled with a methodological individualism” (Menary 2010, 459). Put another way, the four E’s share, in some form or another, an assumption that a comprehensive understanding of the mind will require looking beyond the brain, and beyond the bounds of skin and skull.<sup>3</sup>

It has been well documented by scholars from various traditions that classical pragmatism was an important historical antecedent of this 4E view.<sup>4</sup> I take it

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1 Thanks to John Sarnecki for helping develop this metaphor.

2 For the sake of convenience, I will refer each “E” in this way, rather than using clunky phrases like the “embodied conception of the mind” or the “hypothesis of extended mind,” etc.

3 I hasten to add that as is the case with most catchy and convenient labels for philosophical positions, “4E” can tend to obscure just as much as it clarifies (this is of course also true of the “traditional cognitivism” and “methodological individualism” labels). Nonetheless, Menary’s claim does provide a prima facie reason why the four E’s are grouped together in the first place.

4 See, for example, Burke (2013), Chemero (2011), Johnson (2008), Menary (2007), Madzia (2013), Rockwell (2005) Skorburg (2013), and Vaesen (2014).

these claims are pretty well established by now, and so this paper will not present another argument of the “James/Peirce/Dewey-said-it-first” variety.

While pragmatism and the 4E program may form a united front against methodological individualism, classical cognitivism, traditional internalism, and the like, the 4E approach is not without its own internal tensions. One such tension, between Embodied and Extended, was brought to light by Clark (2008), who argues that the distinction between the two cuts in favor of the latter. More recently, other theorists have pushed back against the functionalist underpinnings of Clark’s view. Dempsey and Shani (2013), for instance, argue that Clark’s functionalism undercuts what should be a more fundamental commitment to Embodied. Similarly, Thompson and Stapleton (2009), and Gallagher (2014) take pains to distance various brands of Enactive from what they take to be problematic strands of overly-functional Extended.

These tensions are the focus of the present paper. Of particular interest is Gallagher’s claim that “there may be resources in pragmatism that can help to adjudicate some of the current debate and to develop a more integrated perspective.” These resources, he continues, “can address some of the objections that have been leveled at enactive and extended models of the mind [...]. My aim is to put pragmatism to work on clarifying and integrating these approaches and thereby resolving some objections that have been raised against them” (Gallagher 2014, 110–111).

Gallagher marshalls the resources of pragmatism to deal with the tension between Extended and Enactive, but his strategy, I will argue, may also be applicable to the tension between Extended and Embodied, as iterated by Clark (2008) and Dempsey and Shani (2013), respectively. The purpose of this paper, then, is to offer a critical perspective on the use of pragmatism to resolve these tensions in the 4E program. More specifically, I will raise two concerns: (1) in light of Rowlands’s (2010) distinction between theories of dependence and theories of constitution, I suggest that textual evidence may only support reading Dewey as a proponent of the former. Put another way, it might be the case that Dewey advocates for something like Embedded, rather than Extended. (2) I suggest that Gallagher’s appropriation of Dewey’s notion of the situation to smooth out tensions between Enactive and Extended might actually serve to exacerbate the well-known problem of “cognitive bloat”.

Here is the plan for the paper. First, I will briefly summarize Clark’s distinction between what he calls body-centric or Special Contribution Stories (SCS) and extended-functional or Larger Mechanism Stories (LMS). This distinction more or less maps onto Embodied and Extended, respectively. The lines along which this distinction is drawn, on Clark’s view, favor LMS. In response to Clark, Dempsey and Shani (2013) argue that (a more nuanced version of) SCS,

or what they term “strong embodiment” (SE) ought to be favored. Having thus elaborated the tension between SE and LMS, and hence, Embodied and Extended, following Menary (2010), I argue that a shared commitment to challenging strictly internalist models of the mind provides a *pro tanto* reason to attempt to reconcile LMS and SE. I then consider whether Gallagher’s (2014) proposed rapprochement is up to the task. I conclude with a few reservations about Gallagher’s strategy, and the resources of pragmatism for 4E, more generally.

## 1 The tension

Clark describes the tension between the extended and embodied conceptions of the mind in terms of Larger Mechanism Stories and Special Contribution Stories. The former is characterized as follows:

Aspects of the body and world can, at times, be proper parts of larger mechanisms whose states and overall operating profile determine (or minimally, help determine) our mental states and properties. Call this the *Larger Mechanism Story (LMS)* [...] larger systemic wholes, incorporating brains, bodies, the motion of sense organs, and (under some conditions) the information-bearing states of non-biological props and aids, may sometimes constitute the *mechanistic supervenience base* for mental states and processes. (Clark 2008, 39–40)

The latter is characterized as follows:

Specific details of human embodiment make a special and ineliminable contribution to our mental states and properties. Call this the *Special Contribution Story (SCS)* [...] specific features of the body (and perhaps the world) make a *persistent, non-trivial, and in some sense special* contribution to our mental states and processes. (Clark 2008, 39–40)

I assume at the outset that this is neither a zero sum game (why would the four E’s have been grouped together in the first place?) nor an entirely false characterization on Clark’s part (we can either say it is the physical properties, or the functional role that is the difference that makes a difference, but not both). In other words, there is a genuine tension here, and what is at stake is the role of the body: is the body, “just one element in a kind of equal-partners dance between brain, body, and world, with the nature of the mind fixed by the overall balance achieved,” (Clark 2008, 56–57) as Clark suggests? Or must the body “lead this dance because it is what realizes the autonomous organization necessary for individual agency and sense-making,” as Thompson and Stapleton (Thompson & Stapleton 2009, 28) suggest?

In the next two sections, I briefly summarize how the tension thus described can be taken to favor LMS or SE.

## 2 Clark's argument for LMS

In the first place, it should be noted that Clark's functionalism is ostensibly not meant to supplant the arguments for Embodied. His purpose is largely reconciliatory in that he attempts to lay out "a way of understanding the embodied, embedded approach that sees it as extending, rather than undermining, a broadly functionalist story" (Clark 2008, 44). To support this broadly functionalist story, Clark first takes aim at a common (mis)characterization of the debate between embodied mind theories, on the one hand, and multiple realizability theories, on the other.

In brief, the former holds that human "mindware" requires, and is reflected in, human "bodyware". The latter theories are "platform neutral" in that they hold that "mindware" could be run on, or realized by, various kinds of "hardware." Much evidence has been brought to bear in favor of embodied mind theories thus described—O'Regan and Noë (2001) and Lakoff and Johnson (1999) being the most prominent examples mentioned by Clark. The aim here is not to discredit these insights, but rather, to caution against making unwarranted inferences from them. As Clark says:

From the fact that (as seems highly likely) our human experience really does depend in part on many idiosyncratic aspects of our embodiment, it does not follow that *only* a creature thus embodied could have those very experiences. The very most that follows is that, for a creature like us, all other things being equal, we would not have that experience were it not for such-and-such an idiosyncratic fact. Other creatures, for all that we have so far had cause to accept, may still have the very same experience courtesy of quite different forms of embodiment and sensory set-up. (Clark 2008, 42)

In other words, one cannot infer the falsity of *functionalism* on the basis of the idiosyncrasies of human embodiment (i.e. the location of our eyes producing a certain kind of visual experience, or the location of our ears producing a certain kind of auditory experience) which seem to discredit strong or global theories of *multiple realizability*. As Clark points out, his brand of extended functionalism is "logically independent, but thematically related" (Clark 2008, 43) to multiple realizability, which is to say that one can be an extended functionalist without buying strong or global multiple realizability.

This is important because, as will become clear in the next section, when considering Clark's positive arguments in favor of his brand of functionalism,

it will not suffice to provide arguments against multiple realizability in an attempt to undermine his position.

According to Clark, “arguments in favour of LMS appeal mainly, if not exclusively, to the *computational role* played by certain kinds of non-neural events and processes in online problem solving” (Clark 2008, 44). Clark and Chalmers’s thought experiment with Otto, his notebook, and Inga serves as a keystone here.<sup>5</sup> Their (in)famous proposal is that:

If, as we confront some task, 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 that part of the world *is* (so we claim) part of the cognitive process. Cognitive processes ain’t (all) in the head! (Clark & Chalmers 1998, 8)

There is no shortage of claims one may object to here, perhaps the most pressing being that there is no argument here, just an intuition pump. Suffice it to say that, if nothing else, Otto’s notebook *does* shine a light on deeply held assumptions about the boundaries between mind, body, and world, even if this thought experiment does not do the work of actually reconstructing these boundaries. Luckily, we can set aside many of the admittedly controversial issues surrounding Otto’s notebook, as Clark also presents empirical evidence in support of his argument for LMS, to which I now turn.

Ballard et al. (1997) conducted a series of experiments wherein a computer screen is divided into three spaces: target space, work space, and reserve space. Subjects are given a pattern of colored blocks in the target space and asked to reproduce this pattern as quickly as possible in the work space by selecting individual blocks from the reserve space. The task is performed using mouse clicks, and the subject’s eye movements are constantly tracked. According to Ballard and colleagues:

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<sup>5</sup> We are asked to imagine two characters: Otto, who suffers from Alzheimer’s and uses a notebook to write down everything he would have normally committed to memory and Inga, whose biological memory is wholly intact. Both Otto and Inga hear about an exhibit at the Museum of Modern Art they wish to see. Otto consults his notebook to “remember” that the MoMA is on 53rd St. while Inga “consults” her biological memory to remember that the MoMA is on 53rd St. According to Clark and Chalmers: “in relevant respects the cases are entirely analogous: the notebook plays for Otto the same role that memory plays for Inga. The information in the notebook functions just like the information constituting an ordinary non-occurrent belief; it just happens that this information lies beyond the skin” (Clark & Chalmers 1998, 13). What is important here is that Otto’s notebook, a non-neural structure, performs the same computational role that Inga’s biological memory does in recalling the address of the MoMA.

A striking feature of task performance is that subjects behaved in a very similar, stereotypical way, characterized by frequent eye movements to the model pattern. Observation of individual eye movements suggest that the information is acquired incrementally during the task and even modest demands on visual memory are avoided. For example, if the subject memorized and copied four subpatterns of two blocks, which is well within memory limitations, one would expect a total of four looks in to the model area. Instead, subjects sometimes made as many as 18 fixations in the model area in the course of copying the pattern, and did not appear to memorize more than the immediately relevant information from the model [...] these fixations allows subjects to postpone the gathering of task-relevant information until just before it is required. (Ballard et al. 1997, 731)

This led Ballard and colleagues to conclude that “eye movements, head movements, and memory load trade off against each other in a flexible way” (Ballard et al. 1997, 732). Here is how Clark marshalls this evidence in support of LMS:

Two morals matter for the story at hand. The first is that visual fixation here is playing an identifiable computational role [...]. The second is that repeated saccades to the physical model thus allows the subject to deploy what Ballard et al. dub ‘minimal memory strategies’ to solve the problem. The idea is that the brain creates its programs so as to minimize the amount of working memory that is required, and that the eye motions are recruited to place a new piece of information into memory [...]. The Ballard et al. model is an example of what might be called an extended functionalist approach. It analyses a cognitive task as a sequence of less intelligent sub-tasks, using recognizable computational and information-processing concepts, but applies those concepts within a larger organizational whole. (Clark 2008, 45)

Notably, Ballard et al. and Clark recognize the importance of bodily actions in structuring and completing the block copying task, but what makes this task what it is has less to do with some unique contribution of the body, and more to do with the functional profile of the component parts involved in the task. That is, in order to complete the task, information has to be stored (i.e. the color of the block, or the location of the block with relation to other blocks) and then processed. The best way to understand the data is that it is the *functional role* rather than the *physical properties* of the information storing and processing mechanisms that explains how subjects complete the task. What matters is the ability of the mechanism to store information—a role fulfilled by the reliable presence of the block pattern in the target space—not the physical makeup of the information storing mechanism. The information storage mechanism is realized through the combination of eye saccades and the reliable presence of the block pattern in the target space on the computer screen. The fact that the computer component of this information processing mechanism is silicon-based rather than carbon-based makes no difference in our understanding of its operation. Note also, that this kind of functional analysis is in no way committed to claims

of phenomenal duplication—the claim that a computer program could “realize” the qualitative human experience of memory and task completion.

The fact that, as Ballard et al. pointed out above, the demands of the block completion task are well within the limitations of working memory capacity, and yet, subjects still used repeated saccades rather than memorizing the pattern, points to a crucial fact about human mental makeup—what Clark elsewhere calls the “007 Principle”:

In general, evolved creatures will neither store nor process information in costly ways when they can use the structure of the environment and their operations upon it as a convenient stand-in for the information-processing operations concerned. That is, know only as much as you need to know to get the job done. (Ballard et al. 1997, 46)

This, I take it, is the “hard core” of LMS (and arguably, Darwinian-inspired pragmatist theories of mind as well). If Clark is on the right track with the 007 Principle, then our theories of mind must be able to account for the ways in which, as organisms embedded in an environment, we *opportunistically* recruit and utilize features of this environment to decrease internal processing loads, despite that the fact that the makeup of these environmental features are quite different than our own biological makeup. Indeed, Clark contends that the special contribution of the body to the mind is precisely this ability to opportunistically recruit and exploit features of the non-bodily environment to optimize internal functioning.

In this section, I have tried to show how Clark argues that the tension between LMS and SE favors LMS. I have also attempted to show that the “hard core” of LMS lies not in some notion of multiple realizability (though LMS is certainly amenable to at least some accounts of multiple realizability, it does not logically entail them, nor is it logically entailed by them), but rather in something like the 007 Principle. Thus, I take it that the upshot of Clark’s view is that any theory of mind must take account of the ways in which organisms opportunistically recruit features of the environment to decrease internal processing loads, much like the Ballard et al. experiments demonstrate. In the next section, I turn to Dempsey and Shani’s argument for why the tension between LMS and SE favors SE.

### 3 Dempsey and Shani's argument for SE

Dempsey and Shani take up the debate between LMS and SCS on (mostly) the same terms that Clark lays out, with two notable exceptions—the first being terminological:

We propose the term *strong embodied cognition thesis* ('strong embodiment' for short) [...] as close in spirit to Clark's body-centric SCS. Strong embodiment is 'strong' in that, by embracing SCS, it assigns embodiment a degree of significance in the shaping of the character of mind which is unmatched by extended functionalism. (Dempsey & Shani 2013, 597)

In what follows, then, I will refer to Dempsey and Shani's notion of "strong embodiment" (SE) on their own terms, rather than Clark's more general characterization (SCS), so as to be as charitable as possible to their position. Here is a succinct formulation of their view: "the kernel of strong embodiment is the claim that experience and embodiment are lawfully interdependent," and "this raises the question, what is the proper manner of interpreting, and of evaluating, this interdependence?" The answer, they argue, is that "the claim that experience and embodiment are lawfully interdependent ought to be interpreted as applying to coherent streams of consciousness occurring under normal ecological circumstances in which agents are free to use their bodies spontaneously" (Dempsey & Shani 2013, 600).

The second difference between Clark's and Dempsey and Shani's characterization is that the latter couch the debate in terms of phenomenal duplication. In their own words:

Clark maintains that the *quality of experience* is a composite function combining the details of physical embodiment, downstream internal processing, and the relevant external props in the agent's natural or artificially constructed environment. Clark's appeal to this composite function opens up the possibility that sameness of experience may not correspond to sameness of embodiment since the specific details of bodily structure and functioning are merely one contributing factor in the making of experience. (Dempsey & Shani 2013, 598, emphasis mine)

While I do not think Clark would object this characterization of his position, I do want to flag the fact that while Dempsey and Shani's focus on phenomenal or qualitative experience could very well undermine strong or global multiple realizability-style arguments (indeed, as they correctly point out, these theories of mind are "notorious for their apparent inability to accommodate conscious experience" [Dempsey & Shani 2013, 614]), they do not immediately or obviously ad-

dress what I take to be the “hard core” of LMS, namely, something like the 007 Principle.

At any rate, as proponents of SE characterize the debate, LMS would be undermined and SE subsequently favored if *either* it could be shown that sameness of phenomenal or qualitative experience *does* require sameness of embodiment, *or* that sameness of phenomenal or qualitative experience *could not* be compensated for by adjustments in downstream internal processing or relevant external props in the environment. Dempsey and Shani opt for the latter, and the key to this strategy is to link LMS to a notion of multiple realizability. They write: “extended functionalism presupposes GMR [Global Multiple Realizability, which they define as: “the view that complete phenomenal lives are, in principle, realizable across radically different physical embodiments” (Dempsey & Shani 2013, 602)], or something near enough, whereas strong embodiment is incompatible with any notion of MR [Multiple Realizability]” (Dempsey & Shani 2013, 603). Thus, their argument in favor of SE relies heavily on discrediting the plausibility of LMS via a refutation of multiple realizability:

Clark is arguing that the contributions of the body are always (in principle) negotiable courtesy of the compensatory effects of inner processing or of environmental scaffolding. The central question, then, is whether or not such differences in embodiment can be compensated for. (Dempsey & Shani 2013, 605)

Dempsey and Shani’s argument turns on the claim that while it is, in principle, possible to compensate for differences in embodiment, these compensations are so rare and contrived that they do not present a real threat to the “hard core” of SE. That is, SE “ought to be endorsed for the simple reason that it is better attuned to the realistic conditions under which experiences unfold in normally functioning embodied creatures,” and it is only under “carefully designed artificial conditions” (Dempsey & Shani 2013, 600–601) that anything like the phenomenal duplication required for multiple realizability, and hence, LMS, could take place.

Further, they conclude that the contrived conditions under which limited cases of phenomenal duplication are possible actually bolsters the argument for SE: “compensating for the special contribution of the body involves either preventing it from making a contribution in the first place, or transforming it into another type of body, and in both cases this serves only to show just how privileged this contribution really is” (Dempsey & Shani 2013, 611).

One might worry here that Dempsey and Shani’s case for the primacy of SE relies too heavily on a negative argument against LMS (and one which arguably does not address its most important insight), and is too light in terms of a pos-

itive argument for SE. As I mentioned at the outset, though, I do not take this debate to be a zero-sum game and so the shortcomings of these arguments for SE by no means settle the debate once and for all in favor in LMS. What I do take to be the upshot of Dempsey and Shani's arguments against LMS is their pragmatic appeal:

SE is primarily a thesis concerning the manner in which embodiment constrains cognition and experience in normal psychological agents operating under normal psychological circumstances [...]. Hence, the possibility that there may be rare exceptions to the norm involving brief isolated episodes of experience occurring accidentally, or under carefully designed experimental control, is, we think, no good reason to deny that experience and embodiment are intimately linked. (Dempsey & Shani 2013, 601)

Indeed, much of literature on philosophical functionalism in the last 50 years would have done well to heed this appeal to actual agents acting in actual situations as setting the standard (how many more papers do we need on Martian pain, anyway?). As relates to the present paper, this appeal serves to ground the debate, first and foremost, in terms of organism environment transactions, to borrow a phrase from Dewey. While the degree to which the actual, bodily, fleshy components of this engagement *determine* character of mental life remains an open question, we can appreciate the constraints that this view places on some of the (admittedly far-fetched) thought experiments brought to bear in favor of functionalism, not the least of which is Clark's own snake-computer example.<sup>6</sup> Here, I fully concede that Dempsey and Shani's criticism of LMS hits its mark.

In this section, we have seen how Dempsey and Shani argue that the tension between LMS and SE favors SE. Their argument attempts to show the implausibility of Clark's claims that downstream processing and non-bodily props can compensate for changes in embodiment so as to yield sameness of phenomenal experience. Their argument that the idiosyncrasies of our embodiment make ineliminable contributions to our mental life sets another standard for a theory of mind: we must respect the *actual* engagements of organisms with their environment. That is, thought experiments can only go so far in showing that minds are (or are not) constituted by bodily structures and processes beyond the brain.

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<sup>6</sup> "Imagine now a case in which we have [...] a snake-like creature lying on top of an advanced touch-screen like environment. In this flat-screen setting every little wriggle of the snake can cause specific external symbolic tokens to appear elsewhere on the screen [...]" (50)

## 4 Why bother?

Having now entertained arguments from each side of the debate, it is fair to ask, “why bother?” That is, why not just claim that strong Embodiment and strong Extended are incompatible? Or, at the other end of the spectrum, that the entire debate is based on a false dichotomy? Or that the debate as I have laid it out is really just a debate over the proper grain of analysis?

A (partial) answer to these questions, I suggest, is that both the Embodied and Extended share a fundamental insight: the mind is made up of, quite literally *constituted* by, structures and processes beyond the brain. Put another way, both the Embodied and Extended theorists could take the yerba example from the introduction as motivating their respective position. Indeed, as Dempsey and Shani state, “both perspectives are, on the face of it, complimentary since each seeks to extend the mind beyond the brain proper and to consider the contributions that the brain’s proximate and distal environments make on both cognition and phenomenology” (Dempsey & Shani 2013, 592). Additionally, insofar as Menary’s claim that both approaches “reject or at least radically reconfigure traditional cognitivism, coupled with a methodological individualism” hits its mark, then both approaches are (more or less) committed to what Rowlands (2010) has identified as theories of *constitution* as opposed to *dependence*. The latter kinds of theories make the relatively weak claim that minds *depend* on bodies and environments—an insight easily incorporated by the traditional cognitivist or methodological individualist. The former kinds of theories make the relatively stronger claim that the mind is *constituted by* or *made up of* bodily and/or worldly structures and processes. Broadly, it is this sort of view which the traditional cognitivist or methodological individualist would want to reject, and that the 4E-inclined theorist would be compelled to defend.

If this is on the right track, then there should be good reason to attempt to integrate (or refrain from disintegrating) Embodied and Extended. In a similar project to my own, Gallagher (2014) argues that, with respect to the tension between Enactive and Extended, the pragmatist tradition contains valuable resources for just this kind of integration, and so *mutatis mutandis*, perhaps this same strategy can alleviate the tension just described between Extended and Embodied.

## 5 Gallagher's rapprochement

In line with Dempsey and Shani (2013), Gallagher writes, “enactivists argue against the functionalism of extended mind theorists who discount any special role of the living body in cognition” (Gallagher 2014, 117), but “the fact that most extended mind proponents adopt a functionalist framework, which includes representational mechanisms that discount the role of the body, does not mean that this is the only way to understand the extended mind” (Gallagher 2014, 118). So Gallagher, like Clark and Dempsey and Shani, is most interested in the reconciliation of the views in tension. At the heart of this reconciliatory effort for Gallagher are Dewey’s notions of organism-environment and the situation.

In the first place, Gallagher notes, “for Dewey’s understanding of cognition, the unit of explanation is not the biological individual, the body itself, or the brain, but the organism-environment” (Gallagher 2014, 115). This sentiment is nicely elaborated in a little passage from Dewey’s *1900–1901 Lectures on Ethics*:

So it is not simply that we happen to have *an* organism drop down into *an* environment and then these two react upon each other. It is quite the opposite. Organism and environment are the two things which converge in the life process. We do not begin with the two things and have them react and produce the life process. (Dewey 1900/1991, 364)<sup>7</sup>

Gallagher is exactly right to identify this level of what Dewey often calls the larger organic whole or unity as the proper unit of analysis for talking about cognition. When organism and environment are thus understood as co-extensive and mutually-defining, their interactions lead to continual changes, adjustments, and adaptations in one another. Cognition, on this view, is a pattern of organized response in the organism that arises from, and also helps to direct these adjustments.

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<sup>7</sup> Cf. Dewey (1898/1976): “No matter how much one school may insist on the organism, no matter how much another school may insist on the environment, it is certainly true that both are parts of a common world...From the larger standpoint we must have one thing, one reality, the world at large, *and the distinction between the organism and the environment and their adjustments to each other must be capable of definition and interpretation from the standpoint of this larger whole.*” (Dewey 1898/1976, 272, emphasis mine). Also cf. Alexander: “The organism and its environment are mutually implicated at each moment; they are aspects of one situation fundamentally related through the act. The organism is just this ability to draw on a range of material in the world and transform the energy in that material into an organized pattern of activity. An environment is in turn that range of energy which is available to the organism and necessary for its survival” (Alexander 1987, 135).

This view of organism-environment naturally leads Gallagher to Dewey's notion of a situation, which

arises when the coupling of the organism-environment becomes problematic or starts to break down [...]. When it starts to go wrong, this is what Dewey calls a problematic situation and it calls for a kind of re-pairing, a reestablishment of workable coupling [...]. Cognition in such cases, is a form of inquiry, understood as a hands-on practical activity through which we transform the problematic situation into one that is less confused and more comprehensible. (Gallagher 2014, 115–116)

When we combine the ideas that organism-environment is the proper level of analysis, and the situation is constituted by the ongoing adjustments and interactions of organism-environment, then according to Gallagher, we have a way of understanding Extended that is grounded in Enactive, rather than Clark-style functionalism:

organism and environment must be thought together in a dynamical relation, so that if differences or adjustments in organism are made one finds correlative adjustments and differences in the experienced environment. Accordingly the animal enacts an ecological and cognitive niche appropriate to its embodied needs (Gallagher 2014, 118).

If Gallagher's argument goes through here, then perhaps what I have identified as the hard core of LMS can be preserved, while still giving pride of place to the body and allowing it to lead the dance. On this view, different creatures will *enact* their worlds in different ways. The kinds of problematic situations faced by a field mouse (i.e. avoiding aerial predators) are obviously quite different than the kinds of problematic situations faced by humans (who by and large don't have to worry about aerial predators). Given these different embodied needs, different parts of the environment will afford different resources for resolving problematic situations. Quite consistent with Dewey's view is the idea that *any number of things can afford such resources*: bodily components, environmental features, ideas, concepts, tools, artifacts, other people, social institutions, etc.<sup>8</sup> Indeed, this line of thought in Dewey squares very nicely with Clark's version of LMS, where different parts of the body, brain, and world can interact to form "larger systemic wholes, incorporating brains, bodies, the motion of

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<sup>8</sup> This, I take it, is the upshot of Hickman's (1990) reading of Dewey as a philosopher of technology. Future work on Dewey should assess the degree to which Dewey's characterization of the social environment can incorporate the role of technology (in the narrow sense of computers, smartphones, social media, etc.).

sense organs, and (under some conditions) the information-bearing states of non-biological props and aids” (Clark 2008, 40).

Now perhaps one could object that giving the body pride of place in this way does not actually square as neatly with LMS as is suggested here. Or one might object that invoking enactivist principles somehow undermines the case for SE. Or that a Dewey-inspired enactivism is orthogonal to the tension between LMS and SE. These (or other) objections may very well undermine the case for a Deweyan integration of the 4E program. But for the sake of argument, let’s assume that this same strategy of appealing to Dewey’s notions of organism-environment and the situation can help alleviate the tension between LMS and SE in the same way that these concepts “provide a productive way to effect a rapprochement between enactive and extended theories” (Gallagher 2014, 115). However one would deal with the objections, we can assume that if Gallagher is on the right track, we will have made headway toward keeping the E’s intact, which, as noted above, we should be motivated to do. But at what cost?

## 6 Prospects for Pragmatism and 4E

In the previous section I argued that Gallagher’s proposed rapprochement between Enactive and Extended, via Dewey’s notions of organism-environment and the situation, might well provide a model for effecting a rapprochement between LMS and SE. I suspect that 4E theorists with pragmatist sympathies will find this strategy rather attractive. But there might be reasons to think that what’s best for integrating Enactive and Extended would be different than what’s best for integrating Extended and Embodied. In this section I want to suggest that even if we can dispel this worry, there might still be additional cause for concern.

More specifically, I want to raise two possible concerns about the appropriation of Dewey’s notions of organism-environment and his corollary concept of body-mind. First is a worry about what exactly Dewey anticipated in the 4E program. Part of what ties Embodied and Extended together is a commitment to theories of wide constitution, as opposed to theories of mere dependence. That is, that minds are quite literally made up of, or constituted by structures beyond the bounds of skull and skin, not just dependent on them. The worry I want to raise is that textual evidence in Dewey might not warrant constitution claims, and might only offer evidence for dependence. A related worry is that appeal to Dewey’s notions of organism-environment, the corollary concept of body-mind, and the situation, while perhaps providing a valuable resource for integrating per-

spectives within the 4E program, might come at the cost of further opening the program to persistent and worrisome criticisms.

First, the worry about constitution vs. dependence. The very same logic and metaphysics which allows Dewey to construct the concept of organism-environment allows Dewey to develop an all-important corollary concept: the body-mind.<sup>9</sup> This is particularly important in the context of the LMS/SE tension. In a passage often quoted to demonstrate Dewey's anticipation of various versions of the embodied mind thesis, Dewey (1925/2008) writes:

The world is subject matter for knowledge, because mind has developed in that world; a body-mind, whose structures have developed according to the structures of the world in which it exists, will naturally find some of its structures to be concordant and congenial with nature, and some phases of nature with itself [...]. In ultimate analysis, the mystery that mind should use a body, or that a body should have a mind, is like the mystery that a man cultivating plants should use the soil; or that the soil which grows plants at all should grow those adapted to its own physico-chemical properties and relations [...]. Every 'mind' that we are empirically acquainted with is found in connection with some organized body. Every such body exists in a natural medium to which it sustains some adaptive connection: plants to air, water, sun, and animals to these things and also to plants. Without such connections, animals die; the 'purest' mind would not continue without them (Dewey 1925/2008, 211–212).

The language of a mind *using* a body and a body *having* a mind are what I find potentially worrisome. Even the most staunch functionalist, committed to strong global multiple realizability could admit that every mind we are so far acquainted with is found *in connection* with an organized body. Nothing here forecloses on the possibility that such a mind *could in principle* be realized in a different kind of organized body. This gets back to Clark's point that yes, "our human experience really does depend in part on many idiosyncratic aspects of our embodiment," but importantly "it does not follow that only a creature thus embodied could have those very experiences" (Clark 2008, 42). But on the other hand, Dempsey and Shani's admonition that our theories of mind must be based in *ac-*

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<sup>9</sup> In *Experience and Nature*, Dewey (1925/2008) defines the concept as follows: "Body-mind designates an affair with its own properties. A large part of the difficulty in its discussion—perhaps the whole of the difficulty in general apart from detailed questions—is due to vocabulary. Our language is so permeated with consequences of theories which have divided the body and from each other, making separate existential realms out of them, that we lack words to designate the actual existential fact. The circumlocutions we are compelled to resort to [...] thus induce us to think that analogous separations exist in nature [...] but body-mind simply designates what actually takes place when a living body is implicated in situations of discourse, communication and participation" (Dewey 1925/2008, 217).

*tual* engagements of *actual* organisms in *actual* environments may be able to guard against this move. Neither side, at any rate, would deny that minds depend on some kind of body, and that one couldn't *have* a mind without some kind of body. But SE is committed to a much stronger claim than minds *using* a body, or a body *having* a mind. Indeed these kinds of claims imply, embodiment theories of *dependence*, rather than *constitution*. And as should be clear by now, SE falls squarely in the latter camp. To be sure, this is not necessarily a slight on Dewey. Rather, if my worry here has some substance, it only means that we might not be able to marshal the resources of Dewey's conception of body-mind in service of the 4E program in the ways Gallagher and others might like.

But perhaps this worry is irrelevant. Indeed, this criticism may amount to faulting Dewey for, in 1925, not making use of a technical distinction coined in 2010. If this is true, then all the better for our prospects of using Dewey to help resolve tensions in the 4E program. But even if the dependence/constitution criticism misses its mark, however, I don't think we're out of the woods yet. There is another worry related to appropriating Dewey's thought in the context of Extended. Namely, that one might think the textual evidence only supports reading Dewey as a forerunner of Embedded. The most well-known formulation of the latter view is espoused by Rupert: "cognitive processes depend very heavily, in hitherto unexpected ways, on organismically external props and devices and on the structure of the environment in which cognition takes place" (Rupert 2004, 393). On Rupert's view, these props, devices, and structures are not themselves *constitutive* of the mental. Rather, the mental merely *depends* on them, albeit in important, significant, and surprising ways.<sup>10</sup> It seems both plausible and safe to read Dewey in this vein. To read Dewey as making stronger claims about the mind being *constituted* by bodily structures or environmental props would require a liberal interpretation which may be hard to ground in the text. Again, this is not a slight against Dewey. Rather, if my worries are grounded, it simply suggests that Dewey's conceptual resources might be better suited for talking about the mind as Embedded, rather than Extended.<sup>11</sup>

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**10** Rupert's view develops out of concern for the strength of arguments that are brought to bear in favor of constitution theories. It is much trickier, he thinks, to argue that organismically external props and devices are *constitutive* of the mind, than it is to argue that these props and devices significantly influence the mind. So if the framework of Embedded can cover the same range of cases as Extended, then by "the methodological principle of conservatism" (Rupert 2004, 395), he argues, we should endorse the former over the latter.

**11** Closely related to Embedded is Sterelny's (2010) notion of cognitive scaffolding. It is outside the scope of the present paper to pursue this line any further, but it seems likely there is a profit-

The second set of concerns has to do with Gallagher's appeal to the situation as the proper unit of analysis for talking about cognition. While we may be convinced by Gallagher that this is a promising solution for ironing out wrinkles in the 4E program, the adoption of this solution might give rise to a family of other problems: those of cognitive bloat variety. Rowlands defines this worry as follows:

the admission of extended cognitive processes places us on a slippery slope. Once we permit such processes, where do we stop? Our conception of the cognitive will become too permissive, and we will be forced to admit into the category of the cognitive all sort sorts of structures and processes that clearly are not cognitive. (Rowlands 2010, 86)<sup>12</sup>

I take this to be a particularly pressing worry because the tractability of the 4E program hinges on the ability to provide operationalizable definitions of cognitive processes, such that they are subject to empirical verification.<sup>13</sup> The lack of a principled criteria for what counts as cognitive and what doesn't would severely hinder the prospects of the 4E program as a viable scientific approach to studying the mind.

As regards the present project, one might worry that an appeal to organism-environment or the situation may lack principled criteria of individuation, or a way to distinguish cognitive from non-cognitive processes at level of organism-

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able comparison to be made between Dewey and Sterelny in this regard. Relatedly, Skorburg (2013) argues that Menary's (2007) notion of cognitive integration, rather than Clark and Chalmers's (1998) notion of cognitive extension, is the proper framework for understanding Dewey's theory of mind.

**12** Rowlands's solution is an ownership condition: "an adequate criterion of the cognitive will contain an ownership condition: any process that is to count as cognitive must be owned by a cognizing organism or subject" (Rowlands 2010, 97). Palermos's (2014) feedback loops criterion, where the bodily and/or worldly components continually affecting and being affected by each other are taken to be necessary and sufficient for wide constitution, is, in my view, the most convincing solution to the problem of cognitive bloat.

**13** Wagman and Chemero make this point strikingly clear: "although there is still open dispute over whether cognitive systems are extended, even the foes of extended cognition agree that it is an empirical matter whether there are extended cognitive systems [...]. This state of play, with everyone agreeing that the claim that whether cognition is extended is an empirical matter, would seem to leave open the possibility of a scientific resolution to the debate. That is, if experiments designed to detect the presence of extended cognition do in fact detect extended cognition, this would seem to constitute empirical confirmation of the existence of extended cognition. Should this happen, it would seem that the debate over extended cognition would simply be over" (Wagman & Chemero 2014, 106).

environment transactions. Gallagher appeals to the following passage from Dewey's *Experience and Education* in his efforts to reconcile Extended and Enactive:

The statement that individuals live in a world means, in the concrete, that they live in a series of situations. The meaning of the word 'in' is different from its meaning when it is said that pennies are 'in' a pocket or paint is 'in' a can. It means [...] that interaction is going on between individuals and objects and other persons. The conceptions of situation and of interaction are inseparable from each other (quoted in Gallagher 2014, 115).

We can gather that interaction is central to what Dewey means by situation, but surely not all elements that might be considered part of a situation interact with one another. To be more concrete, we can say that an advocate of LMS would not argue that the clouds in the sky form a proper component of an information processing mechanism and similarly, an SE advocate would not argue that the length of one's toenails profoundly shapes our rational capacities. But an advocate of LMS might argue that a laptop could be considered a proper component of an information processing mechanism and similarly, an SE advocate might argue that the position of one's eyes on the face does profoundly shape the kinds of concepts we reason with. So where do we draw the lines in these two cases? The worry here is that Dewey's notion of the situation does not provide any resources to answer this question. Or worse, Dewey's notion of the situation is intentionally vague and blurs such lines by its very definition. Indeed, I think this is how Dewey is often read, and if this much is right, we may find ourselves slipping down the slope to cognitive bloat, where we have no criteria to rule out aspects of the situation which ought not to be considered constitutive of the mental.

The same rebuttal might be made here again, however: that this worry amounts to unfairly imposing anachronistic demands on Dewey's thought. But again, even if this is so, I still think a general worry still persists that the grain of analysis of organism-environment or the situation may just be too coarse for the practical, logistical demands of the cognitive sciences.<sup>14</sup> While appealing to the level of organism-environment may indeed be the best strategy to reconcile Extended and Enactive, and perhaps even Embodied and Extended, it may come at the cost of being even more vulnerable to charges of cognitive bloat, and

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**14** This is not to say, however, that such a perspective cannot be extremely useful in other contexts. For example, the notions of organism-environment and situation may provide just the right grain of analysis for examining the ways in which cognitive processes are shaped not just by bodily engagements and various computational technologies, but by broader social and cultural forces.

other related worries.<sup>15</sup> I do not want to suggest that such charges are necessarily conclusive, but rather, that an appeal to Dewey might not be the most effective recourse in this context.

## Conclusion

In this paper I have argued that the 4E program is unified in its stance against traditional cognitivism, methodological individualism, and classical internalism, and in this sense is indebted to the tradition of classical pragmatism, and especially the work of John Dewey. Despite these commonalities, however, the 4E program has its own internal fissures. Recently, many disagreements have centered on the functionalist commitments of Clark's formulations of Extended. Two such disagreements are taken up by Dempsey and Shani (2013) with respect to Embodied, and Gallagher (2014) with respect to Enactive. I have argued that perhaps Gallagher's strategy of appealing to Dewey's concepts of organism-environment, body-mind, and the situation to effect a rapprochement between Extended and Enactive might also work to alleviate the tension between Extended and Embodied, as represented by Clark's notion of LMS, and Dempsey and Shani's notion of SE, respectively.

Lastly, I have argued that even if we grant that Gallagher's strategy is applicable to the LMS/SE debate (which it may or may not be), this may still come at a cost. Namely, that appealing to these aspects of Dewey's thought might only provide support for claims of dependence, and not constitution, in which case his insights might be better suited for Embedded than Extended, and hence, might not have much bearing on the tensions between LMS/SE or Extended/Enactive.

Perhaps more worrisome is that even if we can dispense with all of these worries, appealing to Dewey's notion of the situation in order to reconcile internal tension in the 4E program may come at the cost of being left open to the persistent and formidable charges of cognitive bloat. Dewey's framework may actually magnify this worry, by not establishing boundaries and criteria, but instead purposefully blurring and obfuscating the boundaries.

Given my own pragmatist sympathies, I hope these worries can be quelled and objections answered. The upshot of this paper should not be that we can't or shouldn't appeal to the tradition of pragmatism (of the "classical" or "neo" varieties), but rather, that we need to think carefully about where and how prag-

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15 E.g. Adams and Aizwa's (2001) well-known charge of the coupling-constitution fallacy.

matism can actually make meaningful contributions to the cognitive sciences. I don't think this contribution is useful in the form of "Peirce/James/Dewey-said-it-first" arguments, nor is it useful to think that pragmatism always has the cure to what ails the cognitive sciences. And at the other end of the spectrum, it is equally mistaken to treat pragmatism as a mere historical relic irrelevant to today's concerns. In the end, I hope to have brought a critical perspective to bear in order to bolster the contribution that the tradition of pragmatism can ultimately make to advance the scientific study of the mind.

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