

# Information and Dynamics in Brain-Body-Environment Systems

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**Abstract.** Over the past 25 years, it has become increasingly clear that the proper unit of analysis of behavioral mechanisms is not simply a brain, but rather an entire brain-body-environment system. However, the full consequences of this perspective have yet to be widely appreciated. Traditional conceptions of perception, action, learning, and the nature of cognitive processes are potentially transformed by such a perspective. Unpacking these consequences requires coming to grips with the transient, multiple timescale, non-autonomous character of coupled dynamical systems and the relationship between dynamical and informational descriptions of such systems. In this talk, I will examine some of these issues within the context of one particular question: Under what conditions do we wish to say that an internal state of a brain-body-environment system represents?

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