Literature search results

for the report

Complexity science – an introduction for actuaries

Alan Mills, FSA ND

Version 1
June 10, 2010

INTRODUCTION

This document presents the detailed results of a literature search performed during December 2009 - February 2010 to find resources for the report *Complexity Science – an introduction (and invitation) for actuaries.* It is in two sections:

I. Search chronicle

Section I chronicles the search process. It lists the databases that I searched, in the chronological order searched, and lists the primary and referenced resources (see sidebar) I found within each database. For example, because the first database I searched was the Society of Actuaries online database, it is listed first.

For each database searched, the primary references found are listed by search term (see sidebar). For example, in the Society of Actuaries database, the article "Emerging risks: the signs are there" was found using the search term "complexity science", and so in the search chronicle it is listed accordingly.

Indented under each primary resource are the referenced resources found within that primary resource. I looked for referenced resources after finding all the primary resources. Because of time constraints (and the potential for infinite regress), I did not specifically search for additional resources within all referenced resources. However, in a few cases, I did find referenced resources within referenced resources, and denoted this in the chronicle by further indentation.

The primary resources and referenced resources are the works that I found to be potentially interesting for actuaries. From these, I selected the approximately one hundred resources that I found to be most important for actuaries (which I call the *Essential resources*), and from these I selected and annotated the ten most important books (the *Top ten Complexity Science books*). In the chronicle, the *Essential resources* are listed in **bold type**, and the *Top ten Complexity Science books* are **bolded and underlined**.

At the end of each database section is a summary giving the total hits, as well as the number of primary and referenced resources found.

II. Bibliography

Section II lists the primary and referenced resources found, sorted alphabetically by the primary author's last name.

Search terminology

"Search terms" are words or phrases related to a topic that are used to find resources on that topic within a database. For example, in many databases I used the search term "complexity science" to find resources related to complexity science.

"Hits" are the resources found in a database from using search terms.

"Primary resources" are those resources of potential interest to actuaries that I found directly from searching a database. For example, I found the article "Applying complex adaptive systems to actuarial problems" directly from searching the Society of Actuaries online database. Thus, it is a primary resource.

"Referenced resources" are those resources potentially of interest to actuaries that are mentioned within a primary resource. For example, within the article "Applying complex adaptive systems to actuarial problems", the authors mention an article titled "Modeling annuity policy holder behavior using behavioral economics and complexity science". This second article is thus a "referenced resource".

I. SEARCH CHRONICLE
A. ACTUARIAL ONLINE DATABASES

1. Society of Actuaries (www.soa.org)
To search the Society of Actuaries (SOA) online database, I used its Advanced Search function. In the "Find results with the EXACT phrase" area, I put each search term in quotes (e.g., "complexity science"). Following are the results:

<u>a. CS search terms</u>

"complexity science": 10 hits, 3 potential resources:
▪ 2009: Emerging risk – the signs are there; N Cantle, N Allan.
▪ 2003: Simulation technology for managing risk; L Segre-Tossani.
▪ 2002: The coming revolution in risk management; L Segre-Tossani

"complex adaptive system(s)": 29 hits, 6 potential resources:
▪ 2009: How to spot emerging enterprise risk (.ppt); N Allan, N Cantle
▪ 2009: Why we need to transform our view of risk (.ppt); A Lo
▪ 2009: White, gray, and black swans – identifying, forecasting and managing medical expenditure trend drivers in a complex world; A Mills
   – **2008: Complexity of service value networks; RC Basole, WB Rouse**
   – 2007: A simple guide to chaos and complexity; D Rickles, P Hawe, A Shiell.
   – 2007: The black swan: the impact of the highly improbable; N Taleb
   – 2003: Health care organizations as complex adaptive systems; JW Begun, B Zimmerman, K Dooley
   – 2001: Crossing the quality chasm: a new health system for the 21st century (Appendix B); Institute of Medicine
   – 2000: Business dynamics: systems thinking and modeling for a complex world; J Sterman
   – 1998: Design of simulators to enhance learning, examples from a health care microworld; G Hirsch, C Immediato
   – **1997: On the critical behavior of simple epidemics; CJ Rhodes, HJ Jensen, RM Anderson**
   – **1996: How nature works; P Bak**
▪ 2004: Complexity and complex adaptive systems: applications for actuarial science, finance, and risk management; Rick Gorvett (.ppt). References:
   – 2000: A hitchhiker's guide to the techniques of adaptive nonlinear models; AF Shapiro
▪ 2000: How is behavioral finance behaving?; B Brizeli
▪ **1999: Applying complex adaptive systems to actuarial problems; HM Shumrak, V Darley**:
   – **1999: Modeling annuity policy holder behavior using behavioral economics and complexity science; M Shumrak, M Greenbaum, VD, R Axtell** (from conversation with M Shumrak)

"network science": 0 hits, 0 potential resources

"network theory": 2 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**41**	**9**	**1**	**0**
Referenced	**NA**	**11**	**4**	**0**

I. SEARCH CHRONICLE CONTINUED
A. ACTUARIAL ONLINE DATABASES CONTINUED

1. Society of Actuaries (www.soa.org) continued

<u>b. ABMS search terms</u>

agent-based"/"agent based": 44 hits, 1 potential resource:
- **2005: Concurrent simulation to explain reinsurance market price dynamics; J Alkemper, D Mango.**

"multiagent"/"multi-agent"/"multi agent": 4 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**48**	**1**	**1**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
A. ACTUARIAL ONLINE DATABASES CONTINUED

2. Casualty Actuarial Society (www.casact.org)

For searches on the Casualty Actuarial Society (CAS) website, I used its Google Site Search engine, and put the search term in quotes (e.g., "complexity science"). The DARE search engine on the CAS website was not useful for these searches, because it does not accept search phrases in quotes (e.g., for "complexity science", it returns all documents containing the words complexity and science whether or not the words are contiguous). Following are the results:

a. CS search terms

"complexity science": 8 hits, 3 potential resources:
- 2003: Advanced modeling, visualization and data mining techniques for a new risk landscape; L Smith, L Segre-Tossani.
  - 1990: The actuarial paradigm – a nontechnical exposition; L Smith
- **2003: Applications of advanced science in the new era of risk management; L Smith, L Segre-Tossani.**
- 2003: Applications of advanced science in the new era of risk management (.ppt); L Smith.

"complex adaptive system(s)": 2 hits, 0 potential resources

"network science": 0 hits, 0 potential resources

"network theory": 2 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**12**	**3**	**0**	**0**
Referenced	**NA**	**1**	**1**	**0**

b. ABMS search terms

"agent-based"/"agent based": 28 hits, 3 potential resources:
- 2004: Nonlinear dynamics and complex systems (.ppt); R Gorvett
- **2004: The agents are coming; Donald F. Mango**
  - 2001: Agent-based modeling: a revolution?; SC Bankes
  - 2001: Tools and techniques for developing policies for simulating human systems; SC Bankes
  - 2001: Agent-based modeling: methods and techniques for simulating human systems; E Bonabeau
  - 2001: Adaptive agents, intelligence, and emergent human organization: Capturing complexity through agent-based modeling; JL Brian, L Berry, D Kiel, E Elliott
  - 2001: Computational organization science: a new frontier; KM Carley
  - 2001: Invariance and universality in social agent-based simulations; C Cioffi-Revilla
  - 2001: Exploring cooperation and competition using agent-based modeling; E Elliott, D Kiel
  - 2001: Platforms and methods for agent-based modeling; N Gilbert, SC Bankes
  - 2001: Overcoming design and development challenges in agent-based modeling using ASCAPE; ME Inchlosa, MT Parket
  - 2001: Agent-based modeling as organizational and public policy simulators; R Lempert
  - 2001: A new decision sciences for complex systems; R Lempert
  - 2001: Policy analysis from first principles; S Moss
  - 2001: Economic agents and markets as emergent phenomena; L Tesfatsion
- 2003: Dynamic pricing analysis; CH Boucek, TP Conway

I. SEARCH CHRONICLE CONTINUED
A. ACTUARIAL ONLINE DATABASES CONTINUED

2. Casualty Actuarial Society (www.casact.org) continued
b. ABMS search terms continued

"multiagent"/"multi-agent"/"multi agent": 1 hit, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**29**	**3**	**1**	**0**
Referenced	**NA**	**13**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
A. ACTUARIAL ONLINE DATABASES CONTINUED

3. International Actuarial Association (www.actuaries.org)

I used the site's advanced search function, with the search terms entered in the "exact phrase" box. Following are the results.

a. CS search terms

"complexity science": 17 hits, 2 potential resources:
- 2006: The changing foundations of actuarial mathematics; RD Jones, L Smith.
- 2000: Insurance World 2 – A complex model to manage risk in the age of globalization; G Gionta

"complex adaptive system": 7 hits, 1 potential resources:
- 2009: Systemic risk in financial services; D Besar et al
  - **2009: Rethinking the financial network; A Haldane**
    - **2008: The physics of networks; M Newman**
    - **2003: The structure and function of complex networks; M Newman**

"network science": 0 hits, 0 potential resources

"network theory": 7 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**31**	**3**	**0**	**0**
Referenced	**NA**	**3**	**3**	**0**

b. ABMS search terms

"agent-based"/"agent based": 66 hits, 2 potential resources
- 2008: Agent-based modeling in health care (ppt); P Gaudiano
- 2007: An introduction to insurer strategic risk; D Mango

"multiagent"/"multi-agent"/"multi agent": 11 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**77**	**2**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
A. ACTUARIAL ONLINE DATABASES CONTINUED

4. Institute of Actuaries and Faculty of Actuaries (UK) (www.actuaries.org.uk)
For searches on this website, I used its Advanced Search engine. I used the "Search term" function and put the search term in quotes (e.g., "complexity science"); however, it does not appear that the search algorithm recognizes quotes as denoting contiguous search terms. For the "Search within" category, I selected "All". Following are the results:

a. CS search terms

"complexity science": 1 hit, 0 potential resources

"complex adaptive system": 0 hits

"network science": 0 hits, 0 potential resources

"network theory": 15 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**16**	**0**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

b. ABMS search terms

"agent-based"/"agent based": 3 hits, 2 potential resources:
- 2008: Complexity economics – application and relevance to actuarial work; J Palin et al
  - **2007: The origin of wealth; E Beinhocker.**
    - **2002: Seeing around corners; J Rauch**
    - 2002: Tired of strategic planning?; E Beinhocker, S Kaplan
  - 2006: The (mis)behavior of markets; B Mandelbrot, R Hudson
  - 2002: Agent-based stockmarket models: calibration issues and application; J Palin
- 2008: Complexity economics – application and relevance to actuarial work (.ppt); J Palin et al

"multi-agent"/"multi agent"/"multiagent": 1 hit; 1 potential resource:
- 2009: What is the appropriate framework in which to describe and understand risk?; P Parodi, A Benfield.

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**4**	**3**	**0**	**0**
Referenced	**NA**	**5**	**2**	**1**

I. SEARCH CHRONICLE CONTINUED
A. ACTUARIAL ONLINE DATABASES CONTINUED

5. Institute of Actuaries of Australia (www.actuaries.asn.au)
For searches on this website, I used its Google site-specific search engine. I put the search term in quotes (e.g., "complexity science"); however, it does not appear that the search algorithm recognizes quotes as denoting contiguous search terms. Following are the results:

a. CS search terms

"complexity science": 0 hits

"complex adaptive system": 0 hits

"network science": 0 hits, 0 potential resources

"network theory": 0 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**0**	**0**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

b. ABMS search terms

"agent-based"/"agent based": 0 hits:

"multi-agent"/"multi agent"/"multiagent": 1 hit, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**1**	**0**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
B. BOOKS

1. Library of Congress (catalog.loc.gov)
For searches of the Library of Congress online catalog (LOC), I used its Basic Search function. For each book hit, I reviewed it on Amazon.com or Google Books. For this search, I added a few search terms: Following are the results:

a. CS search terms

"complexity science" as a "Keyword (match all words)" search: 18 hits, 1 potential resource:
▪ 2000: The soul at work; R Lewin
  – 1998: Emergence: from chaos to order; JH Holland
  – **1995: At home in the universe; S Kauffman**
  – **1987: Chaos: making a new science; J Gleick**

"complex adaptive system?" as a "Keyword (match all words)" search: 58 hits, 3 potential resources:
▪ **2007: Complex adaptive systems: an introduction to computational models of social life; J Miller, SE Page**
  – 2006: Essay: Path dependence; SE Page
  – 2004: The interplay between analytics and computation in the study of congestion externalities: the case of the El Farol problem; E Zambrano
  – **2002: A new kind of science; S Wolfram**
  – 2001: Zipf distribution of U.S. firm sizes; R Axtell
  – 2000: An illustration of the essential difference between individual and social learning, and its consequences for computational analyses; NJ Vriend
  – 1999: A day at the beach: human agents self-organizing on the sand pile; H Ishii, SE Page
  – 1999: The computational complexity of sandpiles; C Moore, M Nilsson.
  – 1997: On the minority game: analytical and numerical studies; D Challet, YC Zhang
  – 1997: No free lunch theorems for optimization; DH Wolpert
  – 1996: Aligning simulation models: a case study and results; R Axtell, R Axelrod, J Epstein, M Cohen
  – 1996: The coevolution of automata in the repeated prisoner's dilemma; JH Miller
  – 1994: The calculi of emergence: computation, dynamics, and induction; JP Crutchfield
  – 1978: A guide for the perplexed; EF Schumacher
▪ **1996: Introduction to genetic algorithms; M Mitchell**
▪ **1996: Growing artificial societies: social science from the bottom up; JM Epstein, R Axtell**

"complexity (philosophy)" as a "Subject Keyword" search: 148 hits, 6 potential resources:
▪ 2010: Complexity and public policy: a new approach to 21st century politics, policy, and society; R Geyer, S Rihani (not yet available)
▪ **2009: Complexity: a guided tour; Melanie Mitchell**
  – 2007: The stabilizing effect of noise on the dynamics of a Boolean network; CS Goodrick, MT Matache
  – 2007: Control without hierarchy; D M Gordon
  – **2007: Power-law distributions in empirical data; A Clauset, CR Shalizi, MEJ. Newman**
  – 2007: The powers that be; B Grant
  – 2007: Power law distributions, 1/f noise, long-memory time series; C Shalizi
  – 2005: Revisiting 'scale-free' networks; EG Keller
  – 2005: Power laws, Pareto distributions and Zipf's law; MEJ Newman
  – 2004: Ant colony optimization; M Dorigo, T Stutzle
  – 2004: Sync: how order emerges from chaos in the universe, nature, and daily life; S Strogatz

I. SEARCH CHRONICLE CONTINUED
B. BOOKS CONTINUED

1. Library of Congress (catalog.loc.gov)

<u>a. CS search terms _{continued}</u>

- 2004: Life's universal scaling laws; GB West and JH Brown
- 2003: Effective complexity as a measure of information content; JW McAllister
- 2003: Efficient immunization strategies for computer networks and populations; R Cohen, D ben-Avraham, S Havlin
- 2003: A brief history of generative models for power law and lognormal distributions; M Mitzenmacher
- 2002: Statistical fraud detection: a review; RJ Bolton, DJ Hand
- 2002: Complexity and robustness; JM Carlson, J Doyle
- 2002: Statistical mechanics of complex networks; R Albert, A-L Barabasi
- **2002: Linked: the new science of networks; A-L. Barabasi**
- 2001: Measures of complexity: a non-exhaustive list; S Lloyd
- 2000: Survival of the fittest in drug design; MJ Felton
- **2000: The tipping point: how little things can make a big difference; M Gladwell**
- 1999: Emergence of scaling in random networks; A-L Barabasi, R Albert
- 1999: Thermodynamic depth of causal states: when paddling around in Occam's pool shallowness is a virtue; JP Crutchfield, CR Shalizi
- 1999: Long-term Capital Management: regulators need to focus greater attention on systemic risk; Government Accounting Office
- 1999: A brief history of the concept of chaos; HA Liu
- 1998: Computation in cellular automata: a selected review; M Mitchell
- 1989: Inferring statistical complexity; JP Crutchfield, K Young
- 2004: Deep simplicity: bringing order to chaos and complexity; J Gribben
- 2002: Emergence of everything: how the world became complex; HJ Morowitz.
- **1999: Complexity: life at the edge of chaos; R Lewin**
- **1988: Dreams of reason: the computer and the rise of the sciences of complexity; HR Pagels**

"network science": 10 hits, 2 potential resources
- 2008: Network science: theory and practice; TG Lewis
- 2007: Driving forces in physical, biological and socio-economic phenomena; BM Roehner

"network theory": 97 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**331**	**12**	**6**	**2**
Referenced	**NA**	**42**	**6**	**2**

I. SEARCH CHRONICLE CONTINUED
B. BOOKS CONTINUED

1. Library of Congress (catalog.loc.gov) continued

<u>b. ABMS search terms</u>

"agent-based"/"agent based" as a "Keyword (match all words)": 107 hits, 6 potential resources:
- 2009: Multi-agent systems for healthcare simulation and modeling: applications for system improvement; Paranjape
- 2008: Emergent macroeconomics: an agent-based approach to business fluctuations; D Delli Gatti
- **2008: Agent-based models; N Gilbert**
  - 2004: Simulating organizational decision-making using a cognitively realistic agent model; R Sun, I Naveh
- **2007: Managing business complexity: discovering strategic solutions with agent-based modeling and simulation; MJ North and CM Macal.**
  - 2001: What is complexity science, really?; SE Phelan
- **2006: Generative social science: studies in agent-based computational modeling; JM Epstein**
  - 1999: The emergence of firms in a population of agents: local increasing returns, unstable Nash equilibria, and power law size distributions; R Axtell
  - 2006: Agent-based models of organizations; M Chang, JE Harrington
- **1997: Complexity of cooperation: agent-based models of competition and collaboration; Robert Axelrod.**

"multiagent"/"multi-agent"/"multi agent" as a "Keyword (match all words)": 178 hits; 1 potential resource
- 2009: Data mining and multi-agent integration; L Cao

"social systems (computer simulation) as a "Subject Keyword" search: 4 hits, 0 resources

"social systems (mathematical models)" as a "Subject Keyword" search: 16 hits; 0 resources

"social sciences (computer simulation)" as a "Subject Keyword" search: 8 hits; 0 resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**313**	**7**	**4**	**2**
Referenced	**NA**	**4**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
B. BOOKS CONTINUED

2. Google Books (www.google.com)

I used Google Book's Advanced Search function, with the following settings:

- this exact wording or phrase: e.g.: complexity science
- Language: any language

For each search, I reviewed the top 200 hits. Following are the results:

a. CS search terms

"complexity science": 640 hits; 2 potential resources:

- 1998: Edgeware: insights from complexity science for health care leaders; B Zimmerman, C Lindberg, PE Plsek.
- **1992: Complexity: the emerging science at the edge of order and chaos; MM Waldrop**

"complex adaptive system": 838 hits, 4 potential resources:

- **2008: The mind of the market; M Sherrmer**
- **2008: Complex and adaptive dynamical systems; C Gros**
- **1996: Hidden order; JH Holland**
- 1995: The quark and the jaguar. M Gell-Mann

"network science": 746 hits, 0 potential resources

"network theory": 2572 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**1,478**	**6**	**4**	**1**
Referenced	**NA**	**0**	**0**	**0**

b. ABMS search terms

"agent-based"/"agent based: 2,601 hits, 3 resources:

- 2008: Behavioral modeling and simulation – from individuals to societies; National Research Council
- 2003: Introduction: agent-based computational demography; FC Billari, A Prskawetz
- **2002: The hare and the tortoise – cumulative progress in agent-based simulation; K Takadama, K Shimohara**

"multiagent"/"multi-agent"/"multi agent": 2,531 hits; 0 resource

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**5,132**	**3**	**1**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
B. BOOKS CONTINUED

3. Santa Fe Institute Book List (www.santafe.edu/research/publications/publications-book-list.php)

I manually inspected the list of books. Following are the results:

- 1992: Time series prediction: forecasting the future and understanding the past; AS Weigend, NA Gershenfield

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**1**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
C. INTERNET

1. Google Web (www.google.com)

I used Google's Advanced Search function, with the following settings:

- this exact wording or phrase: e.g. complexity science
- one or more of these words: e.g. actuarial OR actuary OR actuaries
- Language: any language
- File type: Adobe Acrobat PDF (.pdf) (bcause PDF files often contain interesting reports, I did a separate search for PDF files) as well as files that are not PDF.

For each search, I reviewed the top 200 hits. Following are the results:

a. CS search terms + Actuarial search terms
i. PDF documents

"complexity science" actuarial OR actuary OR actuaries filetype**:**pdf: 234 hits; 3 potential resources:

- ?: A complex model for managing risk in the age of globalization; G Gionta
- 2009: Insurance industry under the microscope; N Cantle, N Allan
- 2002: Complicated and complex systems: what would successful reform of Medicare look like?; S Glouberman, B Zimmerman

"complexity science" investment OR "asset allocation" filetype:pdf: 4,710 hits; 1 potential resource:

- 2009: A science of connectedness; KC Stange

"complexity science" insurance OR reinsurance filetype**:**pdf: 2,350 hits; 7 potential resources:

- 2009: Applications of complexity science for public policy; OECD Global Science Forum
- 2009: Complex systems modeling for obesity research; RA Hammond
- 2008: Complexity in the real world – grand challenges for complexity science; EPSRC
- 2005: General practice as a complex system; T Love
- 2004: Complex adaptive systems: a different way of thinking about health care systems; B Sibthorpe
- 2003: Power laws & the new science of complexity management; M Buchanan
- 2002: Learning about complexity science; NAPCRG

"complexity science" pension OR retirement filetype:pdf: 9,510 hits; 4 potential resources:

- 2008: Complexity science and long term care in Pennsylvania: an ecological analysis of the organizational landscape in 2020; M Lin
- 2008: Governance and complexity – emerging issues for governance theory; A Duit, V Galaz
- 2008: The complexity approach to economics: a paradigm shift; M Fontana
- **2002: Predicting the unpredictable; E Bonabeau**

"complexity science" healthcare OR "health care" filetype:pdf: 1,520 hits; 4 potential resources:

- 2006: Complexity, simplicity, and epidemiology; N Pearce
- 2003: Health care organizations as complex adaptive systems; JW Begun
- 2003: Complexity and the adoption of innovation in health care; P Plsek
- 2001: The challenge of complexity in health care; P Plsek

I. SEARCH CHRONICLE CONTINUED
C. INTERNET CONTINUED

1. Google Web (www.google.com) continued

a. CS search terms + Actuarial search terms continued
i. PDF documents continued

"complexity science" "risk management" filetype:pdf: 1,480 hits; 8 potential resources:
- 2009: Emerging risks – sources, drivers and governance issues; IRGC
- 2008: A complexity science based approach to programme risk management; NJ Smith, D Bower, B Aritua
- 2008: Explaining what leads up to stock market crashes: a phase transition model and scalability dynamics; R Yalamove, B McKelvey
- 2007: Complexity and chaos – state of the art; M. Couture
- 2007: Econophysics and the complexity of financial markets; D Rickles
- 2007: Tackling complexity in science; M Couture
- 2006: Crisis management or crisis response system? – A complexity science approach to organizational crises; A Paraskevas
- 2003: The promises and perils of agent-based computational economics; M Richiardi

"complex adaptive system" actuarial OR actuary OR actuaries filetype:pdf: 298 hits; 0 potential resources:

"complex adaptive system" investment OR "asset allocation" filetype:pdf: 48,300 hits; 1 potential resource:
- **2002: The cellular automaton model of investment behavior in the stock market; Y Wei**

"complex adaptive system" insurance OR reinsurance filetype:pdf: 598 hits; 1 potential resource:
- 2008: Health care as a complex adaptive system: implications for design and management; WB Rouse

"complex adaptive system" pension OR retirement filetype:pdf: 5,200 hits; 3 potential resources:
- **2009: Complex adaptive systems: how informed patient choice influences the distribution of complex surgical procedures; J Studnicki**
  - 2008: A new tool for epidemiology: the usefulness of dynamic-agent models in understanding place effects on health; AH Auchincloss and D Roux.
  - 2007: Optimization of HAART with genetic algorithms and agent-based models of HIV infection; F Castiglione, F Pappalardo, M Bernaschi, S Motta
  - 2002: Modeling infection transmission: the pursuit of complexities that matter; JS Koopman
- 2001: A complexity and Darwinian approach to management with failure avoidance as the key tool; R Willis

"complex adaptive system" healthcare OR "health care" filetype:pdf: 632,000 hits; 0 potential resources

"complex adaptive system" "risk management" filetype:pdf: 10,700 hits; 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**698,576**	**31**	**3**	**0**
Referenced	**NA**	**3**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
C. INTERNET CONTINUED

1. Google Web (www.google.com) continued

a. CS search terms + Actuarial search terms continued
ii. General resources (but not PDF documents)

"complexity science" actuarial OR actuary OR actuaries –filetype:pdf: 496 hits; 1 resource:
- 2004: Humana announces latest release of SmartStart

"complexity science" investment OR "asset allocation" –filetype:pdf: 13,700 hits; 0 resources:

"complexity science" insurance OR reinsurance –filetype:pdf: 11,800 hits; 0 resources:

"complexity science" pension OR retirement –filetype:pdf: 3,500 hits; 0 resources:

"complexity science" healthcare OR "health care": 23,400 hits; 1 resource:
- **2008: Why model?; Joshua Epstein**

"complexity science" "risk management" –filetype:pdf: 9,420 hits; 4 resources:
- 2009: The implications of complexity science for economics and finance; G Fisher
- 2009: From Gaussian to Paretian thinking: causes and implications of power laws in organizations; P Andriani
- 2009: 'Power curves': what natural and economic disasters have in common; M Zanini
- 2008: Using 'power curves' to assess industry dynamics; M Zanini

"complex adaptive system" actuarial OR actuary OR actuaries –filetype:pdf: 15,700 hits; 1 resource:
- 2002: The role of futurism in creating actuarial models; P Bishop

"complex adaptive system" insurance OR reinsurance –filetype:pdf: 30,600 hits; 0 resources

"complex adaptive system" pension OR retirement –filetype:pdf: 610 hits; 0 resources:

"complex adaptive system" healthcare OR "health care" –filetype:pdf: 1,600,000 hits; 0 resources:

"complex adaptive system" "risk management" –filetype:pdf: 33,000 hits; 2 resources:
- 2008: Evolution management in a complex adaptive system: engineering the future; D Smith, NF Johnson
- 2007: New directions for understanding systemic risk: a report on a conference cosponsored by the Federal Reserve Bank of New York and the National Academy of Sciences; J Kambhu, S Weidman, N Krishnan

"network science" actuarial OR actuary OR actuaries –filetype:pdf: 95 hits; 0 resource:

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**1,742,226**	**9**	**1**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
C. INTERNET CONTINUED

1. Google Web (www.google.com) continued

b. ABMS search terms + Actuarial search terms
i. PDF documents

"agent-based"/"agent based" actuarial OR actuary OR actuaries filetype:pdf: 2,150 hits; 2 potential resources :
- 2008: An agent-based computational approach to explaining persistent spatial unemployment disparities; D McArthur, I Thorsen, J Uboe
- **2009: Back to basics: systemic risk and everyday behavior; N Cantle, BM Smith**

"agent-based"/"agent based" investment OR "asset allocation" filetype:pdf: 41,800 hits; 1 potential resource:
- 2001: Toward agent-based models for investment; D Farmer

"agent-based"/"agent based" insurance OR reinsurance filetype:pdf: 30,800 hits; 4 potential resources:
- ?: Data integration in agent based modeling; T Bossomaier et al
- **2005: Modeling the US healthcare system – predicting the consequences of policy decisions through computational modeling; D Strip et al**
- 2009: Does Basel II destabilize financial markets? An agent-based financial market perspective; O Hermsen
- 2009: Experimental economics and agent-based models; S Heckbert

"agent-based"/"agent based" pension OR retirement filetype:pdf: 19,400 hits; 0 potential resources:

"agent-based"/"agent based" healthcare OR "health care" filetype:pdf: 83,600 hits; 2 potential resources:
- 2008: Agent-based modeling: new methodologies in impact analysis (ppt); S Chakravarty
- **2008: A survey of agent-based modeling practices; B Heath, R Hill, F Ciarallo**

"agent-based"/"agent based" "risk management" filetype:pdf: 16,600 hits; 3 potential resources:
- 2009: Agent-based computer simulation for operational risk analysis (ppt); EP MacKerrow
- **2005: Risk management research imperatives; D Mango**
- 2009: Is network theory the best hope for regulating systemic risk? (ppt); K Soramaki
  - 2009: Six degrees of rumination; C Wright
  - **2009: Meltdown modeling: could agent-based computer models prevent another financial crisis?; M Buchanan**
  - 2009: Complex systems and networks: July 24 issue of Science

"multi-agent"/"multi agent"/"multiagent" actuarial OR actuary OR actuaries filetype:pdf: 1,350 hits; 0 potential resources

"multi-agent"/"multi agent"/"multiagent" investment OR "asset allocation" filetype:pdf: 24,200 hits; 0 potential resources

"multi-agent"/"multi agent"/"multiagent" insurance OR reinsurance filetype:pdf: 11,700 hits; 0 potential resources

I. SEARCH CHRONICLE CONTINUED
C. INTERNET CONTINUED

1. Google Web (www.google.com) continued

b. ABMS search terms + Actuarial search terms continued
i. PDF documents continued

"multi-agent"/"multi agent"/"multiagent" pension OR retirement filetype:pdf: 11,800 hits; 3 potential resources:
- 2005: A study on Japanese public pension system using multi agent based simulation; N Tanida, M Murakami
- 2006: Revisiting to agent based modelling for unpayment behaviour on Japanese public pension system; M Murakami, N Tanida
- 2005: Multi-agent modeling and analysis of the Brazilian food-poisoning scenario; V Mysore et al

"multi-agent"/"multi agent"/"multiagent" healthcare OR "health care" filetype:pdf: 20,400 hits; 2 potential resources:
- 2005: Modeling malaria with multi-agent systems; F Rateb et al
- 2005: Multi-agent modeling and analysis of the Brazilian food-poisoning scenario; V. Mysore

"multi-agent"/"multi agent"/"multiagent" "risk management" filetype:pdf: 8.250 hits; 1 potential resources:
- ?: Multi-agent simulation of financial markets; O Streltchenko, Y Yesha, T Finin

"network theory"/"network science" "actuary" OR "actuaries" OR "actuarial" filetype:pdf: 4,300 hits; 0 potential resources:

"behavioral economics"/"behavioural economics" "health care" OR "healthcare" filetype:pdf: 9,500 hits; y potential resources:
- 2009: Obesity: can behavioral economics help?; DR Just, CR Payne
- 2009: Economic regulation of physicians: a behavioral economics perspective; TL Greaney
- **2008: Health care and behavioral economics: a presentation to the National Academy of Social Insurance; P Orszag**
  – 2007: Behavioral economics and its applications; P Diamond, H Vartiainen, J Yrjo
- **2008: Behavioral economics: lessons from retirement research for health care and beyond; P Orszag**
- Drilling down on mad markets, gentle nudges and behavioral economics: real-life applications in healthcare (PowerPoint); MJ Barrett
- 2007: The behavioral economics of retirement savings behavior; RH Thaler, S Benartzi
- 2005: The health care challenge: some perspectives from behavioral economics; RG Frank
- 2005: Behavioral economics: the art and science of making choices; JWC Stark
- **2004: Behavioral economics and health economics; RG Frank**
  – 2008: Optimal decision making, rules of thumb, and age; T Besedes
  – 2009: Quality and consumer decision making in the market for health insurance and health care services; J Kolstad
- ?: Concentration & competition in health care (PowerPoint); T Greaney

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**276,350**	**18**	**7**	**0**
Referenced	**NA**	**3**	**1**	**0**

I. SEARCH CHRONICLE CONTINUED
C. INTERNET CONTINUED

1. Google Web (www.google.com) continued

b. ABMS search terms + Actuarial search terms
ii. General resources (but not PDF documents)

"agent-based"/"agent based" actuarial OR actuary OR actuaries –filetype:pdf: 9,750 hits; 0 potential resources

"agent-based"/"agent based" investment OR "asset allocation" –filetype:pdf: 131,000 hits; 1 potential resource:
▪ 2008: An agent-based macroeconomic model with interacting firms, socio-economic opinion formation and optimistic/pessimistic sales expectations; F Westerhoff

"agent-based"/"agent based" insurance OR reinsurance –filetype:pdf: 111,000 hits; 2 potential resources:
▪ 2006: Experimental investigation in medical markets and institutional sources of price inflation; CA Johnston
▪ 2000: Agent-based modeling of disrupted market ecologies: a strategic tool to think with; MJ Jacobson, MA Allison, GEP Ropella

"agent-based"/"agent based" pension OR retirement –filetype:pdf: 59,000 hits; 0 potential resources

"agent-based"/"agent based" healthcare OR "health care" –filetype:pdf: 111,000 hits; 1 potential resource:
▪ 2008: Behavioral economics: implications for an aging population's wealth and health decisions; AS Rao

"agent-based"/"agent based" "risk management" –filetype:pdf: 66,200 hits; 0 potential resources:

"multi-agent"/"multi agent"/"multiagent" actuarial OR actuary OR actuaries –filetype:pdf: 6,530 hits; 0 potential resources

"multi-agent"/"multi agent"/"multiagent" investment OR "asset allocation" –filetype:pdf: 55,100 hits; 0 potential resources:

"multi-agent"/"multi agent"/"multiagent" insurance OR reinsurance –filetype:pdf: 38,100 hits; 0 potential resources:

"multi-agent"/"multi agent"/"multiagent" pension OR retirement –filetype:pdf: 22,500 hits; 0 potential resources:

"multi-agent"/"multi agent"/"multiagent" healthcare OR "health care" –filetype:pdf: 81,500 hits; 0 potential resources:

"multi-agent"/"multi agent"/"multiagent" "risk management" –filetype:pdf: 27,500 hits; 1 potential resource:
▪ 2001: Application of multi-agent games to the prediction of financial time-series; N Johnson et al

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**719,180**	**5**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS

1. Google Scholar (scholar.google.com/advanced_scholar_search)

I used Google Scholar's Advanced Search function, with the following settings:
- with the exact phrase: e.g.: complexity science
- Return articles published between 2008 – 2010 (inclusive)
- Search only articles in the following subject areas:
    - Business, Administration, Finance, and Economics
    - Social Sciences, Arts, and Humanities

For each search, I reviewed the top 200 hits. Following are the results:

a. CS search terms

"complexity science": 893 hits; 2 potential resources:
- 2009: Toward a systems biology framework for understanding aging and health span; West, Bergman
- 2009: Complexity science: an alternative framework for understanding strategic management in public serving organizations; L Paarlberg, Bielefeld

"complex adaptive system" OR "complex adaptive systems": 1,870 hits; 2 potential resources:
- 2009: Is U.S. health care an appropriate system? A strategic perspective from systems science; IP Janecka
- 2008: An agent-based model of a minimal economy; CK Chan, K Steiglitz

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**2,763**	**4**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

a. ABMS search terms

"agent-based" OR "agent based": 4,800 hits; 3 potential resources:
- 2008: Agent-based economic models and econometrics; S Chen, C Chang, Y Du
- 2008: Agent-based models and simulations in economics and social sciences: from conceptual exploration to distinct ways of experimenting; D Phan, F Varenne
- 2008: Agent-based financial modelling as an alternative to the standard representative-agent paradigm; T Ramanauskas

"multi-agent" OR "multi agent" OR "multiagent": 3,300 hits; 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**8,100**	**3**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS CONTINUED

2. PubMed (www.ncbi.nlm.nih.gov/sites/entrez)

I used PubMed's Advanced Search function, with the following settings:

- with the exact phrase(e.g.: "complexity science") using "All Fields" as the focus
- Publication Date from 2008 to present

Following are the results:

a. CS search terms

"complexity science": 33 hits; 6 potential resources:

- 2010: Improving care in nursing homes using quality measures/indicators and complexity science; MJ Rantz, MK Flesner, and M Zwygart-Stauffacher
- 2009: Insight: the application of complexity science to decision making; J Koerner
- 2009: Complexity science: how may it help oncology nurses?; W Duggleby
- 2009: Complexity science may help in defining health; VS Rambihar, V Rambihar
- 2008: Moving beyond nostalgia and motives: towards a complexity science view of medical professionalism; FW Hafferty
- 2008: Complexity science: core concepts and applications for medical practice; AM Patel, TM Sundt, P Varkey

"complex adaptive system": 25 hits; 3 potential resource:

- 2009: The complexity of medical organizations in the 21st century; A Afek
- 2009: Heterogeneous preferences, decision-making capacity, and phase transitions in a complex adaptive system; W Wang
- 2008: Embracing chaos and complexity: a quantum change for public health; K Resnicow and SE Page

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**58**	**9**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS CONTINUED

2. PubMed (www.ncbi.nlm.nih.gov/sites/entrez)
b. ABMS search terms

"agent-based"/"agent based": 199 hits; 13 potential resources:
- 2010: Health outcomes and costs of community mitigation strategies for an influenza pandemic in the United States; DJ Perlroth et al
- 2009: A computer simulation of employee vaccination to mitigate influenza epidemic; BY Lee et al
- 2009: Simulating school closure strategies to mitigate an influenza epidemic; BY Lee et al
- 2009: Agent-based model for friendship in social networks
- **2009: The economy needs agent-based modeling; JD Farmer, D Foley**
- 2009: Modeling to contain pandemics; JM Epstein
- 2009: An agent-based approach for modeling dynamics of contagious disease spread; L Perez, S Dragicevic
- 2009: Modeling the cost-effectiveness of colorectal cancer screening: policy guidance based on patient preferences and compliance; S Subramanian, G Bobashev, RJ Morris
- 2009: Computational disease modeling: fact or fiction?; JN Tegner et al
- 2009: A novel approach to multihazard modeling and simulation; SW Smith et al
- 2009: Multiscale agent-based cancer modeling; L Zhang et al
- 2008: Virtual epidemic in a virtual city: simulating the spread of influenza in a US metropolitan area; BY Lee et al
- 2008: The virtue of virtuality: the promise of agent-based epidemic modeling; N Hupert, W Xiong, A Mushin

"multi-agent"/"multi agent"/"multiagent": 214 hits; 4 potential resources:
- 2008: Multi-agent systems in epidemiology: a first step for computational biology in the study of vector-borne disease transmission; B Roche, JF Guegan, F Bousquet
- 2008: The geosimulation of West Nile virus propagation: a multi-agent and climate sensitive tool for risk management in public health; M Bouden, B Moulin, P Gosselin
- 2008: An adaptive system for home monitoring using a multiagent classification of patterns; A Rammal et al
- 2008: Evolution of a multi-agent system in a cyclical environment; T Baptista and E Costa

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**413**	**17**	**1**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS CONTINUED

3. Santa Fe Institute Working Papers (www.santafe.edu/research/publications/wplist)

I manually inspected the Santa Fe Institute Working Papers for 2008 and 2009. Results:

- 2009: The hidden fragility of complex systems: consequences of change, changing consequences; JP Crutchfield
- 2009: Systemic risks in society and economics; D Helbing
- 2009: El Farol revisited: a note on emergence, game theory and society; M Shubik
- 2009: Economic networks: what do we know and what do we need to know?; F Schweitzer et al
    - **2009: Predictably irrational: the hidden forces that shape our decisions; D Ariely**
- 2008: On the generative nature of prediction; W Lohr, A Nihat

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**5**	**0**	**0**
Referenced	**NA**	**1**	**1**	**1**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS CONTINUED

4a. Journal of Artificial Societies and Social Simulation

(jasss.soc.surrey.ac.uk)

I manually inspected the journal's articles for all of its issues, 1998 - 2009. Results:

- **2009: The development of social simulation as reflected in the first ten years of JASS: a citation and co-citation analysis; M Meyer, I Lorscheid, KG Troitzsch**
- 2009: Social circles: a simple structure for agent-based social network models; L Hamill, N Gilbert
- **2009: Design guidelines for agent based model visualization; D Kornhauser, U Wilensky, W Rand**
- 2009: Tools of the trade: a survey of various agent based modeling platforms; C Nikolai, G Madey
- 2008: Alternative approaches to the empirical validation of agent-based models; S Moss
- 2007: Making models match: replicating an agent-based model; U Wilensky, W Rand
- 2007: Empirical validation of agent-based models: alternatives and prospects; P Windrum, G Fagiolo, A Moneta
- 2006: Dialogues concerning a (possibly) new science; G Deffuant, S Moss, W Jager
- 2004: Evaluation of free Java-libraries for social-scientific agent based simulation; R Tobias, C Hofmann
- **2003: Replication, replication and replication: some hard lessons from model alignment; B Edmonds, D Hales**
- 2002: A comparison of simulation models applied to epidemics; R Bagni, R Berchi, P Cariello
- 2001: Do irregular grids make a difference? Relaxing the spatial regularity assumption in cellular models of social dynamics; A Flache, R Hegselmann
- 2001: Creating artificial worlds: a note on *Sugarscape* and two comments; P Terna
- 1998: Just how (un)realistic are evolutionary algorithms as representations of social processes?; E Chattoe-Brown
- 1998: Understanding complex social dynamics: a plea for cellular automata based modelling; R Hegselmann, A Flache

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**15**	**3**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS CONTINUED

4b. Computational and mathematical organization theory
(www.springerlink.com/content/1381-298X)

I manually inspected the journal's articles for all of its issues, from 2002 through 2009. Results:

- 2009: Models as lab equipment: science from computational experiments; S Bankes
- 2008: Pandemic simulation of antivirals + school closures: buying time until strain-specific vaccine is available; SM Mniszewski et al

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**2**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
D. JOURNALS CONTINUED

4c. Complexity (www3.interscience.wiley.com/journal/388804/home)
I manually inspected the journal's articles for 2008 and 2009. Results:

- 2008: A synthesis and a practical approach to complex systems; N Brodu

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**1**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
E. CONFERENCE PAPERS

1. Winter Simulation Conference (www.wintersim.org)
I manually inspected the conference papers for 2008 and 2009, for the following tracks: Education (all sections), Methodology (all sections), Health care applications, General applications, Business process modeling, and Case study applications. Results:

- **2009: How to build valid and credible simulation models; AM Law**
- **2009: Agent-based modeling and simulation; CM Macal, MJ North**
- **2009: Verification and validation of simulation models; RG Sargent**
- 2009: Three critical challenges for modeling and simulation in healthcare; T Young et al
- 2009: Implementation issues of modeling healthcare problems: misconceptions and lessons; T Eldabi
- 2008: Agent-based modeling and simulation: ABMS examples; CM Macal, MJ North

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**6**	**3**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
F. VIDEOS

1. Google Video (www.google.com)

I used Google's Advanced Video Search function, with the following settings:

- this exact wording or phrase: e.g.: complexity science
- Language: any language
- Duration: all durations
- Date: all dates
- File types: all file types

For each search, I reviewed the top 200 hits. Following are the results:

a. CS search terms

"complexity science": 82 hits; 6 potential resources

- 2009: Adapting the Cynefin framework to encompass systemic change; N Radford
- **2008: Modeling complex adaptive systems; J Holland**
- 2007: On the relevance of extremes vs. means in organization science; P Andriani
- 2007: On the relevance of extremes vs. means in organization science (.ppt); P Andriani
- **2007: Emergence – complexity from simplicity, order from chaos(1 of 2), with J Holland; NOVA**
- 2007: Emergence – complexity from simplicity, order from chaos(2 of 2), with J Holland; NOVA

"complex adaptive system": 24 hits, 1 new resource

- 2009: Modeling the complex healthcare system; W Rouse

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**106**	**7**	**2**	**0**
Referenced	**NA**	**0**	**0**	**0**

b. ABMS search terms

"agent-based"/"agent based": 277 hits; 3 potential resources

- 2009: Anatomy of financial crisis; S Thurner
- **2008: Agent-based modeling and the smallpox example; J Epstein**
- 2007: The prospects and perils of complex systems modeling; M Mitchell

"multiagent"/"multi-agent"/"multi agent": 241 hits; 0 resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**518**	**3**	**1**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
F. VIDEOS CONTINUED

1. Google Video (www.google.com) continued

<u>c. Other</u>
I also searched for videos by author name, and found:

2009: Complexity (Chapter 5 of 6): The complexity of life
2009: A simple explanation of the Cynefin framework
2009: Interview with Richard Dawkins: The Genius of Darwin (part 1); ED Beinhocker
2008: Complexity & economics (part 1)
2008: Complexity & economics (part 2)
2008: A documentary on networks, social and otherwise (part 1)
2008: A documentary on networks, social and otherwise (part 2)
2008: A documentary on networks, social and otherwise (part 3)
2008: A new kind of science; Stephen Wolfram
2008: Presentation of the book Predictably irrational; D Ariely
2007: John Conway talks about the Game of Life (part 1), with John Conway
2007: John Conway talks about the Game of Life (part 2), with John Conway
2007: Murray Gell-Mann on emergence
2006: A new centre for complexity science, with Robert Mackay; Lesley Carr

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**NA**	**14**	**8**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
G. GENERAL REFERENCE

1. Wikipedia (en.wikipedia.org)
I used the basic Wikipedia search function for the search.

a. CS search terms

"complexity science": 1 hit, 1 potential resource:
▪   Complex systems: en.wikipedia.org/wiki/Complexity_science

"complex adaptive system": 1 hit, 1 potential resource:
▪   Complex adaptive system: en.wikipedia.org/wiki/Complex_adaptive_system

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**2**	**2**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

b. ABMS search terms

 "agent-based"/"agent based": 1 hit, 1 potential resources
▪   Agent-based model: 2009: en.wikipedia.org/wiki/Agent_based

"multiagent"/"multi-agent"/"multi agent":   0 hits, 0 potential resources

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**1**	**1**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

I. SEARCH CHRONICLE CONTINUED
H. MISCELLANEOUS SEARCHES

1. Google Web (www.google.com)

a. Cellular automata search terms

"cellular automata" OR "cellular automaton" actuary OR actuarial OR actuaries filetype:pdf: 593 hits, 3 potential resources:
- 2007: Critical review of stochastic simulation literature and applications for health actuaries; L Anderson et al
- 2005: Evolving techniques and capabilities: Part 2; P Lacko
- ?: Actuarial applications of multifractal modeling Part I; JA Major, Y Lantsman

 "cellular automata" OR "cellular automaton" insurance filetype:pdf: 3,140 hits, 5 potential resources:
- 2008: A genetically modified liability insurance contract; S Chandler
- 2004: Simpler games: using cellular automata to model social interaction; S Chandler
- 2002: Visualizing adverse selection: an economic approach to the law of insurance underwriting; S Chandler
- 2001: Behavior and learning under law: automata containing evolutionary algorithms; S Chandler
- 2005: High deductible health plans: the limits of analytic economics; S Chandler

 "cellular automata" OR "cellular automaton" "healthcare" OR "health care" OR "health" filetype:pdf: x hit, y potential resource:

"cellular automata" OR "cellular automaton" "risk management" filetype:pdf: x hits, x potential resource:

"cellular automata" OR "cellular automaton" filetype:pdf: x hits, x potential resource:
2000: Introduction to cellular automata; JP Rennard

"cellular automata" OR "cellular automaton" fractal filetype:pdf: x hits, x potential resource:

"cellular automata" OR "cellular automaton" self-organization filetype:pdf: x hits, x potential resource:

"cellular automata" OR "cellular automaton" prediction filetype:pdf: 24,200 hits, 3 potential resource:
- 2004: Is prediction possible? Chaotic behavior of multiple equilibria regulation model in cellular automata topology; ID Katerelos
- 2005: Genetic algorithm evolution of cellular automata rules for complex binary sequence prediction; AV Adamopoulos
- 2010: Predicting chaotic sequences using cellular automata; WL Meier

Resource type	Total			
	Hits	Potential	100 best	Top ten
Primary	**2**	**2**	**0**	**0**
Referenced	**NA**	**0**	**0**	**0**

II. BIBLIOGRAPHY

Aaron, H. J. (1999). *Behavioral dimensions of retirement economics.* Washington D.C. New York: Brookings Institution Press; Russell Sage Foundation.

Adamic, L. A. (2002). *Ziph, power-laws, and Pareto - a ranking tutorial*: HP Labs - Information Dynamics Lab.

Adamopoulos, A. V. (2005). Genetic algorithm evolution of cellular automata rules for complex binary sequence prediction *Lecture series on computer and computational sciences* (Vol. 1, pp. 1-6). Leiden, The Netherlands: Brill Academic Publishers.

Afek, A., Meilik, A., & Rotstein, Z. (2009). The complexity of medical organizations in the 21st century. *Harefuah, 148*(2), 121-124, 138.

Albert, R., & Barabasi, A.-L. (2002). Statistical mechanics of complex networks. *Reviews of Modern Physics, 74*, 48-97.

Aldrich, C. (2009). *The complete guide to simulations & serious games*: John Wiley & Sons, Inc.

Alkemper, J., & Mango, D. F. (2005). Concurrent simulation to explain reinsurance market price dynamics. *Risk Management, November 2005*(6), 13-17.

Allan, N., & Cantle, N. (2009). *How to spot emerging enterprise risks.* Paper presented at the ERM Symposium - April 2009.

Andriani, P. (Writer). (2007). On the relevance of extremes vs. means in organization [Video].

Andriani, P. (2009). From Gaussian to Paretian thinking: causes and implications of power laws in organizations. *Organization Science, 20*(6 (November 2009)), 1053-1071.

Argonne National Laboratory. (2009). Repast Simphony getting started guide. Retrieved December 20, 2009, from http://repast.sourceforge.net/docs/Getting%20Started.pdf

Argonne National Laboratory, & Northwestern University. (2007). Proceedings of agent 1999-2007 conferences. *Agent 1999-2007 conferences* Retrieved December 20, 2009, from http://agent2007.anl.gov/proceedings/index.html

Ariely, D. (Writer). (2008a). Authors @ Google: Dan Ariely.

Ariely, D. (2008b). *Predictably irrational: the hidden forces that shape our decisions* (1st ed.). New York, NY: Harper.

Ariely, D. (Writer). (2008 - 2009). Predictably irrational series.

Auchincloss, A. H., & Diez Roux, A. V. (2008). A new tool for epidemiology: the usefulness of dynamic-agent models in understanding place effects on health. *Am J Epidemiol, 168*(1), 1-8.

Axelrod, R. M. (1997). *The complexity of cooperation: agent-based models of competition and collaboration.* Princeton, N.J.: Princeton University Press.

Axtell, R. (1996). Aligning simulation models: a case study and results. *Computational and Mathematical Organization Theory, 1*, 123-141.

Axtell, R. (1999). *The emergence of firms in a population of agents: local increasing returns, unstable Nash equilibria, and power law size distributions*: Center on Social and Economic Dynamics.

Axtell, R. (2001). Zipf distribution of U.S. firm sizes. *Science, 293*, 1818-1820.

Bagni, R., Berchi, R., & Cariello, P. (2002). A comparison of simulation models applied to epidemics. *Journal of Artificial Societies and Social Simulation, 5*(3), 16 pages.

Bak, P. (1996). *How nature works: the science of self-organized criticality*. New York, NY, USA: Copernicus.

Bankes, S. C. (2001a). *Agent-based modeling: a revolution?* Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Bankes, S. C. (2001b). *Tools and techniques for developing policies for complex and uncertain systems*. Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Bankes, S. C. (2009). Models as lab equipment: science from computational experiments. *Computational and Mathematical Organization Theory, 15*(1), 8-10.

Baptista, T., & Costa, E. (2008). Evolution of a multi-agent system in a cyclical environment. *Theory Biosci, 127*(2), 141-148.

Barabási, A.-L. (2003). *Linked: how everything is connected to everything else and what it means for business, science, and everyday life*. New York: Plume.

Barabasi, A.-L., & Albert, R. (1999). Emergence of scaling in random networks. *Science, 286*, 509-512.

Barrat, A., Barthelemy, M., & Vespignani, A. (2008). *Dynamical processes on complex networks*. Cambridge, UK ; New York: Cambridge University Press.

Barrett, M. J. (2009). *Drilling down on mad markets, gentle nudges, and behavioral economics: real-life applications in healthcare*. Paper presented at the Connected Health Symposium 2009.

Basole, R. C., & Rouse, W. B. (2008). Complexity of service value networks. *IBM Systems Journal, 47*(1), 53-70.

Bass, T. A. (1999). *The predictors* (1st ed.). New York: H. Holt and Co.

Begun, J. W., Zimmerman, B., & Dooley, K. (2003). Health care organizations as complex adaptive systems *Advances in health care organization theory* (pp. 253-288). San Francisco: Jossey-Bass.

Beinhocker, E. D. (2006). *The origin of wealth: evolution, complexity, and the radical remaking of economics*. Boston, Mass.: Harvard Business School Press.

Beinhocker, E. D. (Writer). (2009). Interview with Richard Dawkins: The Genius of Darwin (part 1 of 3).

Beinhocker, E. D., & Kaplan, S. (2002). Tired of strategic planning? *Actuarial Futures*(October 2002), 8 -12.

Besar, D., Booth, P., Chan, K. K., Milne, A. K. L., & Pickles, J. (2009). *Systemic risk in financial services*: Institute of Actuaries.

Besedes, T., Deck, C., Sudipta, S., & Shor, M. (2008). *Optimal decision making, rules of thumb, and age*.

Billari, F. C., Ongaro, F., & Prskawetz, A. (2003). Introduction: agent-based computational demography. In F. C. Billari & A. Prskawetz (Eds.), *Agent-based computational demography* (pp. 1-17): Physica-Verlag.

Bishop, P. C., Klugman, S., & Rowley, M. C. (2000). *The role of futurism in creating actuarial models.* Paper presented at the Society of Actuaries Annual Meeting.

Boccara, N. (2004). *Modeling complex systems.* New York: Springer.

Bonabeau, E. (2001). *Agent-based modeling: methods and techniques for simulating human systems*. Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Bonabeau, E. (2002). Predicting the unpredictable. *Harvard Business Review, 2002*(March), 5-11.

Booker, L. (2005). *Perspectives on adaptation in natural and artificial systems.* Oxford, England ; New York: Oxford University Press.

Boschetti, F., Prokopenko, M., Macreadie, I., & Grisogono, A.-M. *Defining and detecting emergence in conmplex networks.*

Bossomaier, T., Jarratt, D., Anver, M. M., Scott, T., & Thompson, J. *Data integration in agent based modelling.*

Boucek, C. H., & Conway, T. P. (2003). *Dynamic pricing analysis.* Paper presented at the Casualty Actuarial Society Forum - Winter 2003.

Bouden, M., Moulin, B., & Gosselin, P. (2008). The geosimulation of West Nile virus propagation: a multi-agent and climate sensitive tool for risk management in public health. *Int J Health Geogr, 7*, 35.

Brian, J. L., Berry, L., Kiel, D., & Elliott, E. (2001). *Adaptive agents, intelligence, and emergent human organiztion: Capturing complexity through agent-based modeling.* Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Brizeli, B. (2000). *How is behavioral finance behaving?* Paper presented at the 2000 SOA Annual Meeting.

Brodu, N. (2008). A synthesis and a practical approach to complex systems. *Complexity, 15*(1).

Buchanan, M. (2002). *Nexus: small worlds and the groundbreaking science of networks* (1st ed.). New York: W.W. Norton.

Buchanan, M. (2009). Meltdown modelling: could agent-based computer models prevent another financial crisis? *Nature, 460*(August 6, 2009), 680-682.

Burd, B. A. (2005). *Eclipse for dummies.* Hoboken, NJ: Wiley.

Cantle, N., & Allan, N. (2009a). Emerging risk - the signs are there. *Risk management, September 2009*(17), 8-13.

Cantle, N., & Allan, N. (2009b). *Insurance industry under the microscope*: Milliman.

Cantle, N., & Smith, B. M. (2009). Back to basics: systemic risk and everyday behavior. *Contingencies*(July/August 2009), 38-41.

Cao, L. (2009). *Data mining and multi-agent integration.* New York: Springer.

Capra, F. (2002). *The hidden connections.* London: HarperCollins.

Carey, J. (2006). Medical guesswork. *BusinessWeek*(May 29, 2006).

Carley, K. M. (2001). *Computational organization science: a new frontier*. Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Casti, J. L. (1994). *Complexification: explaining a paradoxical world through the science of surprise* (1st ed.). New York, NY: HarperCollins.

Casti, J. L. (1997). *Would-be worlds: how simulation is changing the frontiers of science.* New York: J. Wiley.

Castiglione, F., Pappalardo, F., Bernaschi, M., & Motta, S. (2007). Optimization of HAART with genetic algorithms and agent-based models of HIV infection. *Bioinformatics, 23*(24), 3350-3355.

Chakravarty, S. (2008). *Agent-based modeling: new methodologies in impact analysis*: Brookings Institution.

Challet, D., & Zhang, Y. C. (1997). On the minority game: analytical and numerical studies. *Physica A, 256*, 514-532.

Chan, C. K., & Steiglitz, K. (2008). An agent-based model of a minimal economy. Princeton University.

Chang, M.-H., & Harrington Jr., J. E. (2006). Agent-based models of organizations. In K. L. Judd & L. Tefatsion (Eds.), *Handbook of computational economics* (Vol. 2).

Chattoe, E. (1998). Just how (un)realistic are evolutionary algorithms as representations of social processes? *Journal of Artificial Societies and Social Simulation, 1*(3), 47 pages.

Chen, S.-H., Chang, C.-L., & Du, Y.-R. (2008). Agent-based economic models and econometrics.

Cioffi-Revilla, C. (2001). *Invariance and universality in social agent-based simulations.* Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Clarke, A. C. (Writer). (2008). Fractals - the colors of infinity [Video].

Clauset, A., Shalizi, C. R., & Newman, M. E. J. (2007). *Power-law distributions in empirical data*: Santa Fe Institute.

Conway, J. (Writer). (2007a). John Conway talks about the Game of Life (part 1 of 2) [Video].

Conway, J. (Writer). (2007b). John Conway talks about the Game of Life (part 2 of 2) [Video].

Couture, M. (2007). *Complexity and chaos: state of the art*: Defense R&D Canada.

Coveney, P., & Highfield, R. (1995). *Frontiers of complexity: the search for order in a chaotic world* (1st ed.). New York: Fawcett Columbine.

Crabb, R. R., & Shapiro, A. F. (1996). Managing the insurance enterprise: an interactive computer game. *Actuarial Research Clearing House, 1*(1996), 279-289.

Crutchfield, J. P. (1994). The calculi of emergence: computation, dynamics, and induction. *Physica D, 75*, 11-54.

Crutchfield, J. P. (2009). *The hidden fragility of complex systems - consequences of change, changing consequences*: Santa Fe Institute.

Csardi, G. (2009). *Package 'igraph'.* Retrieved from cran.r-project.org/web/packages/igraph/igraph.pdf.

Csardi, G. (2010). Network analysis with igraph. from igraph.sourceforge.net/igraphbook/index.html

Danis, M. (2003). *The CHAT project: choosing healthplans all together*: National Institutes of Health.

De Marchi, S. (2005). *Computational and mathematical modeling in the social sciences.* Cambridge ; New York: Cambridge University Press.

Deffuant, G., Moss, S., & Jager, W. (2006). Dialogues concerning a (possibly) new science. *Journal of Artificial Societies and Social Simulation, 9*(1).

Dekker, A. (2007). Studying organisational topology with simple computational models. *Journal of Artificial Societies and Social Simulation, 10*(4).

Delli Gatti, D. (2008). *Emergent macroeconomics: an agent-based approach to business fluctuations.* Milan; New York: Springer.

Diamond, P. A., Vartiainen, H., & Yrjö Jahnssonin säätiö. (2007). *Behavioral economics and its applications*. Princeton, N.J.: Princeton University Press.

Discovery Channel (Writer). (2008). Connected: the power of six degrees (on YouTube.com as *A documentary on networks, social and otherwise*) (part 1 of 5): Discovery Channel.

Duggleby, W. (2009). Complexity science--how may it help oncology nurses? *Can Oncol Nurs J, 19*(2), 52, 54.

Eddy, D., & Schlessinger, L. (2003). Archimedes - a trial-validated model of diabetes. *Diabetes Care, 26*(11 - November 2003), 3093-3101.

Edmonds, B., & Hales, D. (2003). Replication, replication and replication: some hard lessons from model alignment. *Journal of Artificial Societies and Social Simulation, 6*(4), 19 pages.

Edmonds, B., Hernandez, C., & Troitzsch, K. G. (2008). *Social simulation: technologies, advances and new discoveries.* Hershey, PA: Information Science Reference.

Eldabi, T. (2009). *Implementation issues of modeling healthcare problems: misconceptions and lessons.* Paper presented at the 2009 Winter Simulation Conference.

Elliott, E., & Kiel, D. (2001). *Exploring cooperation and competition using agent-based modeling.* Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Epstein, J. (Writer). (2008a). Agent-based modeling and the smallpox example.

Epstein, J. (Writer). (2008b). How organizations adapt to new environments.

Epstein, J. (Writer). (2009). Joshua Epstein on simTV.

Epstein, J. M. (2003). *Growing adaptive organizations: an agent-based computational approach* (Working papers): Santa Fe Institute.

Epstein, J. M. (2006). *Generative social science: studies in agent-based computational modeling.* Princeton: Princeton University Press.

Epstein, J. M. (Writer). (2008a). How organizations adapt to new environments.

Epstein, J. M. (2008b). Why model? *Journal of Artificial Societies and Social Simulation, 11*(412), 5 pages.

Epstein, J. M. (2009). Modelling to contain pandemics. *Nature, 460*(7256).

Epstein, J. M., & Axtell, R. (1996). *Growing artificial societies: social science from the bottom up.* Washington, D.C.: Brookings Institution Press.

Érdi, P. (2008). *Complexity explained.* Berlin: Springer.

European Commission. (2007). *Tackling complexity in science: general integration of the application of complexity in science*: European Commission.

Farmer, J. D. (2001). Toward agent-based models for investment. in *Benchmarks and attribution analysis* (pp. 10 pages): Association for Investment Management and Research).

Farmer, J. D., & Foley, D. (2009). The economy needs agent-based modelling. *Nature, 460*(7256), 685-686.

Fausett, L. V. (1994). *Fundamentals of neural networks : architectures, algorithms, and applications.* Englewood Cliffs, NJ: Prentice-Hall.

Fisher, G. (2009). *The implications of complexity science for economics and finance.*

Fisher, L. (2009). *The perfect swarm: the science of complexity in everyday life.* New York: Basic Books.

Flache, A., & Hegselmann, R. (2001). Do irregular grids make a difference? Relaxing the spatial regularity assumption in cellular models of social dynamics. *Journal of Artificial Societies and Social Simulation, 4*(4), 24 pages.

Frank, R. G. (2004). *Behavioral economics and health economics.* Paper presented at the Conference on Economic Institutions and Behavioral Economics.

Frank, R. G. (2005). *The health care challenge: some perspectives from behavioral economics.* Paper presented at the Federal Reserve Bank Economic Conference on the Challenge of U.S. Health Reform.

Gardner, M. (1970). The fantastic combinations of John Conway's new solitaire game "life". *Scientific American, 1970*(October).

Gaudiano, P. (2008). *Agent-based modeling in health care.* Paper presented at the Joint colloquium of the IACA, PBSS and IAAHS Sections of the International Actuarial Association - May 4-7, 2008.

Gell-Mann, M. (1994). *The quark and the jaguar: adventures in the simple and the complex.* New York: W.H. Freeman.

Geyer, R., & Rihani, S. (2010). *Complexity and public policy: a new approach to 21st century politics, policy, and society.* Milton Park, Abingdon, Oxon, England ; New York: Routledge.

Gilbert, G. N. (2008). *Agent-based models.* Los Angeles: Sage Publications.

Gilbert, G. N., & Conte, R. (1995). *Artificial societies: the computer simulation of social life.* London: UCL Press.

Gilbert, G. N., & Troitzsch, K. G. (2005). *Simulation for the social scientist* (2nd ed.). Maidenhead, England ; New York, NY: Open University Press.

Gilovich, T., Griffin, D. W., & Kahneman, D. (2002). *Heuristics and biases: the psychology of intuitive judgement.* Cambridge, U.K.; New York: Cambridge University Press.

Gionta, G. (2000). *Insurance World 2 - A complex model to manage risk in the age of globalization.*

Gladwell, M. (2002). *The tipping point: how little things can make a big difference* (1st Back Bay pbk. ed.). Boston: Back Bay Books.

Gleick, J. (2008). *Chaos: making a new science* (20th anniversary ed.). New York, N.Y.: Penguin Books.

Gorvett, R. (2004a). *Complexity and complex adaptive systems: applications for actuarial science, finance, and risk management.* Paper presented at the 39th Actuarial Research Conference.

Gorvett, R. (2004b). *Nonlinear dynamics and complex systems.* Paper presented at the ERM Symposium - April 2004.

Gray, L. (2003). A mathematician looks at Wolfram's New Kind of Science. *Notices of the American Mathematical Society, 50*(2 (February 2003)), 200-211.

Greaney, T. L. (2009). Economic regulation of physicians: a behavioral economics perspective. *Saint Louis University Law Journal, 53*, 1189-1209.

Gribbin, J. R. (2004). *Deep simplicity: bringing order to chaos and complexity* (1st U.S. ed.). New York: Random House.

Gros, C. (2008). *Complex and adaptive dynamical systems: a primer* (1st ed.). New York: Springer.

Gupta, A., & Harding, A. (2007). *Modelling our future: population ageing, health, and aged care* (1st ed.). Boston, MA: Elsevier B. V.

Hafferty, F. W., & Levinson, D. (2008). Moving beyond nostalgia and motives: towards a complexity science view of medical professionalism. *Perspect Biol Med, 51*(4), 599-615.

Haldane, A. G. (2009). *Rethinking the financial network.*

Hamill, L., & Gilbert, G. N. (2009). Social circles: a simple structure for agent-based social network models. *Journal of Artificial Societies and Social Simulation, 12*(2), 23 pages.

Hammond, R. A. (2009a). Complex systems modeling for obesity research. *Preventing Chronic Disease, 6*(3), 1-10.

Hammond, R. A. (2009b). *Systemic risk in the financial system: insights from network science*: The PEW Charitable Trusts.

Harding, A., & Gupta, A. (2007). *Modelling our future: population ageing, social security, and taxation* (1st ed.). Boston, MA: Elsevier B. V.

Heath, B., Hill, R., & Ciarallo, F. (2008). A survey of agent-based modeling practices (January 1998 to July 2008). *Journal of Artificial Societies and Social Simulation, 12*(8), 42 pages.

Heckbert, S. (2009). *Experimental economics and agent-based models*. Paper presented at the 18th World IMACS/MODSIM Congress (July 13-17, 2009).

Hegselmann, R., & Flache, A. (1998). Understanding complex social dynamics: a plea for cellular automata based modelling. *Journal of Artificial Societies and Social Simulation, 1*(3), 30 pages.

Helbing, D. (2009). *Systemic risks in society and economics*: Santa Fe Institute.

Hermsen, O. (2009). *Does Basel II destabilize financial markets? An agent-based financial market perspective*. Paper presented at the Econophysics Colloquium Kiel (August 28 - 30, 2009).

Hickman, J. C. (1997). Introduction to actuarial modeling. *North American Actuarial Journal, 1*(3), 1-5.

Hirsch, G. (2005). *Designing simulation-based learning environments: helping people understand complex systems*. Paper presented at the 2005 International Conference of the System Dynamics Society.

Hirsch, G., & Immediato, C. (1998). *Design of simulators to enhance learning, examples from a health care microworld*. Paper presented at the 16th International System Dynamics Conference.

Holland, J. H. (1995). *Hidden order: how adaptation builds complexity*. Reading, Mass.: Addison-Wesley.

Holland, J. H. (1998). *Emergence: from chaos to order*. Reading, Mass.: Addison-Wesley.

Holland, J. H. (Writer). (2008). Modeling complex adaptive systems: Case Western Reserve University.

Horgan, J. (1996). *The end of science : facing the limits of knowledge in the twilight of the scientific age*. Reading, Mass.: Addison-Wesley Pub.

Humana. (2004). Humana announces latest release of SmartStart. Humana.

Hupert, N., Xiong, W., & Mushlin, A. (2008). The virtue of virtuality: the promise of agent-based epidemic modeling. *Transl Res, 151*(6), 273-274.

Inchlosa, M. E., & Parker, M. T. (2001). *Overcoming design and development challenges in agent-based modeling using ASCAPE*. Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Institute of Medicine (U.S.). (2001). Redesigning health care with insights from the science of complex adaptive systems (Appendix B) *Crossing the quality chasm : a new health system for the 21st century* (pp. 337 pages). Washington, D.C.: National Academy Press.

IRGC. (2009). *Emerging risks: sources, drivers, and governance issues*: International Risk Governance Council.

Ishii, H., & Page, S. E. (1999). A day at the beach: human agents self-organizing on the sand pile. *Advances in Complex Systems, 2*, 37-63.

Jacobson, M. J., Allison, M. A., & Ropella, G. E. P. (2000). *Agent-based modeling of disrupted market ecologies: a strategic tool to think with*. Paper presented at the Third International Conference on Complex Systems.

Janecka, I. P. (2009). Is U.S. health care an appropriate system? A strategic perspective from systems science. *Health Research Policy and Systems, 7*(1).

Johansen, A. (1996). A simple model of recurrent epidemics. *Journal of theoretical biology, 178*, 45-51.

Johnson, N. F. (2001). Application of multi-agent games to the prediction of financial time-series. Unpublished Elsevier preprint.

Johnson, N. F. (2009). *Simply complexity: a clear guide to complexity theory*: Oneworld Publications.

Johnson, S. (2001). *Emergence: the connected lives of ants, brains, cities, and software*. New York: Scribner.

Johnston, C. A. (2006). Experimental investigation in medical markets and institutional sources of price inflation. *Computing in Economics and Finance*.

Jones, R. D., & Smith, L. M. (2006). *The changing foundations of actuarial mathematics*. Paper presented at the 28th International Congress of Actuaries.

Just, D. R., & Payne, C. R. (2009). Obesity: can behavioral economics help? *Annals of Behavioral Medicine, 38*(Supplement 1), 47-55.

Kahn, J. (2009). Modeling human drug trials - without the human. *Wired Magazine, 404*(December 2009).

Kahn, R., Alperin, P., Eddy, D., Borch-Johnsen, K., Buse, J., Feigelman, J., et al. (2010). Age at initiation and frequency of screening to detect type 2 diabetes: a cost-effectiveness analysis. *The Lancet, 375*(April 17, 2010), 1365-1374.

Kahneman, D. (Writer). (2008a). Explorations of the mind - Intuition: the marvels and the flaws, *Hitchcock Lectures*.

Kahneman, D. (Writer). (2008b). Explorations of the mind - Well-being, *Hitchcock Lectures*.

Kahneman, D., Slovic, P., & Tversky, A. (1982). *Judgment under uncertainty: heuristics and biases*. Cambridge ; New York: Cambridge University Press.

Kahneman, D., & Tversky, A. (2000). *Choices, values, and frames*. New York; Cambridge, UK: Russell sage Foundation; Cambridge University Press.

Kambhu, J., Weidman, S., Krishnan, N., Federal Reserve Bank of New York., & National Research Council (U.S.). (2007). *New directions for understanding systemic risk: a report on a conference*. Washington, D.C.: National Academies Press.

Katerelos, I. D., & Koulouris, A. G. (2004). Is prediction possible? Chaotic behavior of multiple equilibria regulation model in cellular automata topology. *Complexity, 10*(1), 23-36.

Kauffman, S. A. (1995). *At home in the universe: the search for laws of self-organization and complexity*. New York: Oxford University Press.

Kelly, K. (1994). *Out of control: the rise of neo-biological civilization*. Reading, MA: Addison-Wesley.

Knoke, D., & Yang, S. (2008). *Social network analysis* (2nd ed.). Los Angeles: Sage Publications.

Koerner, J. (2009). Insight: the application of complexity science to decision making. *Creat Nurs, 15*(4), 165-171.

Kolstad, J., & Chernew, M. (2009). Quality and consumer decision making in the market for health insurance and health care services. *Medical Care Research and Review (Supplement), 66*(1), 28S-52S.

Koopman, J. S. (2002). Modeling infection transmission- the pursuit of complexities that matter. *Epidemiology, 13*(6), 622-624.

Kornhauser, D., Wilensky, U., & Rand, W. (2009). Design guidelines for agent based model visualization. *Journal of Artificial Societies and Social Simulation, 12*(2), 27 pages.

Law, A. M. (2009). *How to build valid and credible simulation models.* Paper presented at the 2009 Winter Simulation Conference.

Lee, B. Y., Bedford, V. L., Roberts, M. S., & Carley, K. M. (2008). Virtual epidemic in a virtual city: simulating the spread of influenza in a US metropolitan area. *Transl Res, 151*(6), 275-287.

Lee, B. Y., Brown, S. T., Cooley, P., Potter, M. A., Wheaton, W. D., Voorhees, R. E., et al. (2009). Simulating school closure strategies to mitigate an influenza epidemic. *J Public Health Manag Pract.*

Lee, B. Y., Brown, S. T., Cooley, P. C., Zimmerman, R. K., Wheaton, W. D., Zimmer, S. M., et al. (2009). A computer simulation of employee vaccination to mitigate an influenza epidemic. *Am J Prev Med.*

Lempert, R. (2001a). *Agent-based modeling as organizational and public policy simulators.* Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Lempert, R. (2001b). *A new decision science for complex systems.* Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Lewin, R. (1999). *Complexity: life at the edge of chaos* (2nd ed.). Chicago, Ill.: University of Chicago Press.

Lewin, R., & Regine, B. (2000). *The soul at work: listen, respond, let go: embracing complexity science for business success.* New York: Simon & Schuster.

Lewis, A. A. (1985). On effectively computable realizations of choice functions. *Mathematial Social Sciences*(10), 43-80.

Lissack, M., & Gunz, H. (1999). *Managing complexity in organizations: a view in many directions.* Westport, Conn.: Quorum Books.

Lloyd, S. (2001). Measures of complexity: a non-exhaustive list. *IEEE Control Systems Magazine*(August 2001).

Lo, A. (2009). *Why we need to transform our view of risk.* Paper presented at the SOA 2009 Annual Meeting.

Lohr, W., & Ay, N. (2008). *On the generative nature of prediction*: Santa Fe Institute.

London School of Economics Complexity Programme (Writer). (2009). Adapting the Cynefin framework to encompass systemic change [Video].

Macal, C. M., & North, M. J. (2008). *Agent-based modeling and simulation: ABMS examples.* Paper presented at the 2008 Winter Simulation Conference.

Macal, C. M., & North, M. J. (2009). *Agent-based modeling and simulation.* Paper presented at the 2009 Winter Simulation Conference.

MacKerrow, E. P. (2009). *Agent-based computer simulation for operational risk assessment.*

Maier, W. L. (2010). Predicting chaotic sequences using cellular automata.

Malone, M. S. (2000). God, Stephen Wolfram, and everything else. *Forbes, 11.27.00.*

Mandelbrot, B. B. (1983). *The fractal geometry of nature* (Updated and augm. ed.). New York: W.H. Freeman.

Mandelbrot, B. B., & Hudson, R. L. (2004). *The (mis)behavior of markets: a fractal view of risk, ruin, and reward.* New York: Published by Basic Books.

Mango, D. F. (2004). The agents are coming. *The Actuarial Review, 31*(1), 23-24.

Mango, D. F. (2005). Risk management research imperatives. *North American Actuarial Journal*(July 2005), iii-v.

Mango, D. F. (2007). *An introduction to insurer strategic risk.*

Marion, R. (1999). *The edge of organization: chaos and complexity theories of formal social systems.* Thousand Oaks, Calif.: Sage Publications.

Mark, D. (2009). *Behavioral mathematics for game AI* (1st Ed. ed.). Boston, MA: Course Technology, PTR/CRM.

McArthur, D., Thorsen, I., & Uboe, J. (2008). *An agent-based computational approach to explaining persistent spatial unemployment disparities*: Institutt for Foretaksokonomi.

Merry, U. (1995). *Coping with uncertainty: insights from the new sciences of chaos, self-organization, and complexity.* Westport, Conn.: Praeger.

Meyer, C., & Davis, S. M. (2003). *It's alive: the coming convergence of information, biology, and business* (1st ed.). New York: Crown Business.

Meyer, M., Lorscheid, I., & Troitzsch, K. G. (2009). The development of social simulation as reflected in the first ten years of JASS: a citation and co-citation analysis. *Journal of Artificial Societies and Social Simulation, 12*(4), 20 pages.

Meyers, R. A. (Ed.) (2009) Encyclopedia of complexity and systems science (1st ed.). New York: Springer.

Microinsurance (Writer). (2008). Microinsurance - CHAT - Choosing healthplans all together.

Miller, J. H. (1988). The coevolution of automata in the repeated prisoner's dilemma. *Journal of Economic Behavior and Organization, 29*, 87-112.

Miller, J. H. (2001). Evolving information processing organizations. In A. Lomi & E. R. Larsen (Eds.), *Dynamics of organizations: computational modeling and organization theories.* Menlo Park, CA: AAAI Press and MIT Press.

Miller, J. H., & Page, S. E. (2007). *Complex adaptive systems: an introduction to computational models of social life.* Princeton, N.J.: Princeton University Press.

Mills, A. (2009a). Should actuaries get another job? Nassim Taleb's work and its significance for actuaries. *Forecasting & Futurism Newsletter, September 2009*(1), 22-30.

Mills, A. (2009b). White, gray, and black swans - identifying, forecasting and managing medical expenditure trend drivers in a complex world. *Forecasting & Futurism Newsletter, September 2009*(1), 16-20.

Mitchell, M. (1996). *An introduction to genetic algorithms.* Cambridge, Mass.: MIT Press.

Mitchell, M. (Writer). (2007). The prospects and perils of complex systems modeling.

Mitchell, M. (2009). *Complexity: a guided tour.* Oxford, U.K.; New York: Oxford University Press.

Mitzenmacher, M. A. (2003). A brief history of generative models for power law and lognormal distributions. *Internet Mathematics, 1*(2), 226-251.

Mniszewski, S. M., Del Valle, S. Y., Stroud, P. D., Riese, J. M., & Sydoriak, S. J. (2008). Pandemic simulation of antivirals + school closures: buying time until strain-specific vaccine is available. *Computational and Mathematical Organization Theory, 14*(3).

Moore, C., & Nilsson, M. (1999). The computational complexity of sandpiles. *Santa Fe Institute Working Papers*.

Morowitz, H. J. (2002). *The emergence of everything: how the world became complex*. New York: Oxford University Press.

Moss, S. (2001). *Policy analysis form first principles*. Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Moss, S. (2008). Alternative approaches to the empirical validation of agent-based models. *Journal of Artificial Societies and Social Simulation, 11*(1), 16 pages.

Murakami, M., & Tanida, N. (2005). *Revisiting to agent based modelling for unpayment behaviour on Japanese public pension system*. Paper presented at the 10th Annual Workshop on Economic Heterogeneous Interacting Agents.

Mysore, V., Gill, O., Daruwala, R. S., Antoniotti, M., Saraswat, V., & Mishra, B. (2005). Multi-agent modeling and analysis of the Brazilian food-poisoning scenario.

Namatame, A., Terano, T., & Kurumatani, K. (2002). *Agent-based approaches in economic and social complex systems*. Amsterdam ; Washington DC
Tokyo: IOS Press ;
Ohmsha.

National Research Council. (2008). *Behavioral modeling and simulation: from individuals to societies*. Washington, D.C.: The National Academies Press.

Newman, M. E. J. (2003). *The structure and function of complex networks*: University of Michigan.

Newman, M. E. J. (2005). Power laws, Pareto distributions and Zipf's law. *Contemporary Physics*(46), 323-351.

Newman, M. E. J. (2008). The physics of networks. *Physics Today, November 2008*, 33-38.

Newman, M. E. J. (2010). *Networks : an introduction*. Oxford ; New York: Oxford University Press.

Newman, M. E. J., Barabási, A.-L., & Watts, D. J. (2006). *The structure and dynamics of networks*. Princeton: Princeton University Press.

Nickerson, J. A., & Zenger, T. R. (2002). Being effectively fickle: a dynamic theory of organizational choice. *Organization Science*(13), 547-566.

Nikolai, C., & Madey, G. (2009). Tools of the trade: a survey of various agent based modeling platforms. *Journal of Artificial Societies and Social Simulation, 12*(2), 37 pages.

North, M. J., & Macal, C. M. (2007). *Managing business complexity: discovering strategic solutions with agent-based modeling and simulation*. Oxford ; New York: Oxford University Press.

NOVA (Writer). (2007a). Emergence - complexity from simplicity, order from chaos (1 of 2).

NOVA (Writer). (2007b). Emergence - complexity from simplicity, order from chaos (2 of 2).

Nowak, A., & Lewenstein, M. (1996). Modeling social change with cellular automata. In Hegselmann (Ed.), *Modeling & simulation in the social sciences from a philosophical point of view*. Boston: Kluwer.

Orrell, D. (2007). *The future of everything : the science of prediction* (1st Thunder's Mouth Press ed.). New York: Thunder's Mouth Press.

Orszag, P. R. (2008a, August 7, 2008). *Behavioral economics: lessons from retirement research for health care and beyond*. Paper presented at the Retirement Research Consortium.

Orszag, P. R. (2008b). *Health care and behavioral economics.* Paper presented at the National Academy of Social Insurance.

Paarlberg, L. E., & Bielefeld, W. (2009). Complexity science: an alternative framework for understanding strategic management in public serving organizations. *International Public Management Journal, 12*(2), 236-260.

Page, S. E. (2006). Essay: path dependence. *Quarterly Journal of Political Science*(1), 87-115.

Pagels, H. R. (1988). *The dreams of reason: the computer and the rise of the sciences of complexity.* New York: Simon and Schuster.

Palin, J. (2002). *Agent-based stockmarket models: calibration issues and application.* University of Sussex.

Palin, J., Silver, N., Slater, A., & Smith, A. D. (2008). *Complexity economics - application and relevance to actuarial work*: Institute of Actuaries.

Paranjape, R., & Sadanand, A. (2009). *Multi-agent systems for healthcare simulation and modeling: applications for system improvement.* Hershey, PA: Medical Information Science Reference.

Paraskevas, A. (2006). Crisis management or crisis response system: a complexity science approach to organizational crises. *Management Decision, 44*(7), 892-907.

Parodi, P., & Benfield, A. (2009). *What is the appropriate framework to describe and understand risk?* Paper presented at the GIRO Convension 2009.

Patel, A. M., Sundt, T. M., 3rd, & Varkey, P. (2008). Complexity science: core concepts and applications for medical practice. *Minn Med, 91*(2), 40-42.

Perez, L., & Dragicevic, S. (2009). An agent-based approach for modeling dynamics of contagious disease spread. *Int J Health Geogr, 8*, 50.

Perlroth, D. J., Glass, R. J., Davey, V. J., Cannon, D., Garber, A. M., & Owens, D. K. (2010). Health outcomes and costs of community mitigation strategies for an influenza pandemic in the United States. *Clin Infect Dis, 50*(2), 165-174.

Phan, D., & Varenne, F. (2008). *Agent-based models and simulations in economics and social sciences: from conceptual exploration to distinct ways of experimenting.* Paper presented at the Epistemological perspectives on simulation: a cross-disciplinary workshop.

Phelan, S. E. (2001). What is complexity science, really? *Emergence*(Special issue on "What is Complexity Science?").

Poundstone, W. (1985). *The recursive universe : cosmic complexity and the limits of scientific knowledge.* Chicago: Contemporary Books.

Pujol, J. M., Flache, A., Delgado, J., & Sanguesa, R. (2005). How can social networks ever become complex? Modelling the emergence of complex networks from local social exchanges. *Journal of Artificial Societies and Social Simulation, 8*(4).

Purdy, J. A. (2007). Getting serious about digital games in learning. *Corporate University Journal*(1), 3-6.

Ramanauskas, T. (2008). Agent-based financial modelling as an alternative to the standard representative-agent paradigm. *Ekonomikos teorija ir praktika, 2008*(2).

Rambihar, V. S., & Rambihar, V. (2009). Complexity science may help in defining health. *BMJ, 338*, b32.

Rammal, A., Trouilhet, S., Singer, N., & Pecatte, J. M. (2008). An adaptive system for home monitoring using a multiagent classification of patterns. *Int J Telemed Appl*, 136054.

Rantz, M. J., Flesner, M. K., & Zwygart-Stauffacher, M. (2010). Improving care in nursing homes using quality measures/indicators and complexity science. *J Nurs Care Qual, 25*(1), 5-12.

Rao, A. S. (2008). *Behavioral economics: implications for an aging population's wealth & health*.

Rateb, F., Pavard, B., Bellamine-BenSaoud, N., Merelo, J. J., & Arenas, M. G. (2005). Modeling malaria with multi-agent systems. *International Journal of Intelligent Information Technologies, 1*(2), 17-27.

Rauch, J. (2002). Seeing around corners. *The Atlantic Monthly*(April 2002), 35-48.

Regis, E. (2003). *The info mesa : science, business, and new age alchemy on the Santa Fe Plateau* (1st ed.). New York: W.W. Norton.

Resnicow, K., & Page, S. E. (2008). Embracing chaos and complexity: a quantum change for public health. *Am J Public Health, 98*(8), 1382-1389.

Rhodes, C. J., Jensen, H. J., & Anderson, R. M. (1997). On the critical behaviour of simple epidemics. *Proceedings of the Royal Society London, 264*, 1639-1646.

Richiardi, M. (2003). *The promises and perils of agent-based computational economics*: LABORatorio Riccardo Revelli Centre for Employment Studies.

Rickles, D. (2007). Econophysics and the complexity of financial markets *Handbook of the Philosophy of Science* (Vol. 10: Philosophy of Complex Systems): North Holland.

Rickles, D., Hawe, P., & Shiell, A. (2007). A simple guide to chaos and complexity. *J Epidemiol Community Health, 61*(11), 933-937.

Roche, B., Guegan, J. F., & Bousquet, F. (2008). Multi-agent systems in epidemiology: a first step for computational biology in the study of vector-borne disease transmission. *BMC Bioinformatics, 9*, 435.

Rouse, W. (Writer). (2009). Modeling the complex healthcare system [Video].

Rouse, W. B. (2008). Health care as a complex adaptive system: implications for design and management. *The Bridge, Spring 2008*, 17-25.

Sanders, I. T., & McCage, J. A. (2003). *The use of Complexity Science: a survey of Federal departments and agencies, private foundations, universities, and independent education and research centers*: Washington Center for Complexity & Public Policy.

Sargent, R. G. (2009). *Verification and validation of simulation models*. Paper presented at the 2009 Winter Simulation Conference.

Schelling, T. C. (2006). *Micromotives and macrobehavior*. New York: Norton.

Schiff, J. L. (2008). *Cellular automata: a discrete view of the world*. Hoboken, N.J.: Wiley-Interscience.

Schlessinger, L., & Eddy, D. (2001). Archimedes: a new model for simulating health care systems - the mathematical formulation. *Journal of Biomedical Informatics, 35*(2002), 37-50.

Schumacher, E. F. (1977). *A guide for the perplexed*. London: Cape.

Schweitzer, F., Fagiolo, G., Sornette, D., Vega-Redondo, F., & White, D. R. (2009). *Economic networks: what do we know and what do we need to know?* : Santa Fe Institute.

Segre-Tossani, L. (2002). The coming revolution in risk management. *Risks and Rewards Newsletter, October 2002*(40), 6-10.

Segre-Tossani, L. (2003). Simulation technology for managing risk. *Risks and Rewards Newsletter, February 2003*(41), 4-10.

Serious Games Institute (Writer). (2007). The Serious Games Institute: Building infrastructure for the serious games sector.

Shapiro, A. F. (2000). A hitchhiker's guide to the techniques of adaptive nonlinear models. *Insurance: Mathematics & Economics, 26*, 119-132.

Shermer, M. (2008). *The mind of the market: compassionate apes, competitive humans, and other tales from evolutionary economics* (1st ed.). New York: Times Books.

Shubik, M. (2009). *El Farol revisited: a note on emergence, game theory and society*: Santa Fe Institute.

Shumrak, H. M., & Darley, V. (1999). *Applying complex adaptive systems to actuarial problems*. Paper presented at the 1999 Valuation Actuary Symposium Proceedings.

Shumrak, H. M., Greenbaum, M., Darley, V., & Axtell, R. (1999). *Modeling annuity policyholder behavior using behavioral economics and complexity science*.

Shumrak, H. M., & Turner, P. F. (2001). *Cusomer relationship management - how do you model a customer?* Paper presented at the Toronto Spring Meeting - June 20-22, 2001.

Sierra, K., & Bates, B. (2005). *Head first Java* (2nd ed.). Sebastopol, CA: O'Reilly.

Singer, H. M., Singer, I., & Herrmann, H. J. (2009). Agent-based model for friendship in social networks. *Phys Rev E Stat Nonlin Soft Matter Phys, 80*(2 Pt 2), 026113.

Sloot, P., Chen, F., & Boucher, C. (2002). Cellular automata model of drug therapy for HIV infection. In S. Bandini, B. Chopard & M. Tomassini (Eds.), *ACRI 2002*: Springer-Verlag.

Smith, D., & Johnson, N. F. (2008). Evolution management in a complex adaptive system: engineering the future.

Smith, L. (1990). *The actuarial paradigm: a nontechnical exposition*.

Smith, L., & Segre-Tossani, L. (2003). *Advanced modeling, visualization and data mining techniques for a new risk landscape*. Paper presented at the 2003 Risk and Capital Management Seminar - July 28-29, 2003.

Smith, L. M., & Segre-Tossani, L. (2003). *Applications of advanced science in the new era of risk modeling*. Paper presented at the 2003 Thomas P. Bowles, Jr. Symposium - April 10-11.

Smith, N. J., Bower, D. A., & Aritua, B. (2008). *A complexity science based approach to programme risk management*. Paper presented at the 22nd IPMA World Congress.

Smith, S. W., Portelli, I., Narzisi, G., Nelson, L. S., Menges, F., Rekow, E. D., et al. (2009). A novel approach to multihazard modeling and simulation. *Disaster Med Public Health Prep, 3*(2), 75-87.

Sobkowicz, P. (2003). Opinion formation in networked societies with strong leaders. *Complexity Digest, 2003*(48).

Soramaki, K. (2009). *Is network theory the best hope for regulating systemic risk?* Paper presented at the ECB workshop on "Recent advances in modelling systemic risk using network analysis" (October 5, 2009).

Stange, K. C. (2009). A science of connectedness. *Annals of Family Medicine, 2009*(7), 387-395.

Stark, J. W. C., & Peters, E. (2005). *Behavioral economics: the art and science of making choices*. Paper presented at the Society of Actuaries Health/Pension Spring Meeting.

Sterman, J. (2000). *Business dynamics: systems thinking and modeling for a complex world*. Boston: Irwin/McGraw-Hill.

Streltchenko, O., Yesha, Y., & Finin, T. *Multi-agent simulation of financial markets*.

Strip, D., Backus, G., Strickland, J., & Schoenwald, D. (2005). *Modeling the US healthcare system: predicting the consequences of policy decisions through computational models*: Sandia Corporation.

Studnicki, J., Eichelberger, C., & Fisher, J. (2009). Complex adaptive systems: how informed patient choice influences the distribution of complex surgical procedures. In Z. W. Ras & W. Ribarsky (Eds.), *Advances in information and intelligent systems - studies in computational intelligence* (Vol. 251, pp. 17 pages): Springer.

Subramanian, S., Bobashev, G., & Morris, R. J. (2009). Modeling the cost-effectiveness of colorectal cancer screening: policy guidance based on patient preferences and compliance. *Cancer Epidemiol Biomarkers Prev, 18*(7), 1971-1978.

Suleiman, R., Troitzsch, K. G., & Gilbert, G. N. (2000). *Tools and techniques for social science simulation*. Heidelberg ; New York: Physica-Verlag.

Sun, R., & Naveh, I. (2004). Simulating organizational decision-making using a cognitively realistic agent model. *Journal of Artificial Societies and Social Simulation, 7*(3).

Takadama, K., & Shimohara, K. (2002). The hare and the tortoise: cumulative progress in agent-based simulation. In A. Namatame, T. Terano & K. Kurumatani (Eds.), *Agent-based approaches in economic and social complex systems* (pp. pages 3-14). Amsterdam: IOS Press).

Taleb, N. (2007). *The black swan: the impact of the highly improbable* (1st ed.). New York: Random House.

Tanida, N., & Murakami, M. (2005). *A study on Japanese public pension system using multi agent based simulation*. Paper presented at the 10th Annual Workshop on Economic Heterogeneous Interacting Agents.

Tegner, J. N., Compte, A., Auffray, C., An, G., Cedersund, G., Clermont, G., et al. (2009). Computational disease modeling - fact or fiction? *BMC Syst Biol, 3*, 56.

Terna, P. (2001). Creating artificial worlds: a note on *Sugarscape* and two comments. *Journal of Artificial Societies and Social Simulation, 4*(2), 9 pages.

Tesfatsion, L. (2001). *Economic agents and markets as emergent phenomena*. Paper presented at the National Academy of Sciences - Sackler Colloquia - Adaptive agents, intelligence and emergent human organization: capturing complexity through agent-based modeling.

Thaler, R. H., & Benartzi, S. (2007). *The behavioral economics of retirement savings behavior*: AARP Public Policy Institute.

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: improving decisions about health, wealth, and happiness*. New Haven: Yale University Press.

Thurner, S. (Writer). (2009). Anatomy of financial crisis [Video].

Tobias, R., & Hofmann, C. (2004). Evaluation of free Java-libraries for social-scientific agent based simulation. *Journal of Artificial Societies and Social Simulation, 7*(1), 23 pages.

Tufte, E. R. (2001). *The visual display of quantitative information* (2nd ed.). Cheshire, Conn.: Graphics Press.

Tufte, E. R. (2006a). *Beautiful evidence*. Cheshire, Conn.: Graphics Press.

Tufte, E. R. (2006b). *The cognitive style of PowerPoint: pitching out corrupts within* (2nd ed.). Cheshire, Conn.: Graphics Press.

Voorhees, B. H. (1996). *Computational analysis of one-dimensional cellular automata*. Singapore ; River Edge, NJ: World Scientific.

Vriend, N. J. (2000). An illustration of the essential difference between individual and social learning, and its consequences for computational analyses. *Journal of Economic Dynamics and Control, 24*, 1-19.

Waldrop, M. M. (1992). *Complexity: the emerging science at the edge of order and chaos.* New York: Simon & Schuster.

Walkenbach, J. (2007). *Excel 2007 VBA programming for dummies.* Indianapolis, IN: Wiley Pub., Inc.

Wang, S., & Mango, D. F. (2003). Research outside the actuarial comfort zone. *Actuarial Review, 30*(1 (February 2003)).

Wang, W., Chen, Y., & Huang, J. (2009). Heterogeneous preferences, decision-making capacity, and phase transitions in a complex adaptive system. *Proc Natl Acad Sci U S A, 106*(21), 8423-8428.

Watts, D. J. (1999). *Small worlds: the dynamics of networks between order and randomness.* Princeton, N.J.: Princeton University Press.

Watts, D. J. (2003). *Six degrees: the science of a connected age* (1st ed.). New York: Norton.

Watts, D. J., & Strogatz. (1998). Collective dynamics of small world networks. *Nature*(393), 440-442.

Wei, Y.-m., Ying, S.-j., Fan, Y., & Wang, B.-H. (2003). The cellular automaton model of investment behavior in the stock market. *Physica, 325 (2003)*, 507-516.

Weigend, A. S., & Gershenfeld, N. A. (1994). *Time series prediction: forecasting the future and understanding the past: proceedings of the NATO Advanced Research Workshop on Comparative Time Series Analysis, held in Santa Fe, New Mexico, May 14-17, 1992*. Reading, MA: Addison-Wesley Pub. Co.

West, & Bergman. (2009). Toward a systems biology framework for understanding aging and health span. *Journals of Gerontology Series A, 64A*(2), 205-208.

Westerhoff, F. (2008). An agent-based macroeconomic model with interacting firms, socio-economic opinion formation and optimistic/pessimistic sales expectations.

White, R. (1993). Complexity and chaos [Audio file].

Wilensky, U., & Rand, W. (2007). Making models match: replicating an agent-based model. *Journal of Artificial Societies and Social Simulation, 10*(4), 24 pages.

Willis, R. (2001). *A complexity and Darwinian approach to management with failure avoidance as the key tool*: University of Lecce.

Windrum, P., Fagiolo, G., & Moneta, A. (2007). Empirical validation of agent-based models: alternatives and prospects. *Journal of Artificial Societies and Social Simulation, 10*(2), 19 pages.

Wolfram, S. (2002). *A new kind of science.* Champaign, IL: Wolfram Media.

Wolfram, S. (Writer). (2008). A new kind of science - Stephen Wolfram [Video]: University of California, San Diego.

Wolpert, D. H. (1997). No free lunch theorems for optimization. *IEEE Transactions on Evolutionary Computation, 1*, 67-82.

Wragg, T. (2006). *Modelling the effects of information campaigns using agent-based simulation*: Australian Government Depart of Defence - Technology Organisation.

Wright, C. (2009). Six degrees of rumination. *CFA Magazine, 20*(4 (July/August 2009)), 42-45.

Yalamove, R. (2008). *Explaining what leads up to stock market crashes: a phase transition model and scalability dynamics*: UCLA Anderson School of Management.

Young, T., Eatock, J., Jahangirian, M., Naseer, A., & Lilford, R. (2009). *Three critical challenges for modeling and simulation in healthcare.* Paper presented at the 2009 Winter Simulation Conference.

Zambrano, E. (2004). The interplay between analytics and computation in the study of congestion externalities: the case of the El Farol problem. *Journal of Public Economic Theory, 6*, 375-395.

Zanini, M. (2008). Using 'power curves' to assess industry dynamics. *McKinsey Quarterly, November 2008*.

Zanini, M. (2009). 'Power curves': what natural and economic disasters have in common. *The McKinsey Quarterly, June 2009.*

Zhang, L., Wang, Z., Sagotsky, J. A., & Deisboeck, T. S. (2009). Multiscale agent-based cancer modeling. *J Math Biol, 58*(4-5), 545-559.

Zimmerman, B., Lindberg, C., & Plsek, P. E. (1998). *Edgeware: insights from complexity science for healthcare leaders*: Plexus Institute.