Enactivism Embraces Ecological Psychology

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> Upshot • The authors of the target article seem on the one hand to want to reprimand enactivists for not embracing ecological psychology, and on the other, to criticise them for taking on board some – but not all – of the principles of ecological psychology. In this commentary, I argue that (a) the claim that enactivists have not embraced ecological psychology is false, and (b) that it is coherent for enactivists to take on only some of the principles of ecological psychology, as the two research frameworks have different overall projects. Furthermore, I argue that there is an enactivism-friendly stream of ecological psychology research that is currently yielding exciting results that both broaden the depth of ecological psychology research and bring it into dialogue with enactivism-inspired approaches to understanding perception and experience.

Enactivists and ecological psychology

« 1 » The authors complain that it is "surprising" that enactivism has not embraced ecological psychology (§20) after introducing the Gibsonian concepts of *affordance* (§§7–15) and *agency* (§16). They consider it surprising because of "Gibson's commitments to perception–action mutuality and animal-environment mutuality" (§18). They emphasize that James Gibson understood affordances to reside in not only one part of the animal–environment system, quoting the passage in (Gibson 1979) in which he explains that affordances are neither subjective nor objective properties, and point both to environment and observer.

« 2 » The important point to note here is that the concept of affordance is very appealing to enactivists. This is no coincidence, both ecological psychology and enactivism, as well as what might be considered "orthodox" (because it does not reject representationalism and does not emphasize the importance of self-regulation) embodied cognition research have their roots in Maurice Merleau-Ponty's (1962) exegesis of the role of body in perception (Kaufer & Chemero 2015).

« 3 » The quote in §20 taken from (Varela, Thompson & Rosch 1991, henceforth "VTR") does not take issue with the concept of affordances. Indeed, Thompson even uses the term in several places in his more recent elaboration of the concepts of enactivism (Thompson 2007), and it is a common item to be found in the conceptual toolkits of enactively inspired researchers. The authors' astonishment in §21 is based on a rather uncharitable reading of the VTR quote, which seems to me to also be taken out of context. In the pages leading up to this quote (Varela, Thompson & Rosch 1991: 202–204), they explicitly state (in reference to affordances) that "Gibson's theory has essentially two distinct features. The first is compatible with our approach to perceptually guided action" (203). We can see then that it is certainly not the case that "Gibson has been dismissed by enactivists" (§20).

« 4 » If we go back to the original text where this quote comes from, we see that VTR are not dismissing Gibson's approach, but rather "disaligning" themselves with the Gibsonian explication of the relation between perceptually guided action and animal–environment mutuality. They disalign themselves with this way of explicating the relation because they do not see that animal–environment mutuality is sufficient for direct perception, which, by definition is the responding to a pre-given world. Their claim is that they believe that "this explication" (rather than Gibson's approach in general) "leads to a research strategy that attempts to build an ecological theory of perception entirely from the side of the environment." Now that it is placed in context, it is easier to see the more charitable reading of the VTR quote: given the shared assumption between Gibsonians and enactivists that perception is grounded in organism-environment mutuality/coupling, a focus on direct perception of a pre-given world leads to a research strategy that de-emphasizes aspects of this mutuality/coupling, which enactivists want – to the contrary – to emphasise. This is not a dismissal of the Gibsonian approach, nor a claim that Gibson "was trying to make anything outside of the organism-environment system his unit of analysis" (§21). Rather it is an attempt – respectfully – to make clear where VTR consider the enactive perception story to be distinct from a very close relative with which it might, mistakenly, have been identified.

« 5 » The enactive approach seeks to ground agency and meaning in something more than can be provided by an ecological psychology framework on its own. This is not to deny that a perception of affordances is a perception of meaning in the broad sense. In this regard, I consider enactivists and ecological psychologists to be of one mind. Where it seems to me that they differ is in their assumptions about where this meaning comes from. Due to its aims as a research project that seeks to investigate how much of perception–action can be explained through coupling with the environment rather than internal computations over representations, the ecological psychology project has in one sense a much broader remit than enactivism; it explores perception–action coupling in cases where philosophers are typically loathe to attribute genuine agency or cognition. This is useful research both with respect to developing artificial systems and to understanding more about how human and animal psychology functions. But this does not mean that enactivists ought to embrace all of this research as part of their own project.

« 6 » The enactivist project seeks to give a deeper explanation of perception–action coupling: deeper both in terms of approaching this at a variety of levels/perspectives (cellular–microenvironment, organism-environment, organism–organism) and in terms of grounding this agency in something intrinsic (autonomous) to the system rather than relying on attributing it from an external (heteronomous) perspective (the enactivist position is presented in depth in (Thompson 2007), with accessible introductions to it in Di Paolo & Thompson (2014) and Thompson & Stapleton (2009)). While systems that are tightly perception–action coupled may look very like intrinsic agents, unless this perception–action coupling arises from fulfilling a need they are not genuinely agentive (see discussions in Stapleton & Froese 2015, 2016; Barandiaran, Di Paolo & Rohde 2009). It is precisely the questions

that the authors raise in (§17) with regard to where perception and action come from that enactivism is well placed to investigate and address because it is not limited to answering only in terms of perception–action coupling. The suggestion in (§17) that "some ecological psychologists are beginning to see foraging as the defining behaviour of agency regardless of the embodiment, be it *Craniata* or not, biological or not" is welcome news to enactivists. However, we must ask what foraging behaviour itself – if it is genuine and not merely "as if" foraging – is grounded in, and in so doing we return to having to provide an answer in terms of need. This is where enactivists can bring depth to the ecological psychology project.

« 7 » It seems to me that the main point of divergence (rather than mere difference in project) between ecological psychology and enactivism is with respect to the idea of a pre-given world, and that this is what VTR are highlighting when they object to ecological psychologists embracing a direct perception account of the relation between organism and world. The direct perception account embraced by ecological psychology is, on the one hand, attractive to those of an enactivist persuasion but, on the other hand, it troubles them that cashing out perception as just responding to structured information in the environment puts so much emphasis on the environment-information that we forget that the information in the environment is available for us to respond to only in virtue of it being relevant to us. Of course ecological psychology is premised on the fact that this information *is* relevant to us because the whole point is that we perceive possibilities for (our) action. Nevertheless, because the focus for ecological psychologists is what the world brings to this perception–action relation, rather than what the organism brings to it, this results in this organism-environment mutuality being heavily weighted on the side of the environment. Enactivism on the other hand, might be seen – to ecological psychologists' distaste – to be more heavily weighted on the side of the organism. It seems to me that it is this difference in weighting – a difference in asymmetry of the organism-environment relation – that is at the heart of the critique in this commentary and that drives their charge that enactivism neglects the importance of mutuality (§21). This is, however, a difference in theoretical focus rather than a substantive disagreement: what is most important for both – as the authors of this article rightly point out – is the organism-environment *mutuality*.

« 8 » It is not the case that ecological psychologists must reject any contribution from the organism side, indeed Gibson's own engagement with Eleanor Gibson's perceptual learning theory proposes that changes on the organism side can increase the perceptual discriminations that we can make (Gibson & Gibson 1955). Enactivism-inspired approaches go further in attempting to spell out exactly how an organism-environment mutuality can arise in the first place enabling the perceptual relation (i.e., making it the case that the organism can perceive anything), and then spelling out exactly what role the features of the organism play in determining what parts of the world are able to be perceived. The focus is then on the organism rather than the environment, firstly because the environment as understood as part of this perceptual relation – i.e., the part of the world that is perceived/available to be perceived by the organism rather than the "objective" environment – is dependent on that organism. And secondly, because agency, rather than mere perception, is of critical importance to enactivists – and the asymmetry between organism and environment must lie on the side of the organism, at least much of the time, in order for an organism to qualify as an agent (Barandiaran, Di Paolo & Rohde 2009; Stapleton & Froese 2015).

Enactivism-friendly ecological psychology

« 9 » It is for these reasons that both enactivists and more philosophically inclined psychologists have been drawn to Anthony Chemero's reframing of the affordance relation in terms of a relation between abilities and features of situations (see Chemero 2001, 2003, 2009). While incorporating the explanatory power of the organism-environment relation and its objective nature (see also Heft 2001), this reframing emphasizes the fundamental relationality of the term "environment" that is otherwise apt to become somewhat underplayed in talk of responding to structured information and the like. Chemero's position also provides a way (I suggest) to bridge the barrier between ecological psychology and enactivism with respect to the realism proposed by ecological psychology due to affordances (and therefore "meaning") always being available in the environment whether they are perceived or not (§13) and the more "constructive" enactive concept of sense-making in which features of the environment (or to be more precise the agent–environment system) only have meaning in virtue of the role that they play for that system. Of main importance to us here is that Chemero's position provides "[…] a form of realism about meaning, in which meaning (affordances) is a real aspect of the world and not just in our heads, as indirect theories of perception maintain" (Chemero 2003: 194) but that also addresses the distinction between physical location and a niche, and the mutuality of animals and environments such that "[a]n animal's abilities imply an ecological niche. Conversely, an ecological niche implies an animal" (Chemero 2003: 191). To a friendly eye, this way of framing Gibson's position starts to make it look a lot more compatible with the enactivist concept of sense-making. This combination, and development, of elements from both ecological psychology and enactivism might be better termed "affordance theory" so as to emphasize the shared concepts from both streams without requiring researchers from either to accept the historical dogmas of the other.

« 10 » Chemero argues that affordances, like Daniel Dennett's hippopotamus (Dennett 1998), are "lovely" (Chemero 2009: 149) in that they are present so long as there is at least one individual available to perceive them. So, a cup is still graspable so long as there is at least one individual on earth with hands to grasp it, even if they never come into perceptual contact with this cup in their lifetime. And, contrariwise, this affordance relation of graspability ceases to exist once all instantiations of one of the relata cease to exist, e.g., there are no more graspable things, or no more individuals capable of grasping. Note that this runs contrary to the authors' claim in §42 that sucrose has the potential to be a nutrient even if there are no *extant* bacteria by relativizing "potential" to the existence of a form of life (see Rietveld & Kiverstein 2014: 330) rather than an occur-

rent relatum, as seems to be their accusation against the enactivists (§§41f). This way we secure an ever-present world for ourselves – an environment that is "real and objective" in the sense that ecological psychologists want, but that is also fundamentally in relation to the abilities of the organism that give it its affordance power or "meaning," whether this has developed phylogenetically or ontogenetically. This is important not only for uniting the resources of ecological psychology and enactivism but also to develop a much richer account of how our world can be constituted by affordances. We get, as a result, an ontology of affordances that are abstract and concrete rather than "potential" and "actual," which should go some way to dispersing some of the worries the authors of the target article have with regard to the enactivist concept of sense-making (§40–44).

« 11 » However, the distinction between abstract and concrete affordances can be developed into a yet more subtle taxonomy of affordance relations. In a recent paper (Costantini & Stapleton 2016), we drew on the conceptual apparatus provided by Chemero and further phenomenological and enactivism-inspired developments of affordance theory (by de Haan et al. 2013; Bruineberg & Rietveld 2014; Rietveld & Kiverstein 2014) to help tease out the distinctions revealed in cutting-edge micro-affordance psychology research. In so doing, we can start to unpack the differences (and explore the somewhat surprising dissociations) between perceiving an affordance (e.g., perceiving something as graspable), perceiving something as a soliciting affordance (e.g., experiencing it as demanding grasping), and bodily responsiveness to demandingness (e.g., activation of the bodily components of the specific grasping response). These considerations open ecological psychology to a subtler consideration of the perception of affordances and the role of embodiment in affordance perception.

« 12 » It seems to me that much of the research developed in the ecological psychology approach, and the conceptual tools used, are valuably incorporated by enactivists to flesh out a full framework of life and mind. Likewise, ecological psychology can benefit from the depth of the enactivist enterprise. This is not to say that there should not be careful discussion of exactly how we should cash out the concepts of perception, environment, agency and mutuality (and indeed "affordance"). These discussions can benefit both sides, provided we respect ecological psychology and enactivism as different projects that may sometimes share, and sometimes differ in, emphasis and scope, but can nevertheless embrace and fruitfully inform each other.

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Across the Uncanny Valley: The Ecological, the Enactive, and the Strangely Familiar

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> Upshot • I contrast enactivist and ecological perspectives on some of the themes raised by the authors. I discuss some of their worries about the notion of sense-making and other epistemological aspects of enactivism.

« 1 » Ecological psychologists and enactivists stare at each other across an uncanny valley – the convergences between the two approaches are many and strong, so when disparities unexpectedly crop up, they provoke an uneasy feeling of bemusement. In this context, the target article by Martin Fultot, Lin Nie and Claudia Carello is a welcomed step towards the long overdue dialogue between the two perspectives.

« 2 » For many years, ecological psychology has critically engaged the representationalist theory of the mind. The same can be said about enactivism. Both camps are used to confronting an alternative with which they see little in common. How do they deal with an alternative with which there is very likely a lot in common? One can expect misunderstanding when these two schools face the task of evaluating each other and working out their differences. Are we saying the same things with different languages?

« 3 » I will not address all the issues raised in this article. I am hopeful that the dialogue will gain momentum and that there will be further opportunities to clarify mutual worries.

« 4 » The central claim of ecological psychology is that the environment is rich enough to explain the degree to which an agent is aware of the world. This statement is critical of the prevailing view that considers the environment as poor and to be supplemented by what the authors describe as "mental construction." Apart from some broad agreement, enactivists would have two things to say about this central statement.

« 5 » The first comment is that not only is the environment rich enough, it is in fact too rich! Perception always involves a massive reduction of the inexhaustible potential sources of influence that can impinge on an agent to a rather limited set, the set of influences to which the agent is at this moment sensitive, and which depend massively on biological and socio-cultural factors as well as on the agent's motivations and situation.

« 6 » If so, then the main problem of a psychology of perception is not to establish the availability of environmental information and stop there, but to explain how and why the organism responds *perceptually* only to the particular subset that has any meaning to it at this moment. It is fine to say, as the authors do, that what is relevant are not the animal-neutral environmental energies but "animal-referential variables" (§5), but this is to beg a question. What is relevant depends not only on the organism in a generic way, but specifically on what the organism does, which in turn depends on how it currently engages its environment as an agent. A naturalistic theory of agency, such as the one developed by enactivism, could be a contribution to this problem. In addition to a deep understanding of the environment, we need a theory that pays attention to the perceiver as an active agent and her capacity to engage her world meaningfully. "Active"