University of California, Merced
School of Engineering and Social Sciences, Humanities and Arts
Mind, Technology, and Society (MTS)
Seminar Series

Monday, September 16, 2013
3:00pm-4:30pm
Chancellor's Conference Room KL 232

Dr. Bruce J. West
"Individuality, Imitation and Influence"

Much of the research in Network Science over the past decade has focused on the global properties of complex networks. Studies have determined the relation between network topology and the scale-free degree distribution, as well as the relation between temporal complexity and the scale-free distribution of the time intervals between events. Other investigations determined how global properties, such as criticality and phase transitions, are influenced by committed minorities of various sizes. In today's lecture I will describe the behavior of a model complex network whose interactions are based on the notion of social imitation and whose dynamics belong to the Ising universality class. Research shows that in addition to understanding how the behavior of individuals influence the network's global behavior through committed minorities, the model also reveals how the global behavior of the network influences the decisions of the individual. Finally, it is shown that the influence of the 10,000 elements of the network on an individual can be modeled by a linear fractional stochastic equation whose exact solution fits the results of the numerical calculation extremely well. This latter result may have implications for how to control large complex networks.

Dr. Bruce J. West is the Senior Scientist Mathematics (ST) in the Army Research Office of the Army Research Laboratory, and Adjunct Professor of Physics at Duke University. He received a B.A. cum laude in physics at SUNY@ Buffalo in 1965; an M.S. (1967) and Ph. D. (1970) in physics at the University of Rochester. Before coming to ARO Dr. West was Professor of Physics, University of North Texas, 1989-1999; Chair of the Department of Physics 1989-1993. He received the Decker Scholar Award (1993) and the UNT President's Award for research (1994). Dr. West was Director, Division of Applied Nonlinear Science, La Jolla Institute, 1983-1989. He was Associate Director, Center for the Studies of Nonlinear Dynamics, La Jolla Institute, 1979-1983. He has authored over 300 peer reviewed journal articles and 13 books.

For additional information or questions, please contact: Jeff Yoshimi at jyoshimi@ucmerced.edu