Nicholas Gessler nick.gessler@duke.edu https://people.duke.edu/gessler/

DEGREES:

Ph.D. March 21, 2003. UCLA in Anthropology. GPA 4.0.B.A. 1967, M.A. bypass 1968. University of Alberta, UCLA in Anthropology. GPA 4.0.

EMPLOYMENT:

2018-2023. Self-Employed. Research, lectures, exhibits, on complexity, cryptology & meteoritics.

- 2008-2018. Research Associate. ISIS, Information Science & Information Studies Program, Duke University, Duke Kunshan University.
- 2000-2008. Co-Founder, Lecturer. UCLA's Human Complex Systems Program.
- 1991-1992. Manager. Obsidian Hydration Laboratory, UCLA Institute of Archaeology.
- 1975-1988. Co-Founder, Co-Director, Curator, Conservator, Researcher. Queen Charlotte Islands Museum. A world-class Federal "Category A" institution specializing in quality ethnographic, historic, and natural history research collections. British Columbia, Canada.
- 1973-1983 Founder, Director, Curator, Conservator, Researcher. Ed Jones Haida Museum. A reservebased native Indian institution, Masset, Haida Gwaii, British Columbia.
- 1975 Researcher & Fieldworker. Union of B.C. Indian Chiefs. The international national-minority human rights awareness & organization program for the British Columbia Native Land Claims.

RESEARCH NTERESTS:

Artificial Culture - Experiments in Synthetic Anthropology (Doctoral dissertation).

Culture is the product of individuals and groups, their workplaces and settlements, interacting with their natural, social and technological environments. It is a complex system of matter, energy and information organized at various levels of complexity. Not only do cultures vary over time and space, but each individual member shares shifting similarities and differences with other members. In addition, within each individual mind there are different, cooperating and competing thoughts, changing in different contexts. Those thoughts, whether conscious or non-conscious, do not reside exclusively inside one's head. Thinking, or cognition is interwoven one's natural, social and technological environments. Everywhere in human experience we find complexity which defies traditional description and analysis.

A hypothesis is traditionally considered to be a testable statement of the relationship between two or more variables. But as the number of variables increase, traditional discursive and mathematical analyses become intractable. Consequently, we generally confine our research to two variables. But

how do we deal with the pattern of interactivity connecting multiple systems of mutual causation, a massively parallel multiagent computational process of intermediation? In that context culture may be seen as the product that emerges, through dynamical hierarchical synthesis and the "New Sciences of Complexity," which offers promising alternatives. Although computational languages for describing, explaining and understanding this multiplicity of dynamic interactions first appeared around 1950, the means for investigating these entailments on desktop computers are now readily available. Artificial *Culture* is the research enterprise that extends work which began with distributed artificial intelligence, artificial life and artificial society, towards a new practice of synthetic anthropology. Creative, yet cautiously self-critical and informed by practice and experiment, Artificial Culture recasts noncomputational cultural theory into evolutionary computational simulations. We synthesize a hypothetical world inhabited by a population of individual agents, embedded in their synthetic social and physical environments, all inside a computer. By varying the parameters of this simulated world, or by letting it evolve on its own, we can evaluate the cloud of entailments resulting from a suite of theoretical models, initial and developing conditions. In this way we are better able to describe, understand and explain the complex web of biological and cultural processes that distinguish us as human. Experiments of this kind allow us to synthesize large constellations of alternative counterfactual "what if" scenarios, and they allow us to observe the outcomes of different patterns of similarity and difference, individual and group (local and global) interaction, and ideational & material (cognitive & physical) agency. We are concerned with origins and evolution. How did the universe begin? How did atoms, molecules and minerals come into being to create life? How did galaxies, solar systems and planets arise? How do systems evolve from simple to complex? This has been the challenge of several international workshops under the rubrics of computational synthesis, dynamical ontology and hierarchical selection. The goal of this research is to build simulations which selforganize, in which individually held local rules of interaction automatically synthesize global patterns of behavior, which are then automatically captured and encapsulated as the new primitive local rules leading to even higher levels of evolved global patterns of behavior. Harold Morowitz outlined the problem succinctly in his book, The Emergence of Everything - How the World Became Complex. How do local and global interactions become creative? How do levels of abstraction interact? What is the relationship between bottom-up and top-down processes? Within the context of anthropology, evolutionary and computational epistemologies provide us with new pathways of understanding the rich intermediation between us humans and our social, natural and technological environments, the very processes of evolution which led us to the present rich diversity of cultures on our planet.

COURSE DEVELOPOMENT: Comp[lex Systems and Artificial Intelligence)

Complex Adaptive Systems: ALICE (Artificial Life, Artificial Culture & Evolutionary Computation)

A core course philosophy, theory and practice. Students helped develop over 350 computer simulations written in C++ and posted on the Web, including executables and source code, demonstrating and explaining the philosophy and epistemology of complex adaptive systems implementing agent-based and multiagent modeling with an emphasis on self-organization and evolution from local simple rules and knowledge to global emergent patterns of behavior. Our intuitive knowledge of the world is indirect, based on senses, perceptions and beliefs evolved over countless generations aided increasingly by technological instrumentation. Our ways of knowing

began as conscious and non-conscious thought (intuitively quick) to which we added natural language (deliberately articulated). To these, through discovery or invention, we've added more critical ways to re-present reality: new technologies of description, understanding and explanation. We think and reason utilizing physical and mental models, with writing, diagrams, maps, charts and the arts. In the sciences we continue to develop new ways of thinking with the formal languages of mathematics, algebra and calculus. Yet it was only after World War II that we added complex computational simulations to our scientific ways of knowing.

Fifty years ago, in the 1940s and 50s, human thinkers learned for the first time how to describe complicated machines. We invented something called computer language, programming language, and for the first time people had a way to describe complicated processes or complicated machines: Complicated systems: systems made of thousands of little parts all connected together: networks. Before 1950 there was no language to discuss this, no way for two people to exchange ideas about complicated machines. But why is it important to understand? Because that's what you are. Computer Science is important, but that importance has nothing to do with computers. (Marvin Minsky. "Public Lecture" Artificial Life V. May 16, 1996. Nara, Japan.)

Espionage, Cryptology & Psychological Operations: Networks of Trust, Secrecy and Deception.

Complex systems applications in intelligence. Unlike much research in the social sciences in which "getting it right" is not the first priority, scientific research in the intelligence community often prioritizes "getting it right." The cost of "getting it wrong" is the loss of life and treasure. The call for *actionable intelligence* has led to investigations of networks of trust, secrecy and deception in situations where the stakes are highest. The roles of *Psychological Operations* (PSYOPS), *Military Information Support Operations* (MISO), propaganda, public relations, persuasive media, influencers, and advertising are key to managing societal maintenance and change. In today's world, where the traditional scientific goals to "describe, understand and explain" the world are extended by adding "change," we must be able penetrate the clouds of misinformation and disinformation through uncensored research.

Meteoritics: Meteorites & Solar System History: Culture history from folk lore to science.

Complex systems applications to meteoritics. A history of meteorites and their significance to the cultures and communities that witnessed and studied them. An examination of the conflicting arguments among Western thinkers as to their origins leading to the contemporary science of meteoritics, and the political relationships among the complex system of stakeholders in meteorites among hunters, finders, dealers, collectors, museums, universities, research institutions and governments. We also look at the complex evolving gravitational interactions among celestial bodies using computational models illustrating the dynamics of the Kirkwood gaps, ring structures and the probabilities of fragments from collisions on the planets closer to the Sun reaching orbits further from Sun and falling, as meteorites, onto our Earth.

POSITIONS, MEMBERSHIP & AWARDS:

2008-2023. Meteoritical Society.

2010-2022. International Meteorite Collectors Association.

2008-2022. Advisor, UCLA Meteorite Gallery.

2018-2022. Advisor, Purple Mountain Meteorite Museum.

2022. MENSA. (various years).

Brian C. Copenhaver, Teaching with Technology Award: "Thinking with Technology."

European Network of Excellence in Evolutionary Computing.

CALRESCO - Complexity & Artificial Life Research for Self-Organizing Systems. Select Award.

BORLAND C++ Builder Programmer's WebRing.

SERVICE:



- 1922. Creation of password protected website for UCLA Meteorite Gallery develop and progress proposals. <u>http://issmapping.org/gessler</u> Over 8 .html pages with over 240 edited photographs of hallways, gallery walls, each wall and island exhibit case or stand both inside and outside the Meteorite Gallery. (20 hours).
- 2022, Deverle meteorite collection cataloging of receipts and ID cards for the UCLA Meteorite Gallery. (20 hours).
- 2018. "Jilin Museum Meteorite Conference," Jilin, China. Kunshan, China. Combined conference and exhibition. Coordinator of the Australian/American contingent of the conference and exhibition, supported by the Jilin City Museum, Chinese Academy of Sciences, and the Meteoritical Society, May 7-9. UCLA contingent N. Gessler, P. Warren, A. Rubin.
- 2017. "Meteorites China," Kunshan, China. Combined conference and exhibition. Host of the 1st International Conference and Exhibit of meteorites, Duke Kunshan University, supported by the Chinese Academy of Sciences, the Meteoritical Society, and the Duke Education and Research Innovations in China (ERIC) program, September 15-17. UCLA contingent N. Gessler, P. Warren, A. Rubin. This inspired the subsequent conference and exhibition in Jilin.
- 2008. Panelist, "NSF Supercomputer Funding Panel," Arlington, January 7-11, February 18-20.
- 1999-2008. Co-Founder and Co-Director, "UCLA Human Complex Systems Program."
- 2007. Panelist, "DARPA, Online Gaming Conference," San Diego, January 23.
- 2002-2003. Secretary, "North American Association for Computational Social and Organizational Science."
- 2002-2003. Founding Member. "Society for Anthropological Sciences."

- 2000-2003. Adjunct Member, Founding Board, "International Society for Artificial Life." Portland, Oregon.
- 1998. Organizer and Curator, "Art & Aesthetics of Artificial Life," an exhibition of simulated worlds. Sponsored by the 6th International Conference on Artificial Life, UCLA Center for Digital Arts, and UCLA Center for the Study of the Evolution and Origin of Life. UCLA, June 26 - July 12.
- 1994-1998. Founder and Coordinator. "The Computational Evolution and Ecology Group of the Center for the Study of the Evolution and Origin of Life," UCLA.
- 1979-1984. Chair and Member. "South Moresby Island Multiple Land Use Resources Planning Team." A multicultural, multi-industry, multi-agency and UNESCO constituted committee constituted by the British Columbia Provincial Cabinet, Victoria.
- 1977. Representative, "Northern Peoples' Delegation to China." A three-week invited tour of mainland China offered to "Northern British Columbia native peoples, workers, educators, and progressive intellectuals."
- 1971-1973. Chair. The Plenum of the Department of Anthropology. The faculty, staff and student administrative body for the Department. University of Alberta, Canada.

METEORITE PUBLIC OUTREACH:



- 2023. "Schoolwide Science Sunday Funday," Willows Community School, Culver City, April 23.
- 2023. "Pasadena USD Science Fest," Pasadena Unified School District, April 22.
- 2023. "How to Find a Meteorite." Conejo Gem and Mineral Club, Speaker, January 12.
- 2022. "How to Find a Meteorite." Long Beach Gem & Mineral Society, November 9.
- 2022. "Explore Your Universe," UCLA, Abijah, EYU 2019 Group Coordinator, November 6.
- 2022. "Gems on the Hill," Long Beach Gem & Mineral Society, Demonstrator, September 24-25.
- 2022. "59th Annual Fiesta of Gems," Culver City Rock and Mineral Club," Demonstrator, July 16-17.
- 2022. "Space Day," 17th Annual Exhibition, San Diego Air and Space Museum, with Candace Kohl, Education Coordinator, Jasmine Sempel, May 21.
- 2019. "Explore Your Universe," UCLA, Abijah, EYU 2019 Group Coordinator, October 18.
- 2019. "Space Day," 16th Annual Exhibition, San Diego Air and Space Museum, with Candace Kohl, Coordinator, Shalene Baxter, May 18.
- 2016. "Astronomy Days," 6th event, North Carolina Museum of Natural Sciences, Raleigh, Manager, Kari Wouk, January 30-31.

- 2015. "Astronomy Days," 5th event, North Carolina Museum of Natural Sciences, Raleigh, Curator, Bonnie Eamick, January 24-25.
- 2014. "Meteorites." North Carolina State Fair," Manager, Wesley V. Wyatt, October 16-26.
- 2014. "Astronomy Days," 4th event, North Carolina Museum of Natural Sciences, Raleigh, Curator, Bonnie Eamick, January 25-26.
- 2011-13. "Astronomy Days," 1st, 2nd, 3rd events, North Carolina Museum of Natural Sciences, Raleigh.

METEORITICAL BULLETIN SUBMITTED FINDS:

Alkali H6 Bluewing H5 L6 Bonnie Claire H5 Coyote Dry Lake H4-6 L6 Cuddeback L6 Diamond H5 Kumiva Valley H5 Lucerne Valley L4 L6 H4 CK4 Primm H5 Roach LL6

Silver Dry Lake H6 Superstition Mtn H5 Tungsten Mtn H4 CV3

SIGNIFICANT METEORITE AND IMPACTITES:

Libyan Desert Glass: 16.23 and 5.65 kg individuals (the first likely the largest in the US). European Impactites: Circa 15 cubic-foot Tucson collections of Alain Carion and Artemev.

Lunars: NWA 2402, 2420, 2425, 1828.

Martians: Los Angeles, Tissint, Zagami, NWA 2424, 6963, 7397, 2034 Black Beauty.

Howardites, Eucrites, Diogenites: Several kg individuals.

Mesodiserites: ~8 kg.

Irons: Sikhote Alin ~20 kg, Muonionalusta ~6 kg, Aletai ~3 kg.

Chelyabinsk: Hundreds of examples from 2-100 millimeters, several magnificently oriented, one with interior impact melt pattern similar to expanded meta. Journal on the search for and extraction of the main mass from lake Chebarkul by Nick Murzin.

L'Aigle with original label, "Aerolite tombe a l'Aigle I 26, Floreal an XI 16 Avril 1803."

Carbonaceous Chondrites: several from 1 to 4 kg.

Ordinary Chondrites: likely thousands

AI SOFTWARE: (Graphic Evolutionary Complex Systems applications in C++ using the Borland IDE):

Major Online Game: "Speculation," modules consisting of four challenges.

Naturalization of Money: Continental Currency, Obsolete Banks, Civil War, Gold and Silver Notes, Future Currencies.

Stock Trading: 2007, 2008, 2009, 2010, 2007-2010.

Evolutionary recovery of scrambled imagers.

https://www.academia.edu/20968209/Speculation Financial Games and Derivative Worldin g in a Transmedia Era https://elmcip.net/node/7060 https://www.speculat1on.net/

Cryptology: EvoCrypt evolutionary substitution cipher cryptanalyzer, Enigma, Nicolas Bion Silver Disk, M-94 simulators. Vernam cipher, Steganographic image Vernam cipher simulators.

Visualizations: Representing numerical data as color, Creating red/cyan 3D stereo anaglyphs, Examples in Open GL.

Sonification: Representing numerical data as sound and music. Examples of color, gray, midi, and beep ramp conversions.
Strong physical computing: Cognition in various media.
Weak physical computing: Interfacing sensors and actuators.
Self-Organization: Cellular automata, Chaos, Fractals and Strange attractors.
Evolutionary Computation.
Segregation and Assimilation.
Flocking polygons and flocking images.
Solar system orbits.
Growth by segregated diffusion limited aggregation.
Network analysis.
Philosophy: Simulation of the enigmatic Monty Hall Problem.
Popular Games: MineSweeper, UCLA Monopoly, Snake, Chess foundation, A* Maze Solver.

BOOKS:

- 1989. The Outer Shores: The Proceedings of The Queen Charlotte Islands First International Scientific Symposium, University of British Columbia, August 1984. Co-editor with Geoffrey Scudder. Queen Charlotte Islands Museum Press, Queen Charlotte City, British Columbia. 327 pages.
- 1983. South Moresby Land Use Alternatives. Co-author. Report of the South Moresby Resource Planning Team. Queen's Printer for British Columbia, Victoria. 249 pages.
- 1981. Author. Ecological Reserve Proposals, Windy Bay Watershed/Dodge Point, Queen Charlotte Islands. Economic impact assessment of the South Moresby Resource Planning Team. British Columbia Ministry of Forests, Victoria. 31 pages.

ARTICLES:

- 2014. "Speculation: Financial Games and Derivative Worlding in a Transmedia Era." By Katherine Hayles, Patrick Jagoda and Patrick LeMieux. Critical Inquiry, Spring, 2014, pp. 220-236. One citation (Figure 8) and multiple references allude to one designer, Nick Gessler. See AI software, above.
- 2006. "Things-that-Think: An Interview with Nicholas Gessler." By Margaret Wertheim. Cabinet A Quarterly of Art and Culture, Issue 21, Spring 2006, pp. 21-26.
- 2004. "The Emergence of Reputation in Natural and Artificial Cultures." RAS-2004 A Workshop in Reputation in Agent Societies, Beijing, PRC. Saint Mary's University, Halifax (Technical Report Number: 2004-04 September, 2004; ISBN: 0-9734039-5-0), pp. 7-16 (revised).
- 2004. "The Slipstream of Mixed Reality: Unstable Ontologies and Semiotic Markers in The Thirteenth Floor, Dark City, and Mulholland Drive." With N. Katherine Hayles. PMLA (Publications of the Modern Language Association, Special Topic Science Fiction and Literary Studies: The Next Millennium. Issue on Science Fiction. Vol. 119, No. 3, May, Pp. 482-499.
- 2003. "Evolving Cultural Things-That-Think." Computational Synthesis: From Basic Building Blocks to High Level Functionality. Papers from the 2003 AAAI Spring Symposium, Technical Report SS-03-02. Menlo Park, AAAI Press. Pp 75-81.
- 1998. "Skeuomorphs and Cultural Algorithms." Evolutionary Programming VII, Proceedings of The 7TH International Conference on Evolutionary Programming. Springer-Verlag, Berlin. Pp. 229-238.

- 1997. "We Have Always Been Postmodern: Five Books on Anthropology and Science." Anthropology UCLA, volume 22, 1996-1997, pp 44-65.
- 1997. Book Review: Growing Artificial Societies by Joshua Epstein and Robert Axtell, MIT Press, Cambridge 1996." Artificial Life 3:3: pp 237-242.
- 1996. "Cyberculture." With Dwight W. Read. Encyclopedia of Cultural Anthropology. Edited by David Levinson and Melvin Ember. Henry Hold & Company, New Haven. Volume 1, p] 306-308.
- 1995. "Ethnography of Artificial Culture: Specifications, Prospects, and Constraints." Evolutionary Programming IV, Proceedings of The 4th Annual Conference on Evolutionary Programming. John R. McDonnell, Robert Reynolds and David Fogel, eds. A Bradford Book, MIT Press, Cambridge. Pp 319-331.
- 1994. "Artificial Culture." Artificial Life IV, Proceedings of The 4th International Workshop On The Synthesis And Simulation of Living Systems. Rodney Brooks and Pattie Maes, eds. MIT Press, Cambridge, 430-435.
- 1989. "The Sciences of Man." The Outer Shores: Based on The Proceedings of The Queen Charlotte Islands First International Scientific Symposium, University of British Columbia, August 1984. Geoffrey G.E. Scudder and Nicholas Gessler, eds. Queen Charlotte Islands Museum Press, British Columbia, 195-198.

CONFERENCE and EXHIBITION ORGANIZER:

- 2017. "Meteorites China." The first international conference and exhibition of meteorites in China. September 15-17. Co-Organized by Nick Gessler, Weibiao Xu, Ronin Plesser, Thijs Kouwenhoven, Bo Cheung, Kai Ke, Li Bofang, Dezhao Feng. Co-Sponsored by Duke Education and Research Innovations in China, Duke Kunshan University, Chinese Academy of Sciences, The Meteoritical Society. This inspired the conference and exhibition on meteorites at the Jilin City Museum, May 7-8, 2018. The opening ceremony included introductions by the Ge Dongping (Mayor of Jilin City), Yan Haichun (Director of the Culture Bureau), Trevor Ireland (representing the Meteoritical Society), and Xu Weibiao (Chinese Academy of Sciences, Nanjing, and Curator of the Purple Mountain Meteorite Museum).
- 2004. "Self-Organizing Worlds: Experimental Art, Science and Literature." Organizer with N. Katherine Hayles. Sponsored by the UCLA Department of Design and Media Arts. Los Angeles, April 30.
- 2003. "Second Lake Arrowhead Annual Conference on Multi-Agent Modeling in the Social Sciences." Organizer with Susanne Lohmann and Bill McKelvey. Sponsored by the UCLA Center for Computational Social Science. Lake Arrowhead, March 19-23.
- 2002. "Agent Based Modeling in the Social Sciences." Organizer with Susanne Lohmann and Bill McKelvey. Sponsored by the UCLA Center for Computational Social Science. Lake Arrowhead, May 9-12.
- 1997. "Computational Social Science Workshop." Organizer with Stephen Bankes and John Bragin. Sponsored by the UCLA Computational Evolution and Ecology Group of the Center for the Study of the Evolution and Origin of Life. UCLA, February 27, March 1-2. Keynote speaker: Marvin Minsky (Society of Mind) at the Getty Research Institute and the UCLA Marschak Memorial Symposium.
- 1984. "The First Queen Charlotte Islands International Scientific Symposium." Organizer with Geoffrey Scudder. Cosponsored by the University of British Columbia, Department of Zoology and the Queen Charlotte Islands Museum. August.

CONFERENCE SESSION ORGANIZER:

- 1997. "Computing the Future of Culture: New Approaches to Understanding Cultural Dynamics." A session invited by the Central States Anthropological Society for the American Anthropological Association annual meetings, November 19-23.
- 1995. "Narratives of Non-Human Others: Great Apes, Artificial Intelligences, Artificial Cultures." Joanne Tanner, Patricia Greenfield, Marc Damashek, Michael Dyer, Nicholas Gessler. Society for Literature and Science. Los Angeles, November 2-5.
- 1995. "Computational Human Evolution." Steven Bankes, Liane Gabora, John Bragin, Karl Sims (by proxy), Nicholas Gessler. Human Behavior & Evolution Society. Santa Barbara, June 28-July 2.

CONFERENCE PRESENTATIONS:

- 2019. "The American Brake Shoe Company 'Cook' Cryptograph: A Comparison of its Mechanical and Electrical Implementations." National Security Agency, Center for Cryptologic History, Symposium, Applied Physics Laboratory, Laurel, Maryland, October 15-17.
- 2018. "Oriented Meteorites." The Second International Conference and Exhibit of Meteorites in China. Jilin, China, City Museum, May 7-8.
- 2017. "Oriented Meteorites." Meteorites China, the First International Conference and Exhibit of Meteorites in China. Duke Kunshan University, China, September 15-17.
- 2009. "Cuban Number Stations and Espionage in the United States." National Security Agency, Center for Cryptologic History, Symposium, Applied Physics Laboratory, Laurel, Maryland, October 15-17.
- 2009. "Cryptologic Artifacts: Disks, Slides, Rotors and One-Time-Pads from 1680 to the Present," (Exhibitor). Annual Enigma Reunion, Bletchley Park, Milton Keynes, U.K., September 5-6.
- 2009. "Modeling the Problem Space Object Oriented Programming and C++." NEH, National Endowment for the Humanities, Vectors Workshop, USC, Los Angeles.
- 2008. "Artificial Culture What We Stand to Gain." NESCENT, National Evolutionary Synthesis Center, Duke University, Durham, April 17.
- 2007. "Computing Culture." For Afzal Upal, Occidental College, Los Angeles, November 9.
- 2007. "Intermediated Cultural Cognition: Materiality Matters." University of California, Complexity Conference, Irvine, January 12.
- 2007. "Computational Modeling of Cultural Evolution." American Anthropological Association, Washington, D.C., November 29 December 3.
- 2007. "Intermediated Cultural Cognition: Materiality Matters." Human Complex Systems, Lake Arrowhead, California., April 25-29.
- 2007. "Artificial Culture Multiagent Evolutionary Computation A Critique." Society for Anthropological Sciences, San Antonio, February 21-24.
- 2007. "Workshop on Ethics in Anthropology vs. Ethics in Intelligence." Intelligence Ethics Association, Springfield, Virginia, January 26-27.
- 2006. "Complexity & Anthropology." International Conference on Complex Systems, NESCI, New England Complex Systems Institute, Boston, June 25-30.
- 2005. "Artificial Culture A Posthuman Approach to Processual Archaeology." Society for American Archaeology, Salt Lake City, March 30 April 3.

2005. "ALICE - Artificial Life, Culture & Evolution." HumLab, Umeå University, Sweden. September 20.

- 2004. "The Emergence of Reputation in Natural and Artificial Cultures." RAS-2004 A Workshop in Reputation in Agent Societies, Beijing, PRC, September 19-25.
- 2004. "Emergence in Iterated Multiagent Systems." Human Complex Systems Colloquium, UCLA, December 3.
- 2002. "Implications of Ice Rafting for Meteorite Recovery on Seasonally Wet Playas." PowerPoint presentation Meteoritical Society, Annual Meeting, Los Angeles, July 21-26.
- 2002. "Emergence in Artificial Life and Culture." Embodied Agents of Life-Science and Cyber-Science. University of Bremen. Bremen, Germany, July 5-7.
- 2001. "Envisioning Culture as a Society of a 'Society of Mind.'" Session on Cultural Idea Systems: Logical Structures and the Logic of Instantiation. American Anthropological Association, 100th Annual Meeting. Washington, D.C., November 28.
- 2001. "Artificial Culture Experiments in Synthetic Anthropology." Symposium on Exploring Niche Variability as a Possible Key to Evolutionary Processes Operative Within and Among Cultural Systems. Society for American Archaeology, 66th Annual Meeting, New Orleans, April 18-22.
- 2001. "Cultural Evolution." Part of the "Evolution in the Computer Age" Symposium of the UCLA Center for the Study of Evolution and the Origin of Life. April 13.
- 2000. "Computational Social Science." Southern California Artificial Life Workshop (UCLA, UCSD, UCI, Caltech). James Reserve, CA, October 20-22.
- 1998. "Skeumorphs and Cultural Algorithms." Evolutionary Programming VI, Proceedings of The Sixth Annual Conference On Evolutionary Programming. San Diego, March 25-27.
- 1998. "Parallel Problem Solving in Culture." Fifth International Conference on Parallel Problem Solving form Nature. EvoNet, Amsterdam, 27-30 September.
- 1997. "Artificial Culture A Computational Paradigm." Presented at the session "Computing the Future of Culture New Approaches to Understanding Cultural Dynamics" at the American Anthropological Association, Washington, D.C., November 20.
- 1997. "Intelligent Agents in Anthropology." Panelist, "Intelligent Agents," IEEE International Conference on Tools with Artificial Intelligence, Newport Beach, CA, November 5.
- 1997. "Processual Archaeology as Computational Anthropology." Southern California Artificial Life Workshop (UCLA, UCSD, UCI, Caltech). James Reserve, CA, 1 November.
- 1997. "Computing a Primitive Forager." Presented at the Computational Social Science Workshop, UCLA, 2 March.1996. "A Postmodern Synthesis - Evolutionary Computation." Southern California Artificial Life Workshop (UCLA, UCSD, UCI, Caltech). James Reserve, CA, November 9-11.
- 1996. "Mixed Metaphors of Cultural Evolution." First Conference on Genetic Programming. Stanford, July 28-31.
- 1995. "Narratives of Artificial Culture." Society for Literature and Science. Los Angeles, November 2-5.
- 1995. "Modeling Archaeological Complexity." Complex Societies Group, 2nd Biennial Conference. San Bernardino, October 20-22.
- 1995. "Evolutionary Epistemology for Modeling." Southern California Artificial Life Workshop (UCLA, UCSD, Caltech). James Reserve, CA, October 20-22.
- 1995. "Artificial Culture: Towards a Computational Anthropology." Simulating Societies III. Boca Raton, September 15-17.
- 1995. "Artificial Cultural Evolution." Human Behavior & Evolution Society. Santa Barbara, June 28-July 2.

- 1995. "The Computational Nature of Cultural Things." Society for American Archaeology. Minneapolis, May 3-7.
- 1995. "Ethnography of Artificial Culture." Fourth Annual Conference on Evolutionary Programming. San Diego, March 1-2.
- 1994. "Automatic Narrative in Artificial Culture." Society For Literature And Science. New Orleans, November 10-13.
- 1994. "Introducing Anthropology to Alife." Southern California Artificial Life Workshop (UCLA, UCSD, Caltech). James Reserve, CA, November 5-6.
- 1994. "Artificial Culture." Artificial Life IV: Fourth International Workshop on the Synthesis and Simulation of Living Systems. MIT, Cambridge, July 6-8.
- 1994. "Simulating Cultural Evolution." Multi-Agent Simulation Systems (SWARM Workshop). Santa Fe Institute, Santa Fe, New Mexico, June 16-19.
- 1994. "Towards Creating Artificial Culture: Theory Building for Anthropology and Archaeology." Society for American Archaeology. Anaheim, April 20-24.

TEACHING:

All incorporating themes of complex systems utilizing graphical computer simulations of multiple agency, self-organization, evolution, and emergence using Borland's C++ RAD package for PCs.

- 2008-2017. ALiCE: Artificial Life, Culture and Evolution. Philosophy, theory and practice of artificial life, artificial culture and evolutionary computation. C++ multiagent simulation programming for beginners on up. Duke University, Information Science & Studies -170, Computer Science-107. Visual Media Studies-172.
- 2013-2017. Meteorites and Solar System History. The cultural history and evolution of thought leading to the science of Meteoritics. Duke University, Information Science & Studies-230, Earth and Ocean Sciences-230.
- 2010-2016. Espionage, Cryptology & Psychological Operations. Networks of Trust, Secrecy and Deception. Duke University, Information Science & Studies-226, Cultural Anthroopology-235.
- 2002-2008. ALICE: Artificial Life, Culture and Evolution.
 Philosophy, theory and practice of artificial life, artificial culture and evolutionary computation.
 UCLA Honors Collegium 69, Spring 2002, Winter 2005, Fall 2006, Fall 2007.
- 2004-2008. Artificial Culture: Exploring Human Complex Worlds. Cultural programming through multiagent simulations. UCLA Anthropology, Human Complex Systems Program, Winter 2004, Winter 2005, Winter 2006, Spring 2006, Winter 2008, Spring 2008.
- 2006. Espionage, Cryptology & Psychological Operations. UCLA Human Complex Systems 19, a Fiat Lux Seminar.
- 2003. Physical Computing: Algorithmic and Reactive Art. Interfacing PCs to the real world through sensors and actuators. UCLA Department of Design | Media Arts 189, Fall 2003.
- 2000-2002. Computational Cartography Thinking with Maps and Spatial Visualizations. The cultural context of map-making in the computer age. UCLA Geography 167, Winter 2000, 2001, 2002, Spring 2003.

2003. Interfacing the Real and the Computational. Interactive Multiagent Spatial Simulations and Games.

UCLA Department of Design | Media Arts 189, Winter 2003.

- 2003. Artificial Worlds Life, Culture and Evolution. Emergent evolutionary art and design. UCLA Department of Design | Media Arts 189, Spring 2003.
- 2002. Artificial Life, Artificial Culture and Evolutionary Design. Theory and epistemology of advanced computational modeling in artificial life, artificial societies, artificial culture and evolutionary computation. UCLA Honors Collegium 69, Spring 2002.
- 2001. Connecting Natural and Artificial Worlds Multiagent Spatial Simulations and Games. Methods of multiagent and evolutionary modeling. UCLA Department of Geography 199, Fall 2001.

END