Samuel Arbesman

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Education

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

2004 B.A. Computer Science and Biology, *Brandeis University*. *Summa Cum Laude with High Honors*.

Positions

2011– Senior Scholar in Research and Policy, *Ewing Marion Kauffman Foundation*

2011– Fellow, Institute for Quantitative Social Science, *Harvard University*

2008–2011 Research Fellow in Health Care Policy, *Harvard Medical School*

2008–2011 Affiliate at the Institute for Quantitative Social Science, *Harvard University*

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

Publications

Books

S Arbesman. *The Half-Life of Facts* (Current / Penguin, New York, Fall 2012).

Journal Articles

** Joint first authorship*

1. DG Rand*, **S Arbesman***, NA Christakis. Dynamic Social Networks Promote Cooperation in Experiments with Humans. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1108243108
2. **S Arbesman** and NA Christakis. Eurekometrics: Analyzing the Nature of Discovery. *PLoS Computational Biology* 7(6): e1002072. 2011.
3. JP Onnela*, **S Arbesman***, MC Gonzalez, AL Barabasi, NA Christakis. The constraining role of geography for social groups. *PLoS ONE* 6(4): e16939. 2011.
4. **S Arbesman** and NA Christakis. Scaling of Prosocial Behavior in Cities. *Physica A* 390(11):2155-2159. 2011.
5. **S Arbesman**. The Life-Spans of Empires. *Historical Methods: A Journal of Quantitative and Interdisciplinary History* 44(3): 127-129. 2011.
6. **S Arbesman**. Quantifying the ease of scientific discovery. *Scientometrics* 86(2):245-250. 2011.

7. **S Arbesman** and G Laughlin. A Scientometric Prediction of the Discovery of the First Potentially Habitable Planet with a Mass Similar to Earth. *PLoS ONE* 5(10): e13061. 2010.
8. **S Arbesman** and NA Christakis. Leadership Insularity: A New Measure of Connectivity Between Central Nodes in Networks. *Connections* 30(1): 4-10. 2010.
9. **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.
10. **S Arbesman**, SH Strogatz, and MS Vitevitch. The Structure of Phonological Networks across Multiple Languages. *International Journal of Bifurcation and Chaos* 20 (3), 2010.
11. **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.)
12. **S Arbesman**, L Enthoven, A Monteiro. Ancient Wings: Animating the Evolution of Butterfly Wing Patterns. *Biosystems*, 71: 289-295. 2003.

In Preparation or Under Review

1. **S Arbesman**. The Productivity Potential Index for Human Society.
2. AJ O'Malley*, **S Arbesman***, DM Steiger, JH Fowler, NA Christakis. Egocentric Social Network Structure, Health, and Pro-Social Behaviors in a National Panel Study of Americans.
3. A Mauboussin and **S Arbesman**. Differentiating Skill and Luck in Financial Markets with Streaks (February 3, 2011). Available at SSRN: http://ssrn.com/abstract=1664031

Selected Popular Writing

1. How long will America last? An impossible question, answered with math. *Boston Globe*, October 30, 2011. Ideas.
2. Traces of Humanity: What aliens could learn from the stuff we've left in space. *Boston Globe*, August 7, 2011, Ideas.
3. In Praise of Mediocre Research. *Longshot Magazine*, Issue 2: July 31, 2011.
4. Why Science Drama Would Make Great TV. *Wired Online*, June 15, 2011.
5. Gaussian Genealogy: Math Masters Trace Their Intellectual Lineage. *Wired Magazine*, June 2011.
6. The Social Networks of Superheroes. *The Atlantic Online*, May 27, 2011.
7. Streaks, from Joltin' Joe to Mutual Fund Managers. *Harvard Business Review* | *The Conversation*, February 21, 2011.
8. 2011 – The year you weren't expecting: A calendar of the obscure and surprising in the year to come. *Boston Globe*, January 2, 2011: K1, Ideas.
9. Million-dollar mathematics problem. *New Scientist*, December 25, 2010. (with Rachel Courtland).
10. Expect Earth's twin planet. *New Scientist*, December 25, 2010. (with Rachel Courtland).
11. No 'magic' element just yet. *New Scientist*, December 25, 2010. (with Rachel Courtland).
12. The internet peak comes into view. *New Scientist*, December 25, 2010. (with Rachel Courtland).

13. Mutated Manuscripts: The Evolution of Genes and Texts. *The Atlantic Online*, November 16, 2010.
14. The me-sized universe: Some parts of the cosmos are right within our grasp. *Boston Globe*, September 19, 2010: K1, Ideas.
15. 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.
16. Warning: Your reality is out of date: Introducing the mesofact. *Boston Globe*, February 28, 2010: C3, Ideas.
17. League of nations: Bored with football stats? Introducing fantasy geopolitics. *Boston Globe*, November 15, 2009: K10, Ideas.
18. 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.
19. 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)
20. Start the clock: A modest proposal for improving football: the 'time-in'. *Boston Globe*, August 16, 2009: C2, Ideas.
21. What to do if your child has superpowers: A FAQ for concerned parents. *Boston Globe*, June 21, 2009: C2, Ideas.
22. The Arbesman Limit: How to be famous in a few easy steps. *Boston Globe*, February 8, 2009: L10, Ideas.
23. Anatomy of a Spring Break. *Boston Globe*, January 25, 2009: C10, Ideas.
24. A Journey to Baseball's Alternate Universe. *New York Times*, March 30, 2008: WK12 (with Steven Strogatz).

Selected Presentations and Invited Talks

The Half-Life of Facts
Defrag Conference, Fall 2011.

The Impact of Scale On Cities
Compass Summit, Fall 2011.

Altmetrics for Eurekometrics
altmetrics11: Tracking scholarly impact on the social Web: An ACM Web Science Conference 2011 Workshop, Summer 2011.

The Large-Scale Regularities of Societal Goods: Discovery, Innovation, and Prosocial Behavior
SENSEable City Laboratory, MIT, Spring 2011. (*Invited Talk*)

How to use social networks to understand innovation
Social Networks and Healthcare / Pharmaceutical Summit 2011 - From Insight to Action, MedNetworks, Inc., Spring 2011. (*Invited Talk*)

Do streaks imply skill?
Skill vs. Luck: Disentangling Success in Complex Systems, Center for the Study of Complex Systems, University of Michigan, Spring 2011. (*Invited Talk*)

Innovation and Network Economics.
Kauffman Foundation, Fall 2010. (*Invited Talk*)

Predicting the Discovery of the First Habitable Planet.
Harvard University, Fall 2010. (*Invited Talk*)

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).

Theories of Risk in Financial Markets, Panel Discussion.
Santa Fe Institute Forum on Risk, New York City, Fall 2007. (*Invited*)

Honors, Awards, and Fellowships

The Best Writing on Mathematics 2010: essay included in collection, 2010.

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 – Co-Investigator

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

NetMob2011: Analysis of Mobile Phone Datasets and Networks (2011), MIT Media Lab – Scientific Committee member

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

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

Referee for: *Management Science*, *PLoS ONE*, *Social Psychology Quarterly*, *New Journal of Physics*

Selected Media Coverage

Wall Street Journal, *New York Times*, *The Atlantic*, *New Scientist*, *Wired*, *Nature*, *Barron's*, *The Economist*, *Telegraph*, *Independent*, *Globe and Mail*, *CBC*, *WNPR*, *WNYC*, *New Yorker*, *Harper's*, *Arts & Letters Daily*