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Richard E Niemeyer* (richard.niemeyer@gmail.com), University of California, Riverside, Department of Sociology, 900 University Ave., Riverside, CA 92507. "*Graphs, Dynamical Systems, Fractals: A Heuristic Framework For Modeling the Structure and Dynamics of Complex Interactions Across Multiple Levels of Analysis*". Preliminary report.

With increasing regularity, researchers across the natural and social sciences are employing network analysis, dynamical systems theory, and fractal geometry to model complex dynamics. As of yet though, attempts to combine the unique insights provided by each of the three mathematical tool-sets into a single analytical model are incomplete. In this talk, we will present a heuristic framework capable of accomplishing such a task. To demonstrate the consequence of this framework, we will discuss its applicability in examining of the biological foundations of human consciousness, the rise and fall of AfroEurasian Empires, and the spread of infectious diseases. (Received September 22, 2010)