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Ungrounding Symbols in Development

The symbol grounding problem has been challenging cognitive sciences for several decades. Its difficulty might stem from the way it is posed: the problem is how to ground abstract, arbitrary, formal symbols, the existence of which is assumed. In the truly embodied approaches to cognition this assumption is not obvious. Symbol vehicles are produced in dynamical interactions, inextricable from other multimodal behaviors and real dynamical events. The problem becomes how they ever become symbolic, i.e., in certain aspects independent from the ongoing dynamics of interaction; how they become arbitrary, abstract and acquire formal properties. In other words, in truly embodied approaches to cognition we face the ungrounding problem.

Language development is a particularly opportune domain to trace the ungrounding process: it happens all the time and it is there for us to observe and measure. From very early on infants are immersed in rich multimodal coaction with caregivers, with language always present as part of this coaction. At some point in development the utterances, however, begin to differ from other behaviors in their control powers for interaction and gain their fully symbolic nature and potential.

In this talk we propose that a helpful approach to trace ungrounding process can be forged by integrating the dynamical systems perspective on control in living systems (Pattee, 1969, 1982; Rączaszek-Leonardi, 2016; Rączaszek-Leonardi & Kelso, 2008) with Deacon's view of the semiotic structure of symbolic reference (Deacon, 1998, 2011). Dynamical systems approach provides a viable connection between informational structures and dynamics, in which the former are constraints for the latter, while the semiotic perspective allows for nuancing the kinds of constraints and clarifying the semiotic infrastructure, which scaffolds and maintains symbolic functioning. I will illustrate how this integrated approach may begin to give justice to the complexity of the process of symbol emergence in development, lead to novel hypotheses about the way it unfolds, and provide methods for testing those hypotheses.

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