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Practice, enactivism, and ecological psychology

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Abstract

The Course-of-Experience Framework (CEF) represents a promising path forward for embodied and enactive approaches to cognitive science. It aims to provide a comprehensive explanation of representation-hungry activities by grounding cognition in practice. Practice is not merely something that we do as a means to an end, but is constitutive of cognition. Puzzlingly, however, the CEF begins to develop a distributed approach to cognition by viewing individuals through their culturalcognitive ecology or milieu, before shifting focus to an internalist interpretation of enactive agency. CEF states that the agent enacts their world and discovers themselves through practice, but provides no clear account of organism-environment mutuality. This is problematic because CEF's notion of practice depends on organism-environment mutuality in its first core assumption. The tendency to downplay the importance of the environment is likely due to a holdover of early enactivist ideas that have sparked tensions between ecological psychology and enactivism in the past. We attempt to re-align the CEF with the enactive project, which we think is gradually shifting away from individualistic concepts like autopoiesis and sense-making toward social and ecological concepts like participatory sense-making and affordances.

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Introduction

The Course-of-Experience Framework (CEF) represents a promising path forward for embodied and enactive approaches to cognitive science. It aims to provide a comprehensive explanation of representation-hungry activities by grounding cognition in practice. Practice is not merely something that we do as a means to an end, but is constitutive of cognition (Poizat et al., 2023). This is a step forward for embodied approaches because it provides an account of cognition that ties together complex and abstract behaviors like doing philosophy with the seemingly mundane world of our everyday experiences. Rather than focusing on the agent that is engaging in practice, CEF establishes the practice itself as the unit of analysis. This, like the focus on the organism-environment system taken as a whole in ecological psychology, breaks down agent-world dualisms by blurring the lines between the agent and their world.[1]

Puzzlingly, the CEF begins to develop a distributed approach to cognition by viewing individuals through their cultural-cognitive ecology or *milieu*, before shifting focus to an internalist interpretation of enactive agency.[2] CEF states that the agent enacts their world and discovers themselves through practice, but provides no clear account of organism-environment mutuality. This is problematic because CEF's notion of practice depends on organism-environment mutuality in its first core assumption (Poizat et al., 2023). The tendency to downplay the importance of the environment is likely due to a holdover of early enactivist ideas that have sparked tensions between ecological psychology and enactivism in the past.[3] This is reinforced by a misunderstanding of enactive sense-making in the third core assumption, where the environment is defined as a meaningless source of perturbation for the agent and nothing more. These problems, if left unaddressed, threaten to undermine CEF's comprehensive account of cognition. Luckily, there is a path forward.

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In what follows, we will attempt to re-align the CEF with the enactive project, which we think is gradually shifting away from individualistic concepts like autopoiesis and sense-making toward social and ecological concepts like participatory sense-making and affordances.

Course-of-experience framework

As the name implies, the Course-of-Experience Framework (CEF) attempts to address the puzzles of meaning and lived experience by grounding consciousness in pre-reflective self-awareness. Pre-reflective self-awareness is the ground from which our meaningful worlds are enacted. This approach bridges our embodied experiences and our meaningful concepts and memories with practice.

For CEF, the continuous flow of experience can be referenced and communicated by breaking it into personally meaningful units, like concepts or narratives. The units of meaning—"...called Units of *course of experience* (U)—are assumed to be the expression of a sign." (Poizat et al., 2023, p. 113). This shifts meaning making and conceptualization from within the brain to an embodied semiotic activity or practice. Experiences unfold over time through a contextual *milieu*, and can be rendered meaningful after the fact. This fundamentally changes the roles of concepts and language from real-time mental gymnastics that underlie cognition and action to helpful behaviors that can be used as needed. While deflating the importance of concepts and decentralizing conceptualization from cognition are valuable aspects of the enactive approach, there is a mismatch between semiotics and the enactive approach that threatens to undermine CEF's enactive-semiotic approach.[4]

The semiotic account of sense-making fails to recognize that the world is full of meaning before we make sense of it. Enactivist theorists like Di Paolo et al., (2017) argue that the enactive agent is embedded in a world that is (perhaps too) rich with meaningful information, which means that breaking the flow of experiences into meaningful units is only one aspect of sense-making.[5] Agents are also capable of meaningful navigation of a shared circumstance and making meaning together in real time (i.e., participatory sense-making).[6] A theory of sense-making that leaves out its ecological and participatory dimensions tells an incomplete story and is not in line with the enactive approach. This problem is made clear through CEF's three core assumptions, which will serve as our roadmap for correcting the CEF interpretation of enactivism.

The core assumptions

I. "Practice is a continuous asymmetrical interaction between the actor and their environment (...)
II. Practice is always accompanied by and gives rise to first-person lived experience (...)
III. Practice is a semiosis, that is, a permanent creation and appreciation of meaning, sense-making in short (Thompson & Stapleton 2009)" (Poizat et al., 2023, p. 111–112).

The CEF's account of the enactive approach to organism-environment mutuality is incomplete. For the enactive approach, meaning is not "formed from within" an agent and then projected onto a meaningless environment (Poizat et al., 2023). Instead, the agent navigates and enacts meaning in and through its environment. While early forms of enactivism relied upon operational closure and autopoiesis (Varela et al., 1991), later enactivists have adopted dynamic systems theory and embraced many parts of ecological psychology (Chemero, 2009; Gallagher, 2017; McKinney, 2020). CEF does not engage with ecological psychology at all. This opens CEF to avoidable pitfalls.

The enactive-ecological synthesis

In the late 20th century, enaction and ecological psychology defined themselves in opposition to one another. For example, in *The Embodied Mind*, Varela et al., (1991) complain that ecological psychology assumes that animals live in a pre-given world and build their theory of perception entirely from that pre-given world, without concern for the features of the perceiving animal. Swenson and Turvey (1991) complain that the then-central enactive concept "autopoiesis" explains perception solely in terms of construction of experience by the animal, without reference to the world the animal inhabits. However, 21st-century developments in enaction and ecological psychology have made the two views seem compatible, so much so that there have been a series of calls for combining the two approaches (e.g., Chemero 2009; McGann, 2014; Rietveld & Kiverstein, 2014; Stapleton et al., 2016; Baggs, 2018; McKinney, 2020; Baggs & Chemero 2021).

A series of changes to both disciplines made this seem possible. First, actually beginning in the late 20th century, both disciplines embraced complexity and nonlinear dynamical systems theory as explanatory tools. Second, each softened the views that the other discipline found objectionable, leaving a shared commitment to the view that the world that animals perceive is dependent on the features of those animals, but is not created whole-cloth by the animals (e.g., Chemero 2003; 2009; Di Paolo, 2005; Thompson, 2007; Di Paolo & Thompson 2014). There is a growing shared sense that ecological psychology and enaction have a stronger future together than separately. One of us (Chemero, 2009) has argued that ecological

psychology needs enactivist ideas to develop a theory of agency. That is, ecological psychology is very good at describing what the world we perceive is like, but has fewer resources to explain why we do the things we do. Going in the other direction, Stapleton et al. (2016), for example, points out that enactivists have already embraced the empirical results and many of the concepts of ecological psychology, especially those concerning affordances.[7]

Asymmetry as a tipping point

The strands of enactivism and ecological psychology that are converging can do so only by rejecting the claim that meaning is made within animals, which introduces a strong asymmetry between the agent and the environment it experiences. This asymmetry is out of line with the dynamical approaches that ecological psychology and enactivist theories both endorse. Dynamical models of agent-environment systems describe the way sets of variables and parameters change together over time, without regard to whether the variables and parameters represent internal or external to the agent. That is, the models treat the agent and environment as more or less symmetrical, even though in some contexts the relationship could be described asymmetrically focusing primarily on either the agent or the environment.[8]

This symmetry, of course, is not in conflict with the enactivist claim that the environment as experienced by an agent is in some sense dependent on an agent, what it can do, what matters to its well-being, etc.[9] This is what sense-making is, after all. But the very possibility of sense-making is dependent upon the structures of the environment that matter to the agent's activities. Even if living systems constantly strive to maintain separation between themselves and their surroundings, as enactivists argue, sometimes agents fail to overcome environmental and contextual forces. Without accounts of both agent-environment symmetry and asymmetry, CEF loses out on enactive explanations of things like structural racism, which is characterized by the ways one's embodiment influences how the world of opportunities unfolds for them.[10]

All of this is to say that enactivists and ecological psychologists are equally committed to agent-environment mutuality. Enactivism may tend to focus more on agents and ecological psychologists may tend to focus more on environments, but both are equally committed to mutuality of agent and environment, which points to a co-dependence between them. Agents are what they are in relation to the environment they experience; the environment as experienced by any particular agent is what it is in relation to that agent's abilities and interest. Meaning comes neither from within or from without. Meaning is to be found in the mutuality between agents and environments.

Ecological meaning and languaging

CEF's incorporation of Peircean semiotics is problematic. It is not entirely clear whether the reliance on Peirce is an ontological or an epistemological commitment. Thus, on the one hand the authors make an ontological assumption, as CEF (or rather, one of its components, namely "the extended thought-sign analytical hypothesis") "assumes that practice (as cognition) is *semiosis*" (Poizat et al., 2023, p. 113; our underlining). On the other hand, we see a more modest epistemological claim, namely that CEF proposes "a generic model to describe cognition 'in the wild' and 'from within'– the hexadic sign – derived from Peirce's fundamental categories" (Poizat et al., 2023, p. 112; our underlining). On this view, practice (as cognition) "can be described as a concatenation of signs and analyzed by means of an articulated and coherent set of components (or generic descriptive components) derived from Peirce's semeiotics" (Poizat et al., 2023, p. 113; our underlining).

If CEF uses Peircean semiotics for merely analytical purposes, the criterion for evaluating the use of the semiotic apparatus is whether it produces new insights into the range of empirical phenomena with which CEF is preoccupied. Given that the analytical results are beyond the scope of the target article, we will not go into this discussion. Instead, we critically attend to the assumptions underlying CEF's adoption of semiotics as an ontological premise.

In his early work, Peirce famously developed the view that human thinking was semiotic—"all thought is in signs" (Atkin, 2013)—which Peirce referred to as *thought-signs*. In Peirce's thought-signs, a representamen (that stands for an object) affects a person, and this effect of the representamen—which is termed the *interpretant*—is a *mental* fact.[11] In CEF, Peirce's triadic sign is interpreted as the basis for "the unit of course of experience [which] referred to practical actions, communications, interpretations, emotions, feelings, and self-talk" (Poizat et al., 2023, p. 113). Taken together, the triadic sign and the unit of course of experience constitutes a tetradic sign, which is later developed into a hexadic sign, but for simplicity we keep our focus on the relation between Peirce's triadic sign and CEF's unit of course of experience.

On our reading, Peirce's semiotization of cognition is at odds with the radical embodied tenets of enactivism which is resolutely nonrepresentational. In contrast, the interpretant functions as a quasi-representation in Peirce's semiotics. So why does CEF need this additional semiotic layer? Why don't "actions, communications, interpretations, emotions, feelings, and self-talk" suffice as the object of study for CEF? The claim that sense-making depends on discrete, meaningful units is profoundly at odds with enactivism and other radical embodied positions (such as the ecological view). CEF's reliance on linguistic data, paired with a structuralist

ontology of language as composed of linguistic units (Demuro & Gurney, 2021), forces them to treat practice and cognition as unit-based, and thus aligned with Peircean semiotics.

An ecolinguistic alternative

In recent years, a theoretical alternative to this view has emerged in the language sciences, namely to assume that "we depend on *dynamics first and symbols afterwards*" (Cowley, 2011, p. 11). On such a distributed (Thibault, 2021), ecological (Steffensen & Fill, 2014), or radical embodied ecolinguistic (Steffensen & Cowley, 2021) view, not language, but *languaging* is at the center. This view counters the linguist's obsession with abstracta (words, morphemes, language systems, even languages as delineated wholes) by assuming that the-thing-we-call-language does not reference any single, coherent, homogenous phenomenon in the world. As argued by Steffensen and Fill (2014, p. 17), when we talk about "language" we project "a phenomenological orderliness to a plenitude of disparate phenomena whose only shared properties arise from human activity"—not unlike what we do when we group stars at the night sky into distinct constellations. On this view, rather than focus on "the said," one should investigate how "languaging links bodily coordination with socially derived experience" (Cowley, 2019, p. 484). The reason we emphasize languaging in this context is that it resists any attempt at partitioning activity and speech: the symbolic and sociocultural aspects of languaging constrain the dynamic activities that we engage in (Rączaszek-Leonardi, 2009).

One implication of an ecolinguistic, languaging-based research agenda is that it takes us beyond semiotic concerns: "Just as semiotics encompasses linguistics, languaging transcends semiosis" (Cowley, 2019, p. 487). The semiotic perspective forces us to maintain a circuit of signs, be it in a Saussurean "circuit de la parole" (Saussure, 1972, p. 27) or in a Peircean infinite semiosis of thought-signs. What we need is more theoretically and methodologically robust ways of integrating the dynamics of agential behavior and the symbolic aspects of languaging. What we have on offer to CEF is a model where the ecological and (socioculturally) distributed aspects of cognition are integrated. Thus, rather than go to great lengths to establish a hexadic sign by eliciting post-hoc narratives, we propose that we rely more parsimoniously on the behavioral data, allowing these data to include reflections prompted by a situated researcher.

As argued by Hollan, et al. (2000, p. 179), using cognitive ethnographic methods to study practices presupposes "technical expertise in the domain under study." Given such knowledge, observations of agents immersed in cognitive events may well prove sufficient to understand how they perceive, experience, and emote a given situation. On such a view, we are reluctant to accept the assumption that verbal data somehow reflects the first-person perspective better than other kinds of behavioral data. What warrants the epistemological distinction between the researcher perceiving one kind of behavior (talking) and another kind of behavior (acting)? What is it that endows verbal behavior with the unique quality of being "first-person"? The first-person is a theoretical reconstruction, and basing that on what is said, rather than what is done, depends on a linguistic and philosophical tradition's adoration of the word.

Conclusion

The CEF represents an important opportunity for the development of a theory of meaning that is grounded in practice, but provides an inadequate account of agent-environment mutuality. This is evidenced by its use of semiotics and its overemphasis on the agent-world asymmetry in its assumptions 1 and 3, where the agent is active and the environment is merely acted upon. This recreates problems that have already been addressed by the enactive approach as it has been developed from its early focus on autopoiesis and constructivism to the interactive forms of sense-making. This process involved the convergence of the enactive and ecological approaches. For CEF to succeed as a path forward for the enactive approach, it must first align itself with the enactive approach as it exists today. That is, it should embrace an ecological approach to meaning.

One of CEF's major promises to embodied cognitive science is that it attempts to recover the inner world and its relation to meaning through semiotics. To do so, they fuse semiosis and enactive sense-making together as a kind of embodied practice. However, this aspect of CEF overemphasizes the centrality of the agent as the source of meaning. While CEF provides a detailed account of an individual's inner experiences of meaning-making, no parallel account is provided of the world being made sense of. An asymmetrical micro-phenomenological account this strong is difficult to distinguish from a representational one, where the agent's innermost processes are responsible for filling their world with meaning. To combat this, a micro-phenomenological account should be paired with accounts of micro-ecology and micro-affordances.[12]

For every micro-phenomenological explanation, there is a micro-ecological one to match it. If we replace Piercian semiotics with an ecological account of *languaging*, a micro-ecological approach to meaning (Steffensen & Harvey, 2018) better captures Stapleton's et al. (2016) ecological-enactive approach and lays the groundwork for a more robust account of embodied practice. Assuming that every agent is responsible for

enacting their own meaningful world downplays the myriad forces that push, pull, limit, and expand our experiences. While agents have the choice to change their circumstances, many of us are not aware of that and simply play the hands that we've been dealt. This more accurately captures the everyday experiences of most humans. This is not a damning critique of CEF, but an argument to re-align the project with the social, ecological, and ethical dimensions of human living.

Practice is meant to "integrate into the study of cognitive processes all the resources accumulated or sedimented throughout the cultural-cognitive ecology," (Poizat et al., 2023, p. 110) yet the CEF lacks an account of ecology. Practice is at the grounds of embodied cognitive science, but it reveals more than the importance of pre-reflective awareness and the units of our experiences. In fact, the most interesting revelation of a practice-based theory of life is the relationality of the world.[13] It is because of the relational situations we find ourselves in that we have the experiences that we do. An individual enacts their world (as they experience it) as a result of the place they find themselves in. Pre-reflective awareness is one aspect of our embodied existence, but it is not any more essential than the conditions in which a self-reflective being could arise in. We can discover both ourselves and our world through practice.

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Notes

1. Michaels & Palatinus (2014).
2. For a detailed account of the relationship between CEF and distributed cognition, see Theureau (2020).
3. See Fultot et al. (2016) with responses from Stapleton et al. (2016) and Di Paolo (2016).
4. See Thompson (2021) for a comparable enactive account of concepts through Buddhist Philosophy.
5. Di Paolo et al. (2017), pp. 227–229. See also Di Paolo (2016) and Ward & Stapleton (2012).
6. For detailed accounts of participatory sense-making, see Cuffari et al. (2015) and Di Paolo et al. (2018).
7. For more on this, see Enaction and Ecological Psychology: Convergences and Complementarities (Di Paolo et al., 2021 and McGann 2021).
8. See Kelso & Engstrøm (2006) and Engstrom & Kelso (2008) for a thorough description of this.
9. Barandiaran, Di Paolo, and Rohde (2009). See McKinney (2020) for examples of agent-environment symmetry and asymmetry in the ecological and enactive approaches.
10. For enactive accounts of ethics and social justice, see Di Paolo and De Jaegher (2021) and Maiese (2021).
11. The mentalist assumptions of Peirce are for instance expressed in his later discussion of the interpretant: "The [Dynamic] Interpretant is whatever interpretation any mind actually makes of a sign. […] The Final Interpretant does not consist in the way in which any mind does act but in the way in which every mind would act. That is, it consists in a truth which might be expressed in a conditional proposition of this type: 'If so and so were to happen to any mind this sign would determine that mind to such and such conduct.' […] The Immediate Interpretant consists in the Quality of the Impression that a sign is fit to produce, not to any actual reaction. […] [I]f there be any fourth kind of Interpretant on the same footing as those three, there must be a dreadful rupture of my mental retina, for I can't see it at all" (CP8.315 [1909]; Atkin, 2013).
12. For micro-affordances, see Costantini & Stapleton (2016). For micro-ecology, see Steffensen (2016, 2018).
13. For practice-based accounts of cognition and aesthetics that are world-involving, see Saito (2017), pp. 9–31 and Stapleton (2021).

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