

ROBERT J. GLASS

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Complex Adaptive Systems of Systems Engineering
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a. Professional Preparation

Haverford College	Biology/Ecology	B.S., 1980
Cornell University	Agricultural Engineering	M.S., 1985
Cornell University	Agricultural Engineering	Ph.D., 1988

b. Appointments

2011-2012: William J Perry Fellow in International Security, Center for International Security and Cooperation, Stanford University

2010- present: Senior Scientist, Lead for Complex Adaptive Systems of Systems Engineering, Sandia National Laboratories

2004- 2010: Distinguished Member of Technical Staff, National Infrastructure Simulation and Analysis Center, Lead for Advanced Methods and Techniques Investigations, Sandia National Laboratories

1998-2004: Distinguished Member of Technical Staff, Director of the Flow Visualization and Processes Laboratory, Sandia National Laboratories

1994-1998: Principle Member of Technical Staff, Geoscience Center, Sandia National Laboratories

1988-1994: Senior Member of Technical Staff, Yucca Mountain Project, Sandia National Laboratories

Adjunct Professor: University of Colorado, New Mexico Institute of Mining and Technology, University of Nevada, University of New Mexico, Uniformed Services University of the Health Sciences.

c. Publications

(i) Five most closely related to proposal project

1. Glass RJ, Ames AL, Brown TJ, Maffitt SL, Beyeler WE, Finley PD, Moore TW, Linebarger JM, Brodsky NS, Verzi SJ, Outkin AV, Zagonel AA, Complex Adaptive Systems of Systems (CASoS) Engineering: Mapping Aspirations to Problem Solutions, *Proc of the Eighth Intern'l Conf on Complex Systems, New England Complex Systems Institute Series on Complexity*, http://www.sandia.gov/CasosEngineering/docs/ICCS_Mapping_Aspirations_2011-3354.pdf, NECSI Knowledge Press, 2011, pgs 872-885.
2. Glass, L.M., and R.J. Glass, Social contact networks for the spread of pandemic influenza in children and teenagers, *BMC Public Health*, <http://www.biomedcentral.com/1471-2458/8/61>, BMC Public Health, 8:61, doi:10.1186/1471-2458-8-61, February 14, 2008.
3. Beyeler W.E., R.J. Glass, M.L. Bech, and Soramäki K., Congestion and cascades in payment systems, *Physica A*, 15 Oct. 2007; v.384, no.2, p.693-71.
4. Soramäki K., M.L. Bech, J. Arnold, R.J. Glass, and W.E. Beyeler, The topology of interbank payment flows, *Physica A*, 1 June 2007; vol.379, no.1, p.317-33.
5. Glass, R.J., L.M. Glass, W.E. Beyeler, and H.J. Min, Targeted social distancing design for pandemic influenza, *Emerging Infectious Diseases*, <http://www.cdc.gov/ncidod/EID/vol12no11/06-0255.htm>, Vol. 12, No. 11, November 2006.

(ii) Five other significant publications

1. Glass, R.J., and R.A. LaViolette, Self organized spatial-temporal structure within the fractured vadose zone: Influence of fracture intersections, *Geophysical Review Letters*, 31, L15501, doi:10.1029/2004GL019511, 2004.
2. Pringle, S.E., and R.J. Glass, Double-diffusive finger convection in a solute system at fixed buoyancy ratio: Structural intricacy and length scale growth in Rayleigh space, *Journal of Fluid Mechanics*, 462, 161-183, 2002.

3. Glass, R.J., S.H. Conrad, and L. Yarrington, Gravity destabilized non-wetting phase invasion in macroheterogeneous porous media: Near pore scale macro modified invasion percolation model, *Water Resources Research*, 37:5:1197-1207, 2001.
4. Glass, R.J., M.J. Nicholl and V.C. Tidwell, Challenging models for flow in unsaturated, fractured rock through exploration of small scale processes, *Geophysical Research Letters*, 22:11:1457-1460, 1995.
5. Glass, R.J., T.S. Steenhuis and J-Y. Parlange, Mechanism for finger persistence in homogeneous unsaturated porous media: Theory and verification, *Soil Science*, 148:60-70, 1989.

d. Synergistic Activities

1. Panelist, Addressing Complexity through Simulation and Modeling, Association for Public Policy Analysis & Management, Washington, DC., November, 2011
2. Organizing Committee Member, Sandia Workshop on Agent Based, Discrete and Game Modeling, 2007-Present
3. Panelist, Modeling Community Containment for Pandemic Influenza Workshop, Institute of Medicine of the National Academies of Science, Washington, DC., October, 2006
4. Chief Coordinator, Upper Gila River Environmental Flows Science Forum, New Mexico Interstate Stream Commission, 2006-2009
5. Panelist, New Directions for Understanding Systemic Risk in Banking and Finance, National Academies of Science and the Federal Reserve Bank of New York, New York, May, 2006

e. Collaborators & Other Affiliations

(i) Collaborators

Sandia National Laboratories: Beyeler WE, Ames AL, Min HJ, Brown TJ, Maffitt SL, Moore TW, Mitchell R, Finley PD, Linebarger JM, Brodsky NS, Verzi SJ, Outkin AV, Zagonel AA, Cannon DC, Hobbs JA, Evans LB

Federal Reserve Bank of New York: Bech ML, Arnold J

Bank of France: Renault F

Department of Veterans Affairs: Davey VJ, Norby R

US Geological Survey: Osterkamp WR

Colleges and Universities: Perlroth DJ, Garber AM, Owens DK (Stanford University); Baldoni R, Lodi G (University of Rome); Soramaki K (Helsinki University of Technology); Fagan WF (University of Maryland); Gido KB (Kansas State University); Ryel RJ (Utah State University); Cliff Dahm (University of New Mexico); David Cowley (New Mexico State University); Detwiler R (University of California, Irvine); Rajaram H (University of Colorado); Glass LM (Grinnell College)

(ii) Graduate and Postdoctoral Advisors

J.-Y. Parlange, J.A. Liggett, T.S. Steenhuis and R.D. Miller (Cornell University)

(iii) Thesis Advisor and Postgraduate-Scholar Sponsor

Past PhD students (15) and MS (5) from: Uniformed Services University of the Health Sciences, University of Arizona, University of Colorado, University of Nevada, University of New Mexico, New Mexico Institute of Mining and Technology, Michigan Institute of Technology, University of Wisconsin, Seoul National University, Danish Technical University, University of Texas.

Those with affiliations in past 5 years: Victoria J. Davey (US Department of Veterans Affairs); Sung-Hoon Ji (Korean Atomic Energy Research Institute); Kristine Baker, Donald Fox (Idaho National Laboratory); Mehdi Eliassi, James R. Brainard (Sandia National Laboratories); Russell L. Detwiler (University of California, Irvine); Robert M. Holt (University of Mississippi); Lirong Zhong (Pacific Northwest Laboratory); Clay A. Cooper (Desert Research Institute); Craig Roepke (New Mexico Interstate Stream Commission); Anne E. Carey (Ohio State University); Michael J. Nicholl (University of Nevada, Las Vegas)