ESJP
#26 | 2025

The Mind at an Impasse

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—It began abstract and mindless nowhere
planets of thought have passed
it'll end where it began
– Allen Ginsberg, *Laughing Gas*

I

The figures in Allen Ginsberg's poem *Howl* run amok. "Moloch whose mind is pure machinery!", Ginsberg cries out; "Moloch whose name is the Mind!" Ten years before Ginsberg, Merleau-Ponty wrote "at each instant, I weave dreams around the things, I imagine objects or people whose presence here is not incompatible with the context, and yet they are not confused with the world, they are out in front of the world, on the stage of the imaginary" (2012, lxxiv). Merleau-Ponty presents us with a 'man,' one with "no 'inner man,' man is in and toward the world, and it is in the world that he knows himself" (lxxiv). This leaves the discipline of psychology a broad open stage. The scene of the science is 'the human mind and behaviour,' and this adage, this scene, is strange.[1] Everything that humans do and how they come to do it, everything that we experience and how we may think, imagine, weave dreams and calculate, rationalise, cry, run, eat, and when we do it, why we like it, see, scream, and silence: these are all notes in its genre. Everything 'in and towards the world' may 'seamlessly occupy the horizon of the psychological thinkable'[2] So, it is somewhat strange that the umbrella term '4E cognition' has grown in popularity over the last decades. A mind *embodied*, *embedded* within its environment or functionally *extended* amongst its tools and the world, a mind *enacted* in its world; 4E is put forward as a critical, even radical new approach in cognitive science. Hutto and Myin, for instance, write that were the E-approaches to reject certain foundational concepts of cognitive science, this would form a radical way of reimagining the mind, one which "does not force us to jump from one conceptual branch to another while staying within the same familiar tree—it demands that we switch to a new tree altogether" (2018, 105). In 2016, cognitive frontiersman Andy Clark thus presents us with a new 'man'; a "mobile, body-based brain-meat, immersed in the human social and environmental swirl, to know and engage its world" (10). The description resembles Frankenstein, but we will stick with it, take it under closer inspection. Because, when 4E is put forward as an approach that is *critical* of cognitive science, we can gather at least two things: first, the presumption that 'regular' or 'traditional' cognitive science would not be these four things, and secondly, that the mind can be embodied, embedded, extended, and enacted all at once, composing such thing as '4E.' Our first aim will be, therefore, to sketch what cognitive science could look like without 4E, or rather, to make a historical-conceptual exposition of certain central concepts and movements in cognitive science.

In an industrial, digital, cybernetic pace, the 'mind as machine' once dreamt up by Descartes was formalised in the Macey Conferences on Cybernetics, as championed by Wiener, Shannon, and McCulloch.[3]

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1 I write this essay under the deep methodological and conceptual influence of Lauren Berlant's *Cruel Optimism*. My thinking around impasse, genre, and scenes is shaped directly by Berlant's remarkable work, which I recommend to every reader for its fundamental theoretical richness and its sensitivity to the textures, and buoyancy, of thought and lived experience. In parallel, I gesture toward Mark Fisher's *Flatline Constructs: Gothic materialism and cybernetic theory-fiction*, whose strange resonance surfaces here and there throughout, and which, I believe, should be taken up more intensively within theory on and around cognitive science and neuroscience.

2 Fisher, *Capitalist Realism: Is There No Alternative?*: "Capitalism seamlessly occupies the horizons of the thinkable" (9).

3 See Boden's monumental *Mind as machine: A history of cognitive science*. See also Richards, *Putting Psychology in Its Place: Critical Historical Perspectives*.

In cybernetics, that ambitious, experimental, and interdisciplinary movement, the emphasis lay on form: information, systems, and especially the notion of feedback would come to affect, in vocabulary and approach, every scientific discipline of the subsequent decades (Hui 2019, 143; Pias 2005, 543-545). According to McCulloch, cybernetics aimed to develop "a theory in terms so general that the creations of god and men almost exemplify it" (as quoted by Pias 2003, 15). It was this desire to develop the new science that found its way into a new area of study: the mind.

In their seminal 1943 paper, McCulloch and Pitts were the first to propose the mind could best be studied in a quantitative way through binary logic, which they argued represented the brain's operations via neurons' on-off states. The neural interaction of these binary 'formal neurons,' forming the basis of mental processes, could therefore be quantitatively studied amidst fields like neurophysiology, logic, and information theory. Writing in a distinctly abstract tone, McCulloch and Pitts were hereby able to introduce the 'mind' itself, beyond its physical details, as an acceptable area of *quantitative* research. (Boden 2006, 195-198). This abstraction set the scene for functionalism, where cognition is understood as a system of mental processes that are defined by their functional roles. No structure or process is intrinsically cognitive, it only is cognitive when causally in relation to other elements—coupling—within the cognitive system. The same mental state, then, can arise from a variety of physical mediums, which is known as the thesis of *multiple realizability* (Boden 2006, 1358). Our minds could very well be the result of brains neatly kept 'in a vat', the archetypical functionalist example goes (see Dennett 2017). Or a computer, of course. Although their model was seen as overly simplistic and unrealistic, something McCulloch and Pitts themselves also admitted, the quantification of the mind had its effect (Kay 2001, 598)[4]. As they stated: "'Mind' no longer 'goes more ghostly than a ghost'" (McCulloch and Pitts 1943, 132). The ghost in the machine, as it were, had been successfully exorcised. From the newfound digital condition, a new mind was born. The mind as machine ran amok into 1960's tradition known as cognitivism. With its screws and cogs of 'mental *representations*,' the term for information structures that stand in for, are about, something else (in the world, a cat, a number, if those exist) upon oily, digital, '*computations*,' the (inter)actions according to predetermined sets of rules or algorithms, cognitive science pressed start and started walking.

A functionalist, computationalist foundation allows for a genre of psychology to arise that is, above all, incredibly productive. For a knowledge field to advance, specialization is expected. In psychology this takes the shape of themes operating as *fragments*. Memory, language, intelligence, executive functioning, vision, auditory perception, rationality—these are some of the major established fragments of psychology. Each of these has its own myriad of interpretations and theories, its proper journals, conferences, its numerous models, and concurrent empirical studies continuously expanding upon its niche. They may reach out from one fragment to the next, they may offer fundamental revisions, and fragments such as memory may incorporate its own auditory and visual compartments. If this fragmentation appeals to a 'divide and conquer' mentality, it surely has conquered: research carried out within these fields has been incredibly productive. There are more scientific papers being published than anyone could read, and even despite constructing ever-more narrow conceptual niches, not even specialists within those niches can keep fully up to date. This need not be a problem, because after all; scientists love solving puzzles. They do science because they want to, and there is nothing wrong with that, except for a potential foundational risk, as well as the structural complications. A foundational risk is that 'simply' producing study after study, 'building upon previous research,' without the corresponding foundational work that makes sure *what* it is we are building towards, *how* we build, and who this *we* who is supposedly building even is, this runs the risk of

4 See Boden, who illustrates how by the 1960's the mind as machine had become a heresy, making way for the vague, ambitious, and hand-waving manifesto for cognitivism, *Plans and the Structure of Behavior* by Miller, Galanter, and Pribram. For the heresy, see also McCulloch himself in "Through the Den of the Metaphysician."

ending up nowhere at all. Or the file-drawer. I refer to this as a risk, to describe a situation that while it may not describe an all-encompassing state of affairs of cognitive science, in general, it is felt with an unsettling strangeness, and carries with it an urgency. This affective compartment is what we find in replication crisis discourse. While the matter of why researchers prefer to elaborate upon certain foundations and not others, and why a study may carry different implications for genre-wide foundations, may be entrusted to the philosophy of science, the trust in this delegation of giants and their shoulders was shaken up when pillar studies were found to fail replications. Especially noteworthy, surprising, romantic, extraordinary findings turned out, on repetition, to be, well, different. In headline news and across faculties, the situation was declared a crisis. This crisis had a foundational repercussion that must be understood as typical of its genre. Because, what scientists *do*, and *why* they do it, can be a subject of psychology as well. The same 'human mind and behaviour,' includes scientists' own scientific praxis. And, imperative to a crisis: once a crisis is declared, it must be dealt with. Thus, according to Ivan Flis (2019), psychologists stumbled upon their scientific foundations, and were subsequently forced to face the very same issues and, poorly equipped, reinvent the wheel of the Vienna circle, Immanuel Kant, David Hume. They inadvertently create a 'native epistemology' of philosophy of science itself, without planning for it. The recursive risk that psychology as a genre carried with it, risked imploding upon a crisis.

But, as always is the case, the felt situation was quieter than that. Most researchers struggled keeping afloat doing research as-is, and with their endless grant requests, financial insecurities, systemic overworking yet underpaying, this was an unsettling situation, but not a new one. *Reflexive impotence*, to use Mark Fisher's term, was felt before, during, and after the crisis. Within the material conditions of research, psychologists knew that "yes, it is terrible," the exclamation goes, "but what could I possibly do." That this resignation is a self-fulfilling prophecy comes to show how a capitalist system can effectively immunise itself against critique. That is what Mark Fisher terms *Capitalist Realism*. Capitalism, itself an ideology that may be disputed as any other ideology, stays whether you agree with it or not, and soon enough, as an ideological basis itself, it appears naturalised; we can no longer think any other way, it is just the way things are. That Fisher's business ontology, the idea that "it is simply obvious that everything in society, including healthcare and education, should be run as a business," (2009, 16) was present in science, too, was evident: scientists are forced to be not only scientists, but businessmen, marketeers, and CEOs alike. They must advertise and sell their research to gain funding, distribute and account the costs and report in such a way that will make it marketable, attractive, for high-impact journals to publish it. If anything goes[5] in the 'marketplace of ideas,' so does the marketplace. But, of course, whether of the imagination or replication, a crisis does not fully envelop the affective experience of scientists. Most do know there are alternatives: it could be worse. If these were already times of 'publish or perish,' with increasing budget cuts across higher education it is starting to suggest we may soon be doing both. If these were already times of growing anti-intellectual sentiment and proliferating fake news, a scientific credibility crisis must be dealt with, with tactical stealth. True to the same recursive risk, the emphasis was laid on scientists themselves, through the genre-emblematic operator of human biases. Questionable research practices, a disinterest in conducting replications, and in some extreme cases, fraud. Double- blind peer review, research preregistrations and open science practices thus became more widespread, because these could be mitigated practically without raising too much of a foundational hell.[6] Doubts as to whether replicating more, and replicating better, would even be the end-all solution was invertedly affirmed not by explicit agreement amongst scientists but by their collective failure to replicate more (Peterson and Panofsky 2021). Closer to the time of writing, the replication crisis has lost its urgency, its concerns largely forgotten, and its deeper structural issues once

5 Feyerabend, *Against Method*.

6 Flis, "Psychologists Psychologizing Scientific Psychology: An Epistemological Reading of the Replication Crisis."

more slipped into amnesia. Because psychologists manage, they catch their footing, and they produce studies accordingly. The setting that functionalism and contemporary automaton-fetishism allows for, is helpful that way; the modern 'behavioural lab' consisting of one lone participant in front of a computer screen. The environment can largely be digital, that can be done. Highly profitable ubiquitous industries of social media and larger platformitisation that mimic and extend towards the cognitive and affective faculties of their human users, use and fund cognitive science research. Studies on Large Language Models that make cross-fragmental gestures towards human memory, human attention, are in fashion. It is always cheaper, and faster, to enact the Amazon Mechanical Turk.

II

What follows is an overview of the four E's.[7] Readers less interested in the conceptual differences may accept that 4E is not unified, and that 'it depends' serves as a fair summary—and may safely move on. If you are still here, then it is worth noting that the section on embodied cognition will be more theoretically dense, for a few reasons: it is often considered to be the overarching E, it helps do justice to the field's scale and history, and finally, it shows how divisive research within a single E can be.

Ich möchte ein Eisbär sein, im Kalten Polar
Dann müsste ich nicht mehr schrei'n
All das wär so klar
– Eisbär, Grauzone

The embodied mind raises the claim that the body, the physical constitution of *this* organism not *that* organism, matters—but how much? Embodied cognition refers to the inclusion of the 'body'—referring here to extra-neural structures (i.e., *besides* the neural system; particularly the brain; extra-cranial) within 'mental processes.' In this, embodied cognition is said to take issue with an internalist perspective of cognition, where mental processes would be attributed *solely* to the brain. It is commonplace to fault Descartes for this. However, the inclusion of 'body' into 'mind' can be accomplished in various scientific routes, not all of them being forefront or sympathetic to internalist critiques. We can distinguish between 'weak' and 'strong' versions of embodiment: is the mind merely *causally dependent* on the body, or is the body a *constitutive* part of what cognition *is*? Research within the weak version can draw from the established representationalist, computationalist, account to propose bodily-formatted representations. The body, here, is represented as internal informational states within the brain, that may be interoceptive -responding to the body as with pain, temperature, and the like- as well as motoric, i.e., directing the body to carry out movement (Prinz 2009). We can expand this account a bit further to also include mental processes that are traditionally considered to be non-bodily under the 'neural reuse hypothesis,' where processes traditionally termed 'higher' may originate on both a developmental and evolutionary timescale by 'recycling' neural pathways related to other functions; language production originating from motor pathways, and written language by visual feature detections, for instance (Dehaene and Cohen 2007). This research tradition maintains the brain as the place where all important stuff happens and effectively discounts the body and environment of fundamental importance. As the idea of neural reuse already implies: the brain is not infinitely plastic, but co-evolved within the body, its 'vat' so to say. But the brain is still locked within its vat. A nice, co-evolved, functional vat, but a vat nevertheless. Because it nevertheless operates under the pretext of 4E cognition, Shaun Gallagher (2015) thus refers to this as a case of *the invasion of the body snatchers*.

[7] There is a lot of literature on 4E cognition, and one remarkably thorough and helpful place to start are Shaun Gallagher's writings. See, for instance; *Enactivist Interventions, Embodied and Enactive Approaches to Cognition*, and the introduction to *The Oxford Handbook of 4E Cognition*. For a shorter paper, "A well-trodden path: From phenomenology to enactivism."

Contrary to the 'body snatchers,' a 'strong' embodied cognition argues for a constitutive role of the body, which can be understood from a functionalist perspective, or biologically. Within a *functionalist* perspective, there is no good reason to exclude the body from playing constitutive roles in cognition, as it is not tied to any specific physical medium such as the brain to begin with. A strictly internalist account of cognition can therefore be rejected, and the body can be seen as playing a fairer role within the larger cognitive system. A functionalist embodied cognition is 'strong' as cognition is constituted by any relevant structure, but the body is not strongly relevant in any special way; whether the cognitive process arises from the body of a human, or a large-eared pika is irrelevant. Thus, conducting research on *how* cognition is constituted in the body and bodily structures—specifically—is made almost trivial. For this, there is the *biological* reading: the body in a strong, biological account, is more than the proprioceptive and motoric functions (weak interpretation), but neither is it but one medium over which cognition arises (functionalist perspective). Our cognition is the way it is, precisely because of *our* body, not that of the large-eared pika. There would be no binocular vision had we evolved only one eye, and if our ears were not shaped the way they are, we would not be able to locate sound as we do now. Besides general morphology, this account extends towards a chemical-hormonal level, such as affective experiences. Fear, for example, is something we feel; our heart rate accelerates, we start to sweat, our breathing quickens—this experience is embodied, along with the facial expression of fear. Rather than relegating these affective experiences to their own research themes (to be studied in a way that is fragmented from other experiences, be it the more classically 'cognitive' processes or more 'biological' states) what qualifies as the mental 'fear' can be seen as inextricably linked to, and in fact *constitutive* of, the entire cognitive system. This *is* fear, this *is* language, this *is* vision. And thus, it invites the conceptual critique—the fear—whereby this take is accused of making a coupling-constitution fallacy: yes, these physical states always coincide with their mental states, but why 'Occam' our way to constitution? Where does it end?

Of course, when we define the body as 'extra-neural,' this may itself be stretched rather far. What about prosthetics, or other technologies, such as written language? Put more broadly, what role does the environment play in cognition? "Where does the mind stop and the rest of the world begin?" (Clark and Chalmers 1998, 7). This is where the *embedded* and *extended* mind come in. These, too, include a 'weak' and 'strong' version of causal dependency versus constituency. The embedded mind first arose as a research extension to the embodied mind, known as 2E (Rupert 2004, 393). The embedded mind states that for cognition to function well, part of the cognitive load required to carry out mental processes can be efficiently off-loaded onto the environment. That is *scientalese* for 'you don't need to have the entirety of the airport stored as a mental map prior to entrance, the arrows and overhead-signs will help you.' As such, navigation is in part embedded in the environment, in the sense that a well-structured environment facilitates cognition. What would William Grey Walter's Elmer and Elsie have to say about that?

Making a strong, constitutive claim for the environment is Clark and Chalmers's famous 1998 extended mind thesis. According to the extended mind, to use their thought experiment: whether you remember an address by checking your notebook, or through your biological memory, ought to be considered equally cognitive, as per their principle: "were it to go on in the head, we would have no hesitation in recognizing as part of the cognitive process" (1998, 8). Let it be clear, then, that this is an inherently functionalist thesis—as we saw before, the physical medium does not matter, what matters is what it *does*. Neither does the extended mind, nor subsequent work from their founders in the predictive processing account, reject mental representations outright. But they may become 'minimal,' and extended along; "the vehicles of representation do not stop at the skin; they extend all the way out into the world" (Rowlands 2006, 224). But here is where a lot of the fun starts for the philosophically, media-lly, artistically inclined, as the extended mind emphasises technology. Specifically in the sense of technology serving as an externalised

memory, this appears to coincide, or at least approach, Bernard Stiegler's conception of 'tertiary retention.' Back to 4E literature, Gallagher argues that if you conceptualise the extended mind more liberally, social institutions and cultural practices can be incorporated into 'mind' as well. Is the legal system part of your mind? A mind in itself? Don't legal contracts scaffold, reliably, guide and schematize cognition as it would be in the head? Gallagher admits to a Hegelian streak here. When I visited the Leopold Museum in Vienna, I found myself in front of paintings by Egon Schiele, where my mind wandered off. I suddenly experienced a Eureka-moment as an insight for my essay whose deadline was steadily approaching yet kept off-bay by geographical distance. The insight was fleeting, as upon my return home it had left no trace. However, finding the same paintings by Schiele online, the insight returned to me. This didn't really happen to me, but it could have. We walk along: "If we think that cognition supervenes on the vehicle of the notebook, it seems reasonable to say that it supervenes on the vehicle of the museum—an institution designed for just such purposes" (Gallagher and Crisafi 2009, 49). In the same line, they mention 'conversational thinking,' where a conversation following from my museum visit might in a very similar way scaffold and structure my cognition as well. "In every act of cognition that runs through these tools or institutions, the mind is extended" (49). Have you read *Camera Lucida*? Did Barthes' photograph not collect all the possible predicates from which his mother was constituted, "and whose suppression or partial alteration, conversely, had sent me back to these photographs of her which had left me so unsatisfied" (1981, 70)? But there's a catch. According to Gallagher, this liberal interpretation can come to fruition when functionalism is abandoned, in exchange of the enactivist interpretation of affordances, into 'social affordances' (2013, 4). Because that is the way we were going anyways.

In enactivism, cognition is understood as being for action. It is 'laying down a path in walking,' as goes the adage by its founders Varela, Thompson, and Rosch (1991). Rather than reducing thought to internal computation or abstract symbol manipulation, cognition is understood as something that emerges directly from sensorimotor activity, from the ongoing, dynamic interplay between brain, body, and environment. To model this, enactivism turns to nonlinear dynamical systems theory instead of classical cognitive architectures or modules. Enactivism draws from a variety of traditions and takes on multiple conceptual shapes, but importantly, it offers students and scholars of the mind a different vocabulary, to then reveal a deep conceptual ocean with significant implications for the science itself. As any child looking through the window from the backseat of a car can tell you, the large rock formations appear quite climbable from a distance. Yet, upon getting closer, the cliffs and distances between are revealed to be quite large, and definitively unclimbable. Was our first representation of the mountain wrong, then? For a non-representational enactivist, this change in cognition reflects a change in affordances, which defined by the dynamic coupling of body-environment is not an error, but simply a *change* in this coupling. As Gallagher puts it: "The affordance doesn't disappear because I change the representation of my distance from the mountain, I actually have to change my distance, and when I do so, the body–mountain relation, which defines the affordance, and my perception, changes" (2017, 97).

The notion of affordance is the legacy of J.J. Gibson, who struggled with the weight and legacy of the concept 'information,' a term he used only sparingly: "I would use another term if I could" (2014, 231). Gibson rejected information as information *about* something, which implies information as content—striking a familiar chord with our previous discussion on symbols and representations. Affordances are not properties of the world out there, waiting to be represented or computed. Rather, affordances are to be understood as '*information for*,' such as information *for* perception. Nor are they subjective impressions generated 'in here.' Instead, they arise in the dynamic relation between an organism and its environment. A surface, for example, affords walking not because the brain decides it does, but because of the way that surface and that body fit together. As Gibson puts it, an affordance "points both ways" (121)—to the

organism and to the environment. This mutuality complicates any strict separation between inner and outer, perception and action, as well as subject and object. The common idea of an organism roaming in its environment, its cognition interpreting the world as it falls into the mind, as it were, is turned on its head. According to some enactivists, then, enacted cognition is best described as processes of *sense-making*. An environment is never neutral for the organism to roam through, but valorised: things, happenings, can be good or bad for the organism. So, the organism must make sense of its environment—and that is what cognition *is* (De Haan 2020, 54-56). But this is not a passive regulation behind a screen of computation and representation, or solely a matter of inference (unless it is active). In fact, a significant strand of enactivism termed 'radical' is explicitly anti-representational (See Hutto and Myin, 2013). Now: *the organism brings forth its world*.[8] Here, the organism is said to be self-generating in regulating this interaction, and it owes these insights to the legacy of Humberto Maturana and Fransisco J. Varela, who developed the notion of *autopoiesis*. "Autopoiesis means, in Maturana's definition, that a system can generate its own operations only through the network of its own operations. And the network of its own operations is in turn generated through these operations" (Luhmann 2009, 151). Here, cognition is co-extensive with life itself—taken by other authors as the life-mind continuity thesis—and falls back within the tradition considered as second-order cybernetics (Hui 2024, 11). What in the Macy Conferences was still limited to feedback, recursion, now made explicit, could then be systematically furthered towards Luhmann's systems theory (Hui 2019, 20, 127). In waves and circles overboard, the 'touring machine'[9] has come to an end here, where it began, and there are many questions left unanswered and many things that could be discussed.

III

If everything is drained from interest, if imagination is in crisis or too preoccupied with staying afloat, where do we go from here? And yet. We set forth from an 'and yet'. In the tenth letter, Schelling addresses how in the Greek tragedy, freedom and fate appear, at first glance, to be in an irreconcilable opposition (see Hui 2021, 14-16). There is nothing less free than fate. Every act against fate, all resistance, no matter how cunning or wicked its protagonist, is in vain. And yet, this is where Schelling writes: "Only a being *deprived* of freedom could succumb under fate. It was a *sublime* thought, to suffer punishment willingly even for an inevitable crime, and so to prove one's freedom by the very loss of this freedom, and to go down with a declaration of free will." (Schelling, *Tenth Letter*, 193) It is precisely in the *willing* submission to fate that freedom asserts itself. By choosing to embrace what cannot be avoided, the tragic hero does not overcome the opposition by negating fate, but is instead elevated above fate. After *and yet*, anything may follow.[10]

As we have seen, if we were to take representation, computation, and information, as central concepts in cognitive science, 4E approaches offer no unified stance on how to treat them, and, any attempt to delineate the conceptual grounds of 4E cognition itself, finds itself presented with a multitude of contradictions, corrections, claims, and counterclaims. If anything, they are better understood as operating within an axis. This begins with the extended mind at the fully functionalist end, where cognitive processes are defined entirely by their roles in a system, regardless of physical substrate, and often align with the core assumptions of traditional cognitive science. Next come the embedded mind and weak embodied cognition, which tend to retain computational and representational assumptions. These are followed by strong,

8 Maturana and Varela, *The tree of knowledge: The biological roots of human understanding.*

9 See Fred Moten, "The Touring Machine (Flesh Thought Inside Out)"

10 Berlant, *Cruel Optimism*, p. 266: "If body, then everything can follow."

biological embodiment, and finally, at the opposite end, we arrive at enactivism. Looking from the end of enactivism, especially in its more radical, anti-representationalist forms, you can get a critique *par excellence*.

Even attempts to ground fragments like memory in embodied terms, or to isolate 'body snatching' cases, fall short. In fact, the very notion of such fragments as discrete, self-contained units is called into question without a functionalist or representationalist account to back it up. As a result, a great deal of research built on these fragments—and often reliant on machinic methodologies—begins to feel, if not outright misguided, then increasingly like an answer to a question no longer worth asking.[11] Enactivism is methodologically inspiring too, offering specific suggestions such as studying consciousness from a first-person perspective (Gallagher 2003) to adding an existential dimension to psychiatry (De Haan 2020). These are but two examples, and enactivism provides a robust theoretical justification for them. Yet, in its liberal interpretation, the extended mind also finds its way again to unlikely connections and corners that its original theorists would term 'cognitive bloat.' But it makes these connections, and it does so in an exciting and elegant way. Take Shaun Gallagher's own call towards giving cognitive science a 'critical twist':

> What I suggest is twofold. First, that the concept of the extended mind, if we can get it right, offers a new understanding of what cognition (the mind) actually is and how it works. As such it offers a new perspective for understanding decision making, judging, problem solving, communicative practices, and so forth, which importantly includes reference to the kind of externalities that critical theory ought to be concerned about – institutional practices and procedures, norms, rules, technologies, and so forth. Such externalities not only shape our cognitive processes and thinking, but also play a dominating role in bureaucratic systems, democratic processes, and in an extensive range of social, legal, and political phenomena. Accordingly the *idea of the socially extended mind at the very least offers a new tool for the practice of critical theory*. Second, although cognitive science is already studying the kind of cognition that some theorists take to be socially extended cognition, the proposal here is that we give this kind of cognitive science a critical twist. (Gallagher 2013, 12, italics mine)

In *Exceptional Technologies* (2018), Dominic Smith quotes this citation at length. "We need not lose a concern for embodiment conditions," he writes, "and we need not attempt to reduce the concerns of philosophy of technology, media theory or 4e work to one another. Instead, we can play on the crossover potentials between these fields" (76). *And yet*, only now can we appreciate and foreground what makes 4E cognition interesting, exciting, special: the connections made to other fields. There is an untiring appeal to the imagination, as the concepts and approaches allow for remarkably interdisciplinary connections to be made.

Yet, if our way to find our footing within the impasse is by scavenging what we got, we see a complicated picture arise. Of course, reality is always messier than we can grasp, and conceptual spaces are no different. That is a good thing. Nevertheless, people outside of the discipline must be cautious when engaging with 4E; it may not be what you think it is, and that is not a bad thing. The bad thing, the problem, the risk, that accompanies lending from these spaces is that it is not findings, but scientific flair, the allure of objectivity and authority in its genre, that may be carried over. This risk cuts both ways, but to soften that pernicious orientational metaphor: the original work may, in its originality and optimism, be cast as less rigorous, less serious, or incomplete without its scientific element. And, towards the science, that space where we are reluctant to merely replicate and revulsed at the risk of reinventing the wheel, while we are still at the prelude. Here, if we do not know the spaces we think to contribute to, we can never know, after all, is it new, or *new to you*?[12]

Thus, if we portray 4E cognition as a radically new way of envisioning the mind, growing popular within cognitive science as well as beyond, we may be caught within this same trap of resistance. We may

11 Unless, that is (and admirably so) when the question is made explicit, as it is by Lyotard in "Can Thought Go on Without a Body?"

12 See Boden, "Creativity in a Nutshell" in *The Creative Mind*.

attempt to negate or affirm something that will only leave us feeling out of place, and if we are at this impasse, we try to catch our footing in ways that may not work. One such way is by presenting claims. This is one claim I put forth in this article: 4E is not a unified conceptual approach. And yet, they are a foundational approach, and this is different from working within or against the impasse—it is 'and yet,' written from within, and yet, we continue moving. 4E is a foundational approach, in the sense that they appeal to foundations in cognitive science. Hereby, 4E cognition suspends the foundations of cognitive science, proving that *they could be different*. This is itself a radical gesture, contingency. But it is not finished.[13] By suspending the traditions that came before them, these studies, authors, strands, then affirm their own ideal and ideas of man in and towards the world. The mind as a machine may be discarded in favour of a strongly embodied human subject in the flesh, as we see in enactivism, or it can be reclaimed, as in the extended mind. The concepts, the foundations, rendered contingent, are elevated into necessity once more. In a crisis or something more quiet, stumbling upon foundations or scavenging for ways to make do within the impasse, the mind runs amok. In this situation, 4E appears interesting, strange, and an untiring appeal to the imagination, from the 'and yet'. We follow through the imagination. It will end where it began.

Over and over—refrain—of the Hospitals—still haven't written your
history—leave it abstract—a few images
run thru the mind—like the saxaphone chorus of houses and years—
remembrance of electrical shocks.

– Allen Ginsberg, *Kaddish*

13 In his lecture "Art and Freedom," Yuk Hui put forth the *creative* act as a double act; first by suspending necessity, by rendering it contingent, and then by elevating contingency into necessity again—Beethoven: *Muß es sein? Es muß sein*! Drawing on writings by Kandinsky, Nietzsche, and Schelling, I was enchanted by his idea. As the lecture remains unpublished, any missteps in interpretation are mine alone.

References

Barthes, Roland. 1981. *Camera Lucida: Reflections on Photography*. Translated by Richard Howard. New York: Hill and Wang.

Berlant, Lauren. 2011. *Cruel Optimism*. Durham, NC: Duke University Press.

Boden, Margaret A. 2004. *The Creative Mind: Myths and Mechanisms*. London: Routledge.

Boden, Margaret A. 2006. *Mind as Machine: A History of Cognitive Science*. 2 vols. Oxford: Clarendon Press.

Clark, Andy, and David Chalmers. 1998. "The Extended Mind." *Analysis* 58 (1): 7–19.

Clark, Andy. 2016. *Surfing Uncertainty: Prediction, Action, and the Embodied Mind*. Oxford: Oxford University Press.

De Haan, Sanneke. 2020. *Enactive Psychiatry*. Cambridge: Cambridge University Press.

Dehaene, Stanislas, and Laurent Cohen. 2007. "Cultural Recycling of Cortical Maps." *Neuron* 56 (2): 384–398.

Dennett, Daniel C. 2017. *Brainstorms: Philosophical Essays on Mind and Psychology*. Cambridge, MA: MIT Press.

Feyerabend, Paul. 1993. *Against Method*. London: Verso.

Fisher, Mark. 2012. *Capitalist Realism*. Winchester: Zero Books.

Fisher, Mark. 2018. *Flatline Constructs: Gothic Materialism and Cybernetic Theory-Fiction*. New York: Exmilitary Press.

Flis, Ivan. 2019. "Psychologists Psychologizing Scientific Psychology: An Epistemological Reading of the Replication Crisis." *Theory & Psychology* 29(2): 158-181.

Gallagher, Shaun. 2003. "Phenomenology and experimental design toward a phenomenologically enlightened experimental science." *Journal of consciousness studies 10*(9-10): 85-99.

Gallagher, Shaun. 2013. "The Socially Extended Mind." *Cognitive Systems Research* 25: 4–12.

Gallagher, Shaun. 2015. "Invasion of the Body Snatchers: How Embodied Cognition Is Being Disembodied." *The Philosophers' Magazine*, April: 96–102.

Gallagher, Shaun. 2017. *Enactivist Interventions: Rethinking the Mind*. Oxford: Oxford University Press.

Gallagher, Shaun. 2018. "A well-trodden path: From phenomenology to enactivism." *Filosofisk Supplement* 3: 42-47.

Gallagher, Shaun. 2023. *Embodied and Enactive Approaches to Cognition*. Cambridge: Cambridge University Press.

Gallagher, Shaun, and Alessandro Crisafi. 2009. "Mental Institutions." *Topoi* 28: 45–51.

Gibson, James J. 2014. *The Ecological Approach to Visual Perception: Classic Edition*. New York: Psychology Press.

Ginsberg, Allen. 2015. *The Essential Ginsberg*. London: Penguin Classics.

Grauzone. 1980. "Eisbär." On *Swiss Wave – The Album*. Welt-Rekord. Digital Audio.

Hui, Yuk. 2019. *Recursivity and Contingency*. London: Rowman & Littlefield.

Hui, Yuk. 2021. *Art and Cosmotechnics*. Minneapolis: University of Minnesota Press.

Hui, Yuk. 2024. "Why Cybernetics Now." In *Cybernetics for the 21st Century: Vol. 1, Epistemological Reconstruction*, edited by Yuk Hui, 1–26. Hong Kong: Hanart Press.

Hui, Yuk. 2025. *Art and Freedom*. Lecture, '*What Is the Function of Art?' / Art, Technology, and Philosophy*, Erasmus University Rotterdam, March 10.

Hutto, Daniel D., and Erik Myin. 2013. *Radicalizing Enactivism: Basic Minds without Content*. Cambridge, MA: MIT Press.

Hutto, Daniel D., and Erik Myin. 2018. "Going Radical." In *The Oxford Handbook of 4E Cognition*, edited by Albert Newen, Leon De Bruin, and Shaun Gallagher, 95–116. Oxford: Oxford University Press.

Kay, Lily E. 2001. "From logical neurons to poetic embodiments of mind: Warren S. McCulloch's project in neuroscience." *Science in Context* 14 (4): 591-614.

Lyotard, Jean-François. 1991. *The Inhuman: Reflections on Time*. Translated by Geoffrey Bennington and Rachel Bowlby. Stanford, CA: Stanford University Press.

Maturana, Humberto R., and Francisco J. Varela. 1987. *The Tree of Knowledge: The Biological Roots of Human Understanding*. Boston: New Science Library/Shambhala Publications.

McCulloch, Warren S. 1965. "Through the Den of the Metaphysician." In *Embodiments of Mind*, edited by Seymour Papert, 59–76. Cambridge, MA: MIT Press.

McCulloch, Warren S., and Walter Pitts. 1943. "A Logical Calculus of the Ideas Immanent in Nervous Activity." *The Bulletin of Mathematical Biophysics* 5: 115–133.

Merleau-Ponty, Maurice. 2012. *Phenomenology of Perception*. Translated by Donald A. Landes. London: Routledge.

Miller, George A., Eugene Galanter, and Karl H. Pribram. 1960. *Plans and the Structure of Behavior*. New York: Henry Holt.

Moten, Fred. 2018. "The Touring Machine (Flesh Thought Inside Out)." In *Stolen Life*, 161–182. Durham, NC: Duke University Press.

Newen, Albert, Leon De Bruin, and Shaun Gallagher, eds. 2018. *The Oxford Handbook of 4E Cognition*. Oxford: Oxford University Press.

Luhmann, Niklas. 2009. "Self-Organisation and Autopoiesis." In *Emergence and Embodiment: New Essays on Second-Order Systems Theory*, edited by Bruce Clarke and Mark Hansen, 151–167. Durham, NC: Duke University Press.

Peterson, David, and Aaron Panofsky. 2021. "Self-Correction in Science: The Diagnostic and Integrative Motives for Replication." *Social Studies of Science 51* (4): 583–605.

Pias, Claus. 2003. "The Age of Cybernetics." In *Cybernetics: The Macy Conferences 1946–1953: The Complete Transactions*, edited by Claus Pias, 11–26. Zürich–Berlin: Diaphanes.

Pias, Claus. 2005. "Analog, Digital, and the Cybernetic Illusion." *Kybernetes* 34 (3/4): 543–550.

Prinz, Jesse. 2009. "Is Consciousness Embodied?" In *Cambridge Handbook of Situated Cognition*, edited by Philip Robbins and Murat Aydede, 419–437. Cambridge: Cambridge University Press.

Richards, Graham. 2010. *Putting Psychology in Its Place: Critical Historical Perspectives*. New York: Routledge.

Rowlands, Mark. 2006. *Body Language*. Cambridge, MA: MIT Press.

Rupert, Robert. 2004. "Challenges to the Hypothesis of Extended Cognition." *Journal of Philosophy* 101: 389–428.

Schelling, F. W. J. 1980. "Philosophical Letters on Dogmatism and Criticism." In *The Unconditional in Human Knowledge: Four Early Essays (1794–1796)*, translated by Fritz Marti, 156–218. Cranbury, NJ: Associated University Presses.

Smith, Dominic. 2018. *Exceptional Technologies: A Continental Philosophy of Technology*. London: Bloomsbury Academic.

Varela, Francisco J., Evan Thompson, and Eleanor Rosch. 1991. *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge, MA: MIT Press.