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Author
Spivey, Michael J.

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Michael J. Spivey
Department of Psychology
Cornell University
Ithaca, NY 14853
spivey@cornell.edu

A recent movement in the cognitive sciences is encouraging that we discard the computer metaphor of the mind in favor of a continuous (both in time and in feature-space) dynamical framework for describing cognition (e.g., Port & Van Gelder, 1995; Spivey, in preparation; Thelen & Smith, 1993; Van Orden, Holden, & Turvey, in press). As much of the advancement of this metatheoretical framework has taken place in motor movement research (e.g., Kelso, 1995), a significant proportion of the cognitive science community has conveniently been able to ignore it, more or less. However, as contemporary theorists (e.g., Ballard, Hayhoe, Pook & Rao, 1997; Barsalou, 1999; Glenberg, 1997) renew an emphasis on the physical embodiment of cognition, and the pivotal role of action in all thought, it becomes clear that motor movement -- and especially the theoretical advances of dynamical systems that have come with it -- need to figure prominently in our treatment of mind.

In this talk, I will briefly touch on a number of experimental findings, from a few different cognitive psychology laboratories, that appear more consistent with a dynamical-systems perspective on cognition than an information-processing one. These findings come from some of the core areas in traditional cognitive psychology, including categorical perception, visual attention, spoken word recognition, and sentence processing. When placed in the context of neurophysiological evidence for distributed neuronal population codes coalescing over time, and computational demonstrations of attractor network dynamics, these findings converge on a description of the mind as a graded, probabilistic, continuously flowing “event”, rather than a discrete logical stage-based “object”.

Without abandoning the vast empirical database produced by decades of traditional cognitive psychology, the new framework encourages an extension of these inquiries using continuous on-line experimental measures that can reveal the real-time dynamical nature of cognition, perception, and action. Additionally, a computational characterization of those temporal dynamics can be provided by attractor networks, which loosely approximate both the neurophysiological properties and the temporally continuous nature of real biological neural networks.

In a dynamical (as well as ecological) psychology, we are compelled to treat mind as a continuous nonlinear trajectory through a high-dimensional state-space; not as a box full of boxes full of rules and symbols. As the debate continues (cf. Dietrich & Markman, 2000), the benefits of this new perspective will be witnessed in the decades to come.

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