

Coupled dynamics in host-guest complex systems duplicates emergent behavior in the brain

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Abstract

The ability of the brain to organize information and generate the functional structures we use to act, think and communicate, is a common and easily observable natural phenomenon. In object-oriented analysis, these structures are represented by *objects*. Objects have been extensively studied and documented, but the process that creates them is not understood. In this work, a new class of discrete, deterministic, dissipative, host-guest dynamical systems is introduced. The new systems have extraordinary self-organizing properties. They can host information representing other physical systems and generate the same functional structures as the brain does. A simple mathematical model is proposed. The new systems are easy to simulate by computer, and measurements needed to confirm the assumptions are abundant and readily available. Experimental results presented here confirm the findings. Applications are many, but among the most immediate are object-oriented engineering, image and voice recognition, search engines, and Neuroscience.

Keywords – AI, artificial intelligence, complex system, object-oriented, OO, refactoring.