

Samuel Arbesman

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Education

2008 Ph.D. Computational Biology, *Cornell University*.

Dissertation: Complex Dynamics of Human Activity: Language, Cities, Collaboration, and Baseball.

Committee: Steven Strogatz (chair), Stephen Ellner, and Adam Siepel.

Minor: Ecology and Evolutionary Biology.

2004 B.A. Computer Science and Biology, *Brandeis University*.

Honors: Summa Cum Laude with High Honors, Phi Beta Kappa.

Thesis: Computational Energetics and the Origins of Life.

Minor: Near Eastern and Judaic Studies.

Academic Appointments

2008– Research Fellow in Health Care Policy, *Harvard Medical School*.

2008– Research Fellow in the Institute for Quantitative Social Science, *Harvard University*.

2010 Instructor in Biostatistics, *Harvard School of Public Health*.

Publications

Journal Articles

S Arbesman. Quantifying the ease of scientific discovery. *Scientometrics* (in press).

S Arbesman and NA Christakis. Leadership Insularity: A New Measure of Connectivity Between Central Nodes in Networks. *Connections* 30(1): 4-10. 2010.

S Arbesman, SH Strogatz, and MS Vitevitch. Comparative analysis of networks of phonologically similar words in English and Spanish. *Entropy* 12(3): 327-337. 2010.

S Arbesman, SH Strogatz, and MS Vitevitch. The Structure of Phonological Networks across Multiple Languages. *International Journal of Bifurcation and Chaos* 20 (3), 2010.

S Arbesman, JM Kleinberg, and SH Strogatz. Superlinear Scaling for Innovation in Cities, 1929, *Phys. Rev. E*. 79 (1), 2009 (reprinted in *Virtual Journal of Biological Physics Research*. 17 (3). 2009.)

S Arbesman, L Enthoven, A Monteiro. Ancient Wings: Animating the Evolution of Butterfly Wing Patterns. *Biosystems*, 71: 289-295. 2003.

In Preparation and Under Review

S Arbesman and G Laughlin. Prediction of the Discovery of the First Habitable Planet.

JP Onnela*, **S Arbesman***, AL Barabasi, NA Christakis. The Geography of Social Groups. [** Joint first authorship*]

S Arbesman and NA Christakis. Scaling of Prosocial Behavior in Cities.

A Mauboussin and **S Arbesman**. Differentiating Skill and Luck in Financial Markets with Streaks (August 23, 2010). Available at SSRN: <http://ssrn.com/abstract=1664031>

S Arbesman. The Lifespans of Empires.

Unpublished Manuscripts

S Arbesman and SH Strogatz. A Monte Carlo Approach to Joe DiMaggio and Streaks in Baseball. arXiv:0807.5082 [popular physics].

Presentations and Invited Talks

Quantifying the Ease of Scientific Discovery.

New England Complex Systems Institute, Boston, Summer 2010. (*Invited Talk*)

Geography of Social Groups.

NetMob 2010: Workshop on Mobile Phone Networks, Boston, Summer 2010.

Doing Well and Doing Good: Scaling of Productivity and Prosocial Behavior in Cities.

Science-Based Business Initiative Seminar, Harvard Business School, Fall 2009. (*Invited Talk*)

Leadership Insularity: connectivity and insularity between central nodes in networks.

NETSCI '09, Venice, Summer 2009 (co-scheduled with NetHum '09: International Workshop on Network Science and Culture).

Networks of Similar-Sounding Words.

Santa Fe Institute Seminar, Spring 2008.

Networks of Similar-Sounding Words.

Mathematical Sciences Graduate Student Seminar, Cornell University, Spring 2008. .

Theories of Risk in Financial Markets, Panel Discussion.

SFI Forum on Risk, New York City, Fall 2007. (*Invited*)

Protein Evolution, Function and Interaction.

Mathematical Sciences Graduate Student Seminar, Cornell University, Spring 2007.

Genetic Freezing.

IGERT Graduate Student Seminar, Cornell University, Fall 2006.

Honors, Awards, and Fellowships

NSF IGERT Fellow in Nonlinear Systems: studying complex systems, 2004-2006.

National Science Foundation Graduate Research Fellowship Honorable Mention recipient: 2004, 2006.

Rishon Bialer Memorial Prize: Brandeis University, for excellence in the sciences, 2004.

Phi Beta Kappa: Brandeis University, 2003.

Hiatt Challenger Memorial Scholarship: Brandeis University, for excellence in the sciences 2000-2004.

Dean's List: Brandeis University, 2000-2004.

Grants Awarded

Science of Generosity Initiative (\$396,447), *University of Notre Dame and the John Templeton Foundation*

Exploring the Social Contagion of Generosity – Investigative Team member

Research Experience

2006-2008 *Cornell University*

Graduate Research Assistant (Steven Strogatz)

Mathematical models of productivity and innovation in cities, and phonological language networks

Summer 2005 *Weizmann Institute of Science*

IGERT Summer Research Intern (Uri Alon)

Mathematical model for prediction of the host range of RNA viruses

Summer 2003 *Santa Fe Institute*

National Science Foundation REU Intern (Walter Fontana and David Krakauer)

Creation of the Chai-calculus: an abstraction for simple biotic systems based on computation theory

Summer 2002 *University at Buffalo, Buffalo, NY*

Research Intern, Butterfly Evolution and Development Lab (Antónia Monteiro)

Analysis and visualization of ancestral butterfly wing patterns

Teaching Experience

Spring 2010 *Advanced System Architecture (MIT)*

An overview of urban scaling behavior in cities and a network model to understand productivity and innovation in cities. (**Guest Lecturer**)

Spring 2010 *Models of Complex Systems in Biology and Public Health (Harvard School of Public Health)*

A brief overview of the mathematics of networks, with a focus on their structure, epidemics and contagion. (**Guest Lecturer**)

Winter 2010 *Math and Science of Networks (Harvard School of Public Health)*

An overview of the mathematics and science of networks, with a focus on the quantitative aspects of networks as they relate to epidemics and contagion. (**Instructor**)

Spring 2004 Genes, Culture History: A Case Study (*Brandeis University*)

An introductory interdisciplinary course that examines the interplay between genetics, and cultural and historical information about specific human populations (**Teaching Assistant**)

Advising

2009– Andrew Mauboussin, *Darien High School*

Professional Activities

Connecting the Dots: Network Visualization Symposium (2010), Harvard University – co-organizer

Mathematical Sciences Seminar (2007-2008), Cornell University – co-organizer

4-H Career Explorations Conference (2007), Cornell Math Department – small-group facilitator

Expanding Your Horizons Conference (2007), Cornell University – small-group facilitator

Computer Science Graduate Student Visit Day (2005), Cornell University – co-chair

Genetic and Evolutionary Computation Conference (2005) – program committee member

Referee for:

Management Science

Popular Writing

Hard to find: Why it's increasingly difficult to make discoveries – and other insights from the science of science *Boston Globe*, July 18, 2010: C1, Ideas.

Warning: Your reality is out of date: Introducing the mesofact. *Boston Globe*, February 28, 2010: C3, Ideas.

League of nations: Bored with football stats? Introducing fantasy geopolitics. *Boston Globe*, November 15, 2009: K10, Ideas.

Naming the sky: The true story of one man's quest to give George Plimpton a permanent presence in orbit. *Boston Globe*, September 27, 2009: K1, Ideas.

The mysterious equilibrium of zombies: and other things mathematicians see at the movies. *Boston Globe*, September 6, 2009: C3, Ideas.

Reprinted in M. Pitici (ed.) *The Best Writing on Mathematics 2010*, Princeton University Press, 2010)

Start the clock: A modest proposal for improving football: the 'time-in'. *Boston Globe*, August 16, 2009: C2, Ideas.

What to do if your child has superpowers: A FAQ for concerned parents. *Boston Globe*, June 21, 2009: C2, Ideas.

A brief inquiry into the nature of sports fandom: Why the home team doesn't deserve your loyalty. *Boston Globe*, March 22, 2009: K10, Ideas.

The Arbesman Limit: How to be famous in a few easy steps. *Boston Globe*, February 8, 2009: L10, Ideas.

Anatomy of a Spring Break. *Boston Globe*, January 25, 2009: C10, Ideas.

A Journey to Baseball's Alternate Universe. *New York Times*, March 30, 2008: WK12 (with Steven Strogatz).

Selected Media Coverage

Wall Street Journal, New York Times, New Scientist, Nature, Telegraph, Daily Mail, Globe and Mail, Wired News, CBC Radio, WNPR, WNYC, New Yorker, Harper's, Arts and Letters Daily, Frankfurter Rundschau, Natuur Wetenschap & Techniek

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