

**Avoiding organismic asymmetries in ecological cognition:
Analysis of agent-environment couplings with eco-
physical variables**

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Avoiding organismic asymmetries in ecological cognition: Analysis of agent-environment couplings with eco-physical variables

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Abstract

The target article promotes an enactive approach to human behaviour, highlighting the phenomenology of agent-environment coupling, and is rooted in the course of experience from pre-reflective self-consciousness. In our comment we debate the idea that experience does equate with subjectivity. Such an equation reflects an organismic asymmetry locating behavioural organisation in the subjective mind, interacting with the objective world. In contrast, an ecological realist perspective considers that human behaviour and experience should be captured at the ecological level of analysis, requiring investigation of eco-physical variables. To achieve this aim, researchers need to avoid organismic asymmetries, and instead study performance variables that underpin the symmetry of the agent-environment system. We also debate the place of language and the fact that verbalisation does not equate with subjective experience. According to James Gibson, language focuses on ‘knowledge about the environment’ and not ‘knowledge of the environment’ needed by any autonomous, self-regulating organism, making their way in the world. Last, the target paper promotes the course of information to complement the course of experience, without fully explaining how to deal with potential incongruence and divergence between findings emerging from verbalisation and behavioural aspects of realizing a given activity (the difference between ‘what we say, what we do’). We conclude by considering how our ecological perspective could offer pathways for the presented enactive approach to go beyond the course of information.

Keywords

Organismic asymmetry, ecological dynamics, knowledge of environment, knowledge about environment, verbal reports, behavioural incongruence

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Introduction

Poizat et al. (2023) promote an enactive approach to human behaviours, highlighting the phenomenology of agent-environment coupling, notably an enactive anthropology, and the ‘course of action’ method (Theureau, 2015). The anthropological dimension relates to human agency and the need for a comprehensive analysis of human activity, making sense for those who ‘live it’. The enactive dimension specifies the anthropological orientation: interest in how agents find meaning and value from their interactions with environments in which they act. With this purpose, the article of Poizat et al. (2023) argues for a micro-phenomenological and semeiotic approach for studying cognition ‘in the wild’ and ‘from within’. This approach to enaction is rooted in the course of experience from pre-reflective self-consciousness. Methodologically, the agent’s behaviour is recorded in the

course of action, and those recordings are used to support subsequent self-confrontation interviews about their experiences (Theureau, 2015). Then, those micro-phenomenological interviews are analysed, based on the Peircean semeiotic (pragmatist) method. Semeiotic (pragmatist) methods propose

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a generic model to describe cognition ‘in the wild’ (defined as emerging during continuous interactions with the environment) and from within – the hexadic sign – derived from Peirce’s fundamental categories. The expression of hexadic signs constitutes the elementary unit of meaning for the actor. The extended analytical ‘thought-sign’ hypothesis (developed within the course-of-experience framework) connects phenomenology and Peirce’s semeiotic approach and seeks to remain consistent with enactive assumptions.

The main points of interest developed by Poizat et al. (2023) relate to their multidisciplinary approach for studying cognition ‘in the wild’ and ‘from within’ using enaction, micro-phenomenological and semeiotic (pragmatist) methods. They also consider cultural practice as the main unit of analysis. This approach led the authors to study the phenomenological-cognitive-cultural system (in which human cognition is embedded) through the course-of-experience framework. This signifies that brain–body–world coupling was considered in the social and material world (Hutchins, 2008). Although those valuable points of interest are to be acknowledged, we debate the idea that experience equates with subjectivity. Such a view reflects an organismic asymmetry locating control in the subjective mind of the individual interacting with the objective world. Second, we also debate the place of language in their methodology, highlighting the idea that participant verbalisation about actions, using a Peircean semeiotic (pragmatist) method, does not necessarily equate to subjective experience. Third, we query the potential incongruence and divergence between findings emerging from using verbalisation methodologies and observing behavioural aspects of activity, which is termed the ‘course of in-formation’ by the authors.

Experience does not equate with subjectivity

In their article, Poizat et al. (2023, p. 111) propose that: ‘*experience refers to what an agent is subjected to at any given time and place, that to which s/he has access in the first person* (p. 2) (Depraz, 2003). *Lived experience means first-hand acquaintance with, and account of practice, with an emphasis on its immediateness and embodiment, and its individual nature*’. For the enactive approach, this idea indicates that experience is what an individual perceives with the addition of something, which is dependent on ‘*that body’s being a subjectively lived body*’ (p. 15) (Thompson, 2011). This idea rests on the central claim that some important features of our experience are subjectively constituted.

However, experience does not equate with subjectivity because subjectivity reflects an *organismic asymmetry* locating behavioural control in the subjective mind interacting with the objective world. Organismic asymmetry is characterized by subversion of the organism–environment system as the appropriate level for explaining human behaviour, in favour of a biased preference for organism-

centred explanations (Brunswik, 1955). The more symmetrical notion of the organism–environment system has implications for understanding cognition and experience. Some approaches to psychology tend to be predicated, tacitly and explicitly, on a number of dualisms of which *mind–body* is the most common; hence, the need for an ‘embodied cognition’ manifesto. In ecological psychology (e.g. Richardson et al., 2008), these multiple dualisms are reflections of an overarching dualism: the view that an organism (such as people and other animals) and environment can be theoretically investigated and explained as logically distinct, separate systems (Jarvilehto, 1998; Turvey & Shaw, 1999). The dualist view localizes cognitive processes in one’s mind, not in the surroundings. Consequently, a separation between organism and environment originates explanations of cognitive activity centred within (one level of) the organism. However, in such an approach, an organism is considered separate from environment, and the partial system (organism) is taken to represent the whole system (i.e. environment–organism system). This perspective leads to a clear tendency to find explanations for behaviour through variables that are putatively located within the organism and beyond direct observation (Richardson et al., 2008). These variables can be implied by studying ‘subjective’ experience which is believed to be located internally and cannot be directly observed. Contrary to this explanatory tendency, in the ecological approach (Gibson, 1979), the organism and environment are mutual (one cannot exist without the other) and reciprocal (one implies the other) systems. The existential influence of the organism on the environment and the existential influence of the environment on the organism are both equivalent and complementary (Gibson, 1979; Richardson et al., 2008). More than just mutual and reciprocal, however, organism and environment are a deeply integrated whole (Turvey, 2007), such that the organism-in-its-environment (i.e. the organism–environment system) should be taken as the appropriate unit of analysis for studying behaviour (Turvey & Shaw, 1999). Jarvilehto (1998) suggests that, from an ecological perspective, behaviour is a continual reorganization of the organism–environment system, not an interaction of organism and environment. Cognitive processes are different aspects of the dynamical re-organization of the organism–environment system, not localised processes of the organism, such as the ‘subjectivity of the lived body’.

From a Gibsonian point of view in ecological psychology, behavioural explanations that focus on the poles of the organism–environment continuum (i.e. in the subjective or in the objective) neglect the key idea that it is a complementary whole. To focus on the objective world, or on the subjective lived body, is not helpful to understand behaviour because these are only parcels of the whole system. Doing that, scientists are left with the immense challenge of having to explain how the subjective mind is commensurate, or

interacts, with the objective world. So far there has been no convincing explanation for this incommensurability. However, following Gibson's theorizing, there is no commensurability problem between physics, psychology and biology (Turvey & Shaw, 1999).

Ecological realism considers that human behaviours and experience should be captured at the ecological scale of analysis: the organism–environment system is considered as the most fundamentally relevant unit of analysis for understanding human behaviours (Araujo & Davids, 2018). Instead of recording experience 'from within one part of the system' through a first-person approach, the ecological dynamics framework uses concepts and tools of dynamical systems to understand phenomena that emerge at an ecological scale, underpinning the symmetry of the organism–environment system and requiring investigation of *ecophysical* variables. As mentioned previously, symmetry of the agent–environment system infers mutuality and reciprocity, meaning that organism–environment couplings emerge synergistically, rather than independently (Davids & Araújo, 2010). In summary, human behaviours and experiences from an ecological dynamics framework can be studied by addressing how agents develop and sustain a functional interplay with the environment. These agent–environment systems are poised in stable states and can destabilise and reorganize over time, allowing them to switch between stable states of organisation (Araújo et al., 2006).

Verbalisation does not equate with experience (i.e. perceiving and acting)

Another problematic issue concerns the place of language and the idea that verbalisation equates with experience. In the course-of-experience framework, pre-reflective self-consciousness is defined as the part of one's experience that each actor can 'show (for example by miming or gesturing), tell and comment on' (Poizat et al., 2023 p. 112). The communication of this information can be made to an observer-interlocutor at any instant under favourable conditions. The use of the term 'pre-reflective' in an enactive explanation of behaviour indicates that showing, telling or commenting on lived experience does not entail thinking about it, reflecting on it, or establishing causal reasons. Pre-reflective self-consciousness 'adds nothing' to cognitive activity. To comment on this idea, we again resort to the key ecological ideas (Gibson, 1979), who argued that language encompasses '*knowledge about the environment*', which provides a categorical description of the environment. This type of knowledge differs from '*knowledge of the environment*' which is needed for the autonomy of organisms in making their way in the world.

Virtually all theories of perception have assumed that the objects of which organisms are immediately aware, are based on sensations. Which then are mentally represented and

constructed into perceptions. Traditional approaches to cognition imply that these subjective objects provide organisms with knowledge about the external world but only after an internal reconstructive process is applied to them (e.g. identifying, retrieving from memory, inferring and interpreting). In other words, traditional psychology held that what are directly perceived are mental representations, and it is only indirectly, through the mediation of these representations, that we have access to the external world (e.g. Fodor & Pylyshyn, 1981).

Gibson's theorised that perception of environmental objects, places and events is based on ecological information directly available in the environment, challenging this widespread assumption (Gibson, 1979). Gibson's (1979) ecological psychology is based on a form of direct realism, maintaining that the surrounding environment could be perceived directly, on the basis of surrounding information, and not indirectly, on the basis of internalised sensations and mental inferences. Importantly, Gibson (1979) never argued that indirect (mediated) perception (or awareness) was impossible, but he clarified a strong distinction between perception based on detected information and perception based on presented language, pictures and other representations.

In ecological psychology, there is a deeply intertwined relationship between action, perception and cognition, since the process of detecting information is carried out by a functional system distributed throughout an individual's body. Continuous adjustments of peripheral organs, such as turning the eyes and head, touching and manipulating objects and moving in space, play as significant a role in direct perception as the activity of the brain. Awareness of the environment is based on continuous adjustments of the performer's perceptual systems to the information surrounding them. This adjustment includes a range of processes, all of which may be described as the simultaneous detection of persisting and changing properties of surrounding stimulation, picking up invariants from disturbances of the array of information (Gibson, 1979). For example, Gibson (1979) considered vision to function as a proprioceptor. With such a functionally integrated system, performers can perceive themselves, their environments, and the changing relationship between themselves when moving and their surroundings. Gibson (1979) also introduced the notion of *affordance*, a term that simultaneously captures and couples objects and events of the world with an individual's skills (Turvey & Shaw, 1999). An affordance is a combination of invariant properties available in the environment, taken with reference to an organism (its capabilities) that specifies an opportunity for action (Turvey, 1992). Consistent with Gibson's (1979) ecological notion of perception–action coupling, affordances are properties of the environment whose actualization requires an individual with reciprocal effectivities (skills or capabilities). An effectivity is the dynamic actualization of an ability by an individual, with respect to a particular opportunity for action

(Turvey & Shaw, 1999). For an affordance to be experienced there must be an affordance-effectivity fit of an organism and environment, harnessing perception-action coupling and implying the existence of an ecological niche.

The fundamental hypothesis of Gibson's ecological approach to perception and action is that, where specific information about environmental objects, places, events and people is available and picked up, performers will perceive these entities to support their actions. This is what Gibson (1979) meant by the term direct perception, conducive to 'knowledge of the environment'. This type of knowledge is not formulated in pictures or words, because it is this knowledge that makes the formulation of pictures and words possible. However, even though it is tacit, knowledge of the environment, obtained through direct perception is not personal, subjective or private. Information is available in the environment, and it can be picked up by active observers. On the other hand, according to Gibson (1979) '*images, pictures, and written-on surfaces afford a special kind of knowledge that I call mediated or indirect, knowledge at second hand*' (p. 42). This kind of knowledge is intrinsically shared because it involves the displaying and communication of information to others. In all these cases the information on which direct perception can be based is selectively adapted and modified in a display, or through language. The value of these pictures or verbalisations with selected samples of information lies not in the displays or words themselves, but in what they refer to or represent. These mediators are representations; they do not have affordances as objects do, but rather have 'referential meaning' (Reed & Gibson, 1988). They consolidate gains of perception by converting tacit knowledge into explicit knowledge (Reed & Gibson, 1988). The role of explicit knowledge, and the processes that make knowledge explicit, is not to create knowledge out of merely potentially meaningful input, nor even to select meanings to assign to inputs. The role of indirect forms of knowledge is to make others aware and to share knowledge. They do not equate with experience. The consequence is that methods using verbalization as a process to capture experience, miss what experience is. Verbalization is in itself an experience, a first-person experience, relatively independent of the pre-reflective contents represented in the words verbalized.

Epistemological and methodological cautions and limitations of the course of in-formation

In their article, Poizat et al. (2023) also proposed the course of in-formation to complement the course of experience. They promoted the course of in-formation as a theoretical object to address the dynamics of structural coupling or the in-formative interactions between an actor and environment. Although the

course of in-formation has been considered, Poizat et al. (2023) did not fully explain how to deal with potential incongruence and divergence between findings emerging from verbalisation and the behavioural aspects of realizing a given activity. Indeed, following the course-of-experience framework, the primacy of data is given to the pre-reflective contents represented in the verbalizations of the actor. It is assumed that behaviours complement those verbalizations, but little methodological guidance is provided to investigators navigating the complexity of understanding how those first- and third-person data are intertwined. Thus, when incongruence and divergence are observed between data of a different nature (for examples in sport science, see Rochat et al., 2020; Sève et al., 2013), it could be questioned whether differences arise from methodological issues (e.g. in collecting, sampling and analysing data) or epistemological considerations (e.g. experience from within vs. experience as a symmetrical organism-environment system; for detailed discussion on this topic, see McGann, 2020). Many issues arise about the status (primacy) of different types of data (verbalisation vs. behavioural observations) and about the type of analysis (e.g. independent and complementary) and their potential intertwining.

Conclusion

The article of Poizat et al. (2023) raises some important issues, discussed in this commentary. They proposed the integration of micro-phenomenological data, focussing on important questions that need to be considered in the cognitive sciences. Their key ideas suggested that experience equates with subjectivity, highlighting the role of language, assuming that verbalisation, using Peircean semeiotic (pragmatist) methods, equates with subjective experience. We questioned the assumptions behind intertwining verbalisation and actions, conceptualised as the 'course of in-formation' to complement the 'course of experience'. Beyond intertwining the first- and third-person approach, our questions address the possible rapprochement between enactive and ecological approaches. Some researchers have proposed the idea of an 'ecological enactivism' or 'ecological enactive' approach (Heras-Escribano, 2019; Kiverstein & Rietveld, 2018), supporting a 'productive synthesis' (Baggs & Chemero, 2018). Despite some shared interests that have been proposed (e.g. Adé et al., 2022; Bruineberg et al., 2021; Seifert et al., 2016), we have 'red-flagged' several epistemological and methodological issues that limit the potential rapprochement between ecological and enactive frameworks. We conclude by suggesting how an ecological dynamics perspective could offer pathways for the presented enactive approach to go beyond the course of in-formation, notably in investigating dynamics of action by considering methodologies used to study emergent behaviours in complex dynamical systems.

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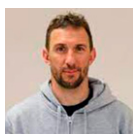
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