Oaoer 255 OPC on “Coordination produced cognitive niches, not just experiences: A semi-formal constructivist ontology based on von Foerster” by Konrad Werner.

Making use of contact, niches, and coordination

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Upshot: The eigenforms of Von Foerster, like the concept of invariants in ecological psychology, have proved useful in stimulating both theory and empirical work in the study of perceptually guided action. The target article offers a novel elaboration of the core idea of invariance in flux. I offer three sketches that suggest how the novel formalism might provide a useful stimulus to thought in specific domains: the use of names, Buddhist accounts of perception, and the sharing of experience in intense interpersonal interaction.

Von Foerster and Gibson: the search for invariants

1. Konrad Werner reimagines a proposal by Von Foerster that was intended to account for the obstinate persistence and stability of objects within an "observer-included epistemology" (§8). As the interactions between perceivers and worlds are necessarily dynamic, and indeed perception is widely acknowledged now to be a form of active exploration of the Umwelt, Von Foerster appeals to the notion of eigenvalues (or eigenforms) to provide a semi-formal concept that captures the notion of invariance under transformation. Von Foerster, in turn, was drawing on the constructivist epistemology of Piaget.

2. The mathematical formulation speaks eloquently to the idea of invariance within a field that is constantly changing. It thus tries to provide a kind of Parmenidean stability within a field that is all Heraclitean flux, without invoking the magic of representational correspondence demanded by Cartesian accounts in which perception is by individuated subjects of a separate world through the medium of representation. This move is formally remarkably similar to the many attempts within Ecological Psychology to ground perception of stable objects in high order invariants within a field such as the optic array (Gibson, 1973).

3. The reliance upon invariants within a Gibsonian, ecological framework has met with mixed success. It has fared best in accounts of perceptually guided actions, such as throwing, catching, wielding, hefting, and locomoting. In these cases, the invariants adduced typically refer to affordances, or the opportunities provided to an actor through interaction with objects and the environment. More ambitious attempts to provide mathematical or empirically worked accounts of complex activities have not, as far as I know, met with much success in extending the formal notion of invariance through transformation. But the notion of invariance has been a useful stimulus to researchers in developing strongly empirical accounts of specific kinds of action. Von Foerster's

original appeal to eigenforms may be thus be cast as a hand-waving encouragement to take a semi-formal mathematical concept, and to return to the complex and messy world of human behaviour, to see if the concept might help to guide inquiry or to refine the questions asked by scientists.

From objects and affordances to connections and niches

4. The target article develops the seed of Von Foerster's idea in a rather different manner. It uses the notion of a cognitive niche to draw an account of subjects and worlds back to the flux of the present, or to "the presentation that we live in" (§21). Where the Von Foerster account was concerned with perception as coordination grounded in observation, the novel account is concerned with perception understood as connection and continuity in coordinated activity. Cognition itself is considered as "a process of setting up and maintaining a connection between cognizers and their environments" (§33), where the term "environment" is not to be taken in a purely spatial sense, but rather in terms of continuous and significant reciprocal contact. Part of the environment so considered, is of course, the co-presence of other cognizers. This necessary intertwining of the sense-making activities of multiple individuals has become familiar under the term "participatory sense-making" (De Jaegher & Di Paolo, 2007).

5. It would be premature and inappropriate to attempt to assess the utility of the semi-formal account provided in the target article. It will stand, fall, or, more likely, develop and change as it finds application in consideration of specific phenomena within specific domains. In this initial presentation, it goes no further than to sketch the manner in which an apparently stable world might arise from the coordinated activity of cognizers who are reciprocally connected; the set of connections themselves constitute the cognitive niche (§53).

6. In the spirit of encouragement to try out this idea on specific worked examples, the following are three frankly speculative observations drawn from radically different areas, each of which seems to demand something like a notion of connection, reciprocal contact, and stable persistence through activity. I do not know if the proposed semi-formalism can be of service here, but it just might help to extend the discussion to specific contingent examples.

Names

7. In conversational dialog, one does not normally use the name of the other conversational participant(s), except at the beginning ("Hi Jane!") and end ("See ya later, Bill!") of an encounter. The conversational exchange thus has something like a formal structure, delimited by the use of names. If names are used within the time delimited by these end markers, it has the curious effect of making an object, temporarily, of the named one. This may be used to assert authority ("really, Fred, I'm disappointed in you"), or to coordinate with processes and structures that are outside the bounds of the present conversation ("and William, you will drive the getaway car").

The conversation thus represents something like a shared niche in which the participants are in continuous reciprocal contact with each other. Names either break this structure or point outside of it. This example might encourage us to consider what the boundaries of a niche are and how they might be recognised or even signalled in specific instances.

Perception

8. Many schools of Buddhist philosophy describe the originating preconditions of phenomenal experience as arising from a conjunction of three things: a sense organ (often the eye is provided as an example), an object (that to be perceived, not as an independently existing entity) and contact (Sanskrit: Sparsha, Pali: Phassa). This is one of the means by which anything at all comes into being, and thus it speaks of the ground from which the "presentation that we live in" arises. This account of perception is not dependent on any closed domain of experience, or cogito, nor does it admit of decomposition into an interior and exterior realm linked through the medium of representation.

9. I do not know if the formalism of the target article works here, but the phrasing of §53 "an object shows up when coordination of connections brings forth an entity with boundaries all around" strongly suggest to me that there might be a way to employ the proposed formalism in a contemporary interdisciplinary account of perception that works along these lines. Certainly, if we are to provide alternatives to the still ubiquity of Cartesian representational accounts of perception, then contact, presence and presentation must become terms of art that can be wielded more robustly than is currently the case.

Shared experience

10. A solipsistic account of experience denies any reality to the notion of genuinely shared experience. Solipsism is, of course, a straw man, and not a position most are willing to defend. It is, rather, a logical dead end arrived at through certain problematic presuppositions, including the distinctness of minds, and hence the separateness of the experiences of different individuals. The detached, introspective stance of a solitary individual, such as Mr Husserl, seated in his chair, contemplating the aesthetics of his morning coffee, lends itself well to the solicitations of solipsism. The mutuality that is involved in the richest forms of human interaction such as fighting or sex do not seem to support this kind of detachment from the world, or of the participants from each other. In such intense interpersonal exchanges, contact and reciprocity are fundamental elements. Boundaries are obliterated. "Mind is not an isolated kingdom" (§5), and, to that one might add experience is neither transcendental nor discrete.

Concluding thoughts

11. These three specific examples provide food for thought. How might a semi-formalism, of the kind here, be worked into rich and insightful accounts of everyday experience? In the cognitive sciences, formalisms are not infrequently stepping stones to empirical agendas. They provide ways of talking about still poorly-articulated

concepts that are more stable than mere words. They constrain and encourage thinking in novel ways. I do not know if the observations made here may link up fruitfully with the welcome novel formulation Werner has provided. Two of the examples I discuss relate to interpersonal coordination, and not object perception. But I feel that any innovation like that on offer here will really come into its own only when, and if, it is brought to bear in the description and understanding of the familiar.

References

De Jaegher, H., & Di Paolo, E. (2007). Participatory sense-making. Phenomenology and the Cognitive Sciences, 6(4), 485-507.

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The author

Fred Cummins conducts interdisciplinary research into the business of joint (unison) speaking, as found in practices of protest and prayer. This topic raises issues of collective intentionality that seem to be best addressed within an enactive framework. It also spotlights such rewarding topics as rhythm, speech-gesture and speech-music relations, synchronized action, and the aesthetics of ritual practices. He works at University College Dublin, where he co-directs a postgraduate cognitive science programme.