

## CURRICULUM VITA

**NAME:** David L. Sallach

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**EDUCATION:** University of Nebraska, Lincoln, NE 68508  
Sociology: Ph.D., 1970; M.A., 1969; B.A. 1967

### EMPLOYMENT:

2003-present, Associate Director, Center for Complex Adaptive Agent Simulation Systems (CAS<sup>2</sup>)  
Division of Decision and Information Science, Argonne National Laboratory, Argonne, IL 60439

1998-2003, Director, Social Science Research Computing, University of Chicago, Chicago, IL 60637

1989-98, Senior Technical Associate, Swiss Bank Corporation, Chicago, IL 60604

1987-89, Visiting Associate Professor of Computer Science, University of Arkansas, Fayetteville, AR 72701

1983-87, Chief Technical Officer, System Synergies, Inc., Omaha, NE 68154

1981-83, Assistant Professor of Computer Science, University of Nebraska, Kearney, NE 68849

1979-81, Assistant Professor of Sociology, Lincoln University, Jefferson City, MO 65101

1978-79, Assistant Professor of Sociology, University of Missouri, Columbia, MO 65201

1972-77, Assistant Professor of Sociology, Washington University, St. Louis, MO 63130

1970-72, Assistant Professor of Sociology, Indiana University, Bloomington, IN 47401

### AFFILIATIONS:

North American Association for Computational Social and Organizational Science  
American Sociological Association  
Association for Computing Machinery

### OFFICES, AWARDS & PARTICIPATION:

2004-present, Senior Fellow  
1999-2004, Fellow  
Computation Institute, University of Chicago

2004-present, Member  
Joint (Argonne/UChicago) Theory Institute

2003-present, External Board Member

Center for Social Complexity, George Mason University

2004-2006, President

2003-2004, Vice President

North American Association for Computational Social and Organizational Science

2003-present Member

2003-2005, Coordinator

Repast Organization for Architecture and Design (ROAD)

2003-2006, Associate Editor for Computational Sociology and Social Computation  
*Computational Social and Organizational Science*

2002-present, Editorial Reviewer

Journal of Mathematical Sociology

Social Science Computer Review

Journal of Artificial Societies and Social Simulation

Computational Social and Organizational Theory

American Journal of Sociology

2004, Invited Participant, Workshop on Cyberstructure and the Social Sciences  
National Science Foundation

2002, Review Panel, Information Technology Workforce (ITWF) program  
National Science Foundation

2000, Review Panel, Information Technology Research Program  
National Science Foundation

2000, Site Review Panel, P-30 Population Core Center  
National Institute of Child Health and Human Development

2000, Co-Investigator, "Generating Social Network Dynamics"  
University of Chicago Advanced Technology Innovation Grant

2001, Ad Hoc Advisory Committee on Computation, University of Chicago

Association for Computing Machinery

Distinguished Lectureship Program

1996-2000, 2002-present, Member, Advisory Committee

1998-1999, Chair, Advisory Committee

1993-1996, Distinguished Lecturer

1999-2003, Distinguished Service Award Committee

1998-2000, Membership Activities Board

1996-1997, Committee on Virtual Communities

1991-1993, Program Committee, SIGAPP Symposium on Applied Computing

1988, 1989, NASA Summer Faculty Research Fellowship  
Lewis Research Center, Cleveland, OH 44106

Data Processing Manager's Association, AK-SAR-BEN Chapter

1985-87, Chair, Information Processing Conference

1984-86, Education Director

1983-84, Principal Investigator, Small Business Innovation Research Grant  
System Synergies, Inc., Omaha, NE 68154

1983, Chatauqua Course Participant, Microcomputers as Laboratory Tools  
American Association for the Advancement of Science

1981, Chatauqua Course Participant, Food Energy & Society  
American Association for the Advancement of Science

United Chapters of Alpha Kappa Delta  
1972-1977, Executive Committee  
1972-1974, Secretary-Treasurer

1969-70, Fellowship, National Institute of Health  
University of Nebraska, Lincoln

1965, Undergraduate Research Participants, National Science Foundation  
(Case) Western Reserve University, Cleveland

**CLASSES TAUGHT** (partial lists):

*Computational Social Science:*  
Modeling Social Complexity

*Sociology:*  
Social Problems; Deviance & Social Control  
Research Methods; Data Analysis Methods  
Social Statistics; Seminar in Research Methods  
Population and Demography; Social Stratification  
Family; Culture and Society; Social Psychology  
Political Sociology; Social Movements & Societal Change  
Criminology; Corrections; Social Disorganization  
Sociological Theory; History of Social Theory  
Seminar in Sociological Theory

*Computer Science:*  
Programming in C/C++  
Computer Architecture & Organization  
Operating Systems  
Database Management Systems  
Advanced Database Concepts  
Seminar on Database Design  
Seminar on Knowledge-Based Systems  
Data Structures & Algorithms  
Systems Analysis & Design

**PUBLICATIONS**

EDITED VOLUMES:

*Proceedings of Agent 2006 – Social Agents: Results & Prospects* (with Charles Macal & Mike North, first editor). Argonne, IL: Argonne National Laboratory.

*Proceedings of Agent 2005 – Generative Social Processes, Models & Mechanisms* (with Charles Macal & Mike North, third editor). Argonne, IL: Argonne National Laboratory.

*Proceedings of Agent 2004 – Social Dynamics: Interaction, Reflexivity and Emergence* (with Charles Macal & Mike North, second editor). Argonne, IL: Argonne National Laboratory.

*Proceedings of Agent 2003 – Challenges in Social Simulation* (with Charles Macal & Mike North, third editor). Argonne, IL: Argonne National Laboratory.

*Proceedings of Agent 2002 – Social Agents: Ecology, Exchange and Evolution* (with Charles Macal, second editor). Argonne, IL: Argonne National Laboratory, ANL/DIS/03-1, 2003.

Special issue on 'The Simulation of Social Agents' (with Charles Macal, first editor),  
*Social Science Computer Review* 19 (Fall 2001).

*Proceedings of the Workshop on Simulation of Social Agents: Architectures and Institutions* (with Thomas Wolsko, first editor). Argonne, IL: Argonne National Laboratory, ANL/DIS/TM-60, 2001.

*Proceedings of the Workshop on Agent Simulation: Applications, Models and Tools* (with Charles Macal, second editor). Argonne, IL: Argonne National Laboratory, ANL/DIS/TM-59, 2000.

#### REFEREED ARTICLES AND BOOK CHAPTERS:

Modeling emotional dynamics: Currency versus field. Under editorial consideration.

A paradigm shift in computing and IT education (with H.L. Berghel, second author). *Communications of the ACM* (June, 2004):83-88.

Social theory and agent architectures: Prospective issues in rapid-discovery social science. *Social Science Computer Review* 21 (Summer, 2003):179-195.

Classical social processes: Attractor and computational models. *Journal of Mathematical Sociology* 24 (Winter, 2000):245-272.

The impact of computers on job opportunity: An analysis of employment trends, 1972-1982 (with H. L. Berghel, second author). Pp. 169-189 in G.L. Eberlein & H. Berghel (Eds.), *Theory and Decision: Essays in Honor of Werner Leinfellner*. Reidel, Boston, 1987.

Computer program plagiarism detection: Limits of Halstead metric (with H.L. Berghel, second author). *Journal of Educational Computing Research* 1 (Fall, 1985): 295-315.

Computers and democracy: A critique of Parslow (with H.L. Berghel, second author). *ACM Computers and Society* 12 (Spring, 1983): 12-16.

Class domination and ideological hegemony. *Sociological Quarterly* 15 (Winter, 1974): 38-50. Reprinted in G. Tuchman, *The TV Establishment: Programming for Power and Profit*. New York: Prentice-Hall.

What is sociological theory? *The American Sociologist* 8 (August, 1973): 134-139.

Critical theory and critical sociology: The second synthesis. *Sociological Inquiry* 43 (1973): 131-140.

Class consciousness and the everyday world in the work of Marx and Schutz. *Critical Sociology* 3 (Summer, 1973): 27-37.

Systems analysis and sociological theory. *Sociological Focus* 5 (Spring, 1972): 54-60.

Social involvement and political activity: Another view (with Nicholas Babchuk and Alan Booth, first author). *Social Science Quarterly* (March, 1972): 879-892.

The primary group: A systematic orientation. *Kansas Journal of Sociology* 7 (Fall, 1971): 87-92.

#### PROCEEDINGS ARTICLES:

Complex multigames: Toward an ecology of information artifacts. *Proceedings of Agent 2006*. Argonne, IL: Argonne National Laboratory.

Idealization, uncertainty and heterogeneity: Defining game frameworks using formal concept analysis (with Mihai-Teodor Racovitan, second author). *Proceedings of Agent 2006*. Argonne, IL: Argonne National Laboratory.

Voluntary exchange in interpretive heatbugs (with Jonathan Ozik, second author). *Proceedings of Agent 2006*. Argonne, IL: Argonne National Laboratory.

Logics for situated action. *Proceedings of the First World Congress on Social Simulation*, Kyoto, 2006.

Coherence and interpretive agency: Mechanism design. North American Association for Computational Social and Organizational Science, South Bend IN, 2006.

Interpretive agents: A heatbug reference simulation (with V.S. Mellarkod, first author). *Proceedings of Agent 2005*. Argonne, IL: Argonne National Laboratory.

Interpretive heatbugs: Design and implementation (with V.S. Mellarkod, second author). *Proceedings of Agent 2005*. Argonne, IL: Argonne National Laboratory.

Contesting hearts and minds: A baseline model of military occupation (with Kevin Ruby, Veena S. Mellarkod & Charles Macal, third author). *Proceedings of Agent 2005*. Argonne, IL: Argonne National Laboratory.

Typifying situations: Contextualizing and cohering action (with Veena S. Mellarkod, first author). North American Association for Computational Social and Organizational Science, IN, 2005.

Prototype structure and conceptual structuring (with Veena S. Mellarkod, second author). North American Association for Computational Social and Organizational Science, South Bend IN, 2005.

Challenges in computational social theory. *Proceedings of Agent 2004*. Argonne, IL: Argonne National Laboratory.

Prototype inference and social interaction (with V.S. Mellarkod). *Proceedings of Agent 2004*. Argonne, IL: Argonne National Laboratory.

Critical tests and computational social theory. *Proceedings of the North American Association of Computational Social and Organizational Science*, Pittsburgh, 2004.

Toward constraint-sensitive agents. *Proceedings of SWARMfest*. SWARM Development Group, 2004.

Generative models of social ordering. *Proceedings of the North American Association of Computational Social and Organizational Science*, Pittsburgh, 2003.

Complex motives in agent simulation: Proximity attractors and their design. *Proceedings of Swarmfest*, Swarm Development Group, 2003.

Interpretive agents: Identifying principles, designing mechanisms. *Proceedings of Agent 2003: Challenges in Social Simulation*, Chicago, IL, 2003.

A model of AIDS transmission in SubSaharan Africa: Methodological issues (with Patrick Heuveline & Tom Howe, second author). *Proceedings of Agent 2003: Challenges in Social Simulation*. Chicago, IL 2003.

Situated social ecology: An integrated design hermeneutic. *Proceedings of Agent 2002: Ecology, Exchange and Evolution*. Argonne, IL: Argonne National Laboratory, 2003.

A deductive database audit trail. *Proceedings of the 1992 Symposium on Applied Computing*. Kansas City, 1992.

Platypus: Inheritance and scientific discovery (with Roger E. Ghormley, second author). Pp. 227-235 in Z. Michalewicz (ed.), *Proceedings of the Fifth International Conference on Statistical and Scientific Database Management*. New York: Springer-Verlag, 1990.

Comparing objects composed by abstract relationships. *Proceedings of the ACM Hawaii International Conference on the System Sciences*, Volume III. Kailua Kona, 1989.

The structure of social mind: Empirical patterns of large-scale knowledge organization. *Proceedings of the Tenth Annual Conference of the Cognitive Science Society*. Montreal, 1988.

A comparison of parallel architectures: Neural and social models of mind. *Proceedings of the Second ACM Symposium on Artificial Intelligence*. Norman, OK, 1988.

Dynamic classification and decision support. *Proceedings of the Second ACM Workshop on Applied Computing*. Tulsa, 1988.

Toward an expert support system for the social sciences. *Proceedings of the International Conference on Databases in the Humanities and Social Sciences*. Montgomery, AL, 1987.

Modeling context: Toward a universal knowledge frame. *Proceedings of the 1985 Conference on Intelligent Systems and Machines*, Rochester, MI, 1985.

Measurement of program similarity in identical task environments (with H.L. Berghel, second author). *SIGPLAN Notices* 19 (August, 1984): 65-76.

Artificial language and knowledge based systems: Negentropic representation as a design criterion. *Proceedings of the 1983 Conference on Artificial Intelligence*, Rochester, MI, 1983.

Student outcomes assessment: A biracial analysis (with Jean Budig, second author). *ERIC Clearinghouse for Higher Education*, 1981.

#### PAPERS AND PRESENTATIONS:

Modeling social complexities. Department of Mathematics, Northern Illinois University, DeKalb, IL, 2006.

Foundational Issues in Agent Interaction: A Workshop (with Michael North, first author). *First World Congress on Social Simulation*, Kyoto, 2006.

Social field theory: Concept and application. American Sociological Association, Montreal, 2006.

Challenges in threat modeling. Presentation to What Are National Security Threats? Joint Threat Anticipation Workshop, University of Chicago, 2006.

Adversarial and systemic financial risk. Invited speaker at the Workshop on Systemic Risk in the Financial Sector, Collegium Budapest, Hungary, 2005.

Social intent and the threat of genocide: Toward computational models. International Association of Genocide Scholars, Boca Raton, Florida, 2005.

Threat dynamics: Social theory and computational models. Presentation to Threat Anticipation: Social Science Methods and Models, Joint Threat Anticipation Workshop, University of Chicago, 2005.

Prototype inference and social rationality. ASA Joint Mathematical Sociology/Rationality and Society Mini-Conference, San Francisco, 2004.

Accounting for agent orientation (with Veena S. Mellarkod, first author). Presentation to the Third Lake Arrowhead Conference on Human Complex Systems, Lake Arrowhead, CA, 2005.

Meaning-oriented social interaction: Conceptual prototypes, inferences and blends (with Veena S. Mellarkod, second author). Presentation to the Third Lake Arrowhead Conference on Human Complex Systems, Lake Arrowhead, CA, 2005.

Modeling social complexity. Forestry and Natural Resources Workshop, Purdue University, West Lafayette, IN, 2004.

The structure of an epidemic: A model of AIDS transmission in sub-Saharan Africa (with Patrick Heuveline & Tom Howe, second author). Topical Workshop on Agent-Based Computational Modelling, Vienna, Austria, 2003.

Generative models of social meaning. North American Association for Computational Social and Organizational Science, Pittsburgh, PA, 2002.

The simulation of emergence: Mysticism, reduction, or complexity generation?. North American Association for Computational Social and Organizational Science, Pittsburgh, PA, 2002.

Social complexity and interpretive processes: Extending agent modeling. The Emerging Computational Social Sciences, George Mason University, George Mason University, Fairfax, VA, 2003.

Agent simulation for social and demographic research. Demography Workshop, University of Chicago, 2003.

Generative microdynamics: A novel, unrealizable epistemology. Presentation to the Second Lake Arrowhead Conference on Human Complex Systems, Lake Arrowhead, CA, 2003.

Social complexities and situated emergence. Presentation to the Cambridge Colloquium on Complexity and Social Networks. Harvard University, Cambridge, MA, 2002.

Modeling emotional dynamics: Currencies versus fields. Presentation to the American Sociological Association, Chicago, 2002.

Agent interaction and the formalization process. Presentation to the Computational and Mathematical Organization Theory Conference, Pittsburgh, 2002.

Layered situations and agent orientation. Presentation to the First Arrowhead Conference on Computational Social Science, Lake Arrowhead, CA, 2002.

Toward a synthetic theory of social structure. Presentation to the Midwest Sociological Society, Milwaukee, 2002.

Social complexity and agent simulation. Computation Institute, University of Chicago, 2002.

The future of agent modeling and simulation. Presentation to the course on Capturing Business Complexity with Agent Modeling and Simulation, Argonne National Laboratory, Argonne, IL, 2002-2006.

ABMS rules: Structure and interaction. Presentation to the course on Capturing Business Complexity with Agent Modeling and Simulation, Argonne National Laboratory, Argonne, IL, 2002-2006.

Axial processes and social field dynamics. Presentation to the Social Science History Association, Chicago, 2001.

Social simulation: An overview. Presentation to the Workshop on Organization and State Building, University of Chicago, 2000.

Extending situated reasoning: A model and a mechanism. Presentation to the Computational Social and Organizational Science Conference, Pittsburgh, 2000.

Games social agents play: A complex form. Presentation to the Joint Conference on Mathematical Sociology in Japan and America, Honolulu, 2000.

Modeling genocide: Complexity and criticality. Presentation to the Association of Genocide Scholars, Madison, 1999.

Axial processes and institutional quasi-emergence: Comparative and computational perspectives. Presentation to the Social Science History Association, Fort Worth, 1999.

Attractor models of classical social processes. Presentation to the 94<sup>th</sup> Annual Meeting of the American Sociological Association, Chicago, 1999.

Transcendence and order: Cultural dynamics in history. Presentation to the 26th Annual Meeting of the International Society for the Comparative Study of Civilizations, Provo UT, 1997.

Lecture Series of the Association of Computing Machinery

Paradigms, platforms and portfolios: Navigating technology evolution

Chicago Chapter of the ACM, 1994

Allegheny College, 1995

Indianapolis Chapter of the ACM, 1997

Multimedia: The evolution of abstraction

Wayne State University, 1995

Southern Illinois University, Carbondale, 1995

University of Louisville, 1996

Chaos and causality in complex domains. *Perspectives* 13 (January, 1990).

Reasoning from prototypes: A neo-Bayesian approach. Presentation to the Twenty-First Symposium on the Interface between Computer Science and Statistics. Orlando, 1989.

Knowledge interchange standards and the RM/T model. Presented to the International Association for Social Science Information Services and Technology (IASSIST-88), Washington DC, 1988.

Inductive analysis for composite prototypes. Presentation to the ACM South Central Regional Conference, Lafayette LA, 1987.

Presentations at the DPMA Information Processing Conference, Omaha:

Decision support for strategic planning, 1987.

Building decision support systems, 1987.

Practical approaches to database modeling, 1986.

Expert systems: A tutorial, 1986.

Database design, 1985.

Law and coercion as measurable variables: A response to Donald Black. Presentation to the Missouri Academy of Science, Saint Joseph MO, 1981.

Voluntary associations and power. Presentation to the American Sociological Association, Washington, 1973.

#### TECHNICAL & SPECIALIZED REPORTS:

Cryptographic technologies: Potentials and policies (with M. Soland, second author). Swiss Bank Corporation, 1995.

An Analysis of Trends of Population in Mental Institutions of Nebraska. Nebraska Public Library Commission, Lincoln NE, 1968.

A Survey of the Physically Handicapped of Nebraska: The Parameters of Expanded Library Services. Nebraska Public Library Commission, Lincoln NE, 1968.

## BOOK REVIEWS:

Distributed Constraint Satisfaction: Foundations of Cooperation in Multi-Agent Systems (by Makoto Yokoo). *Journal of Artificial Societies & Social Simulation*, forthcoming.

Strategic Negotiation in Multiagent Environments (by Sarit Kraus). *Journal of Artificial Societies & Social Simulation* 4 (January, 2003).

Dynamics in Human and Primate Societies: Agent-Based Modeling of Social and Spatial Processes (edited by Timothy Kohler and George Gumerman). *Journal of Artificial Societies & Social Simulation* 4 (June, 2001).

Multiagent Systems: A Modern Approach to Distributed Artificial Intelligence (edited by Gerhardt Weiss). *ACM Intelligence* 11 (Fall, 2000): 52-54.

The Clash of Civilizations and the Remaking of World Order (by Samuel Huntington). *Comparative Civilizations Review*, No. 42. (Spring, 2000): 90-99.

Marxist Theory and Indian Communism: A Sociological Interpretation (by Charles P. Loomis and Joan Rytina). *Contemporary Sociology*, Vol. 1, No. 3. (May, 1972): 240-241.