Steven H. Strogatz

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Employment

2017–	Stephen H. Weiss Presidential Fellow, Cornell
2009–	Professor of Mathematics, Cornell
2009–2014	Professor of Mechanical and Aerospace Engineering, Cornell
2007–	Jacob Gould Schurman Professor of Applied Mathematics, Cornell
2005–2012	Director, Center for Applied Mathematics, Cornell
2000–2009	Professor, Theoretical and Applied Mechanics, Cornell
1994–2000	Associate Professor, Theoretical and Applied Mechanics, Cornell
1993–1994	Associate Professor of Applied Mathematics, Dept. of Mathematics, MIT
1989–1993	Assistant Professor of Applied Mathematics, Dept. of Mathematics, MIT
1986-1989	NSF Postdoc in Mathematical Sciences, Harvard and Boston University

Education

1986	Ph. D., Applied Mathematics, Harvard University
1986	M.A., Mathematics, Cambridge University
1982	B. A., first class honours, Mathematics, Cambridge University
1980	A. B., summa cum laude, Mathematics, Princeton University

Research Interests

Nonlinear dynamics and complex systems applied to physics, biology, and social science

Honors and Awards

2019 Shortlist for Royal Society Science Book Prize, *Infinite Powers*

2019 George Pólya Prize for Mathematical Exposition
"For extensive and brilliant works conveying the fascination and the impact of mathematics to the general public through numerous books, newspaper and magazine articles, and radio, television, web, and video appearances, and for his important and influential textbook on nonlinear dynamics and chaos." Awarded by the Society for Industrial and Applied Mathematics.

2018 Fellow of the Network Science Society
One of seven fellows elected in the inaugural class. "For seminal work on small-world networks, chimera states, and synchronization phenomena in networks."

2017 Stephen H. Weiss Presidential Fellow
Cornell's highest teaching award.

2016 Fellow of the American Mathematical Society
"For contributions to nonlinear dynamics and complex systems, and for the promotion of mathematics in the public sphere."

2015 Joseph Priestley Award
"Presented by Dickinson College in memory of Joseph Priestley, discoverer of oxygen, to a distinguished scientist whose work has contributed to the welfare of humanity. The award, first presented in 1952, recognizes outstanding achievement and contribution to our understanding of science and the world." Past recipients include Francis Crick, Margaret Mead, and Linus Pauling.

2015 Lewis Thomas Prize for Writing About Science
"Honors the rare individual who bridges the worlds of science and the humanities—whose voice and vision can tell us about science's aesthetic and philosophical dimensions, providing not merely new information but cause for reflection, even revelation." Past recipients include Lewis Thomas, Oliver Sacks, and Freeman Dyson. Awarded by Rockefeller University.

2014 Fellow of the American Physical Society
"For seminal work on complex networks, nonlinear oscillators, and synchronization phenomena."

2014 Euler Book Prize, *The Joy of x*
"The Euler Book Prize is awarded annually to an author or authors of an outstanding book about mathematics. The Prize is intended to recognize authors of exceptionally well written books with a positive impact on the public's view of mathematics and to encourage the writing of such books." Awarded by the Mathematical Association of America.

2013 Public Engagement with Science Award
"For his exceptional commitment to and passion for conveying the beauty and importance of mathematics to the general public." Past recipients include Carl Sagan, Neil deGrasse Tyson, John Allen Paulos, and E.O. Wilson. Awarded by the American Association for the Advancement of Science.

2012 Fellow of the American Academy of Arts and Sciences

2009 Fellow of the Society for Industrial and Applied Mathematics
"For investigations of small-world networks and coupled oscillators and for outstanding science communication."

2008 Highly Cited Paper in Physics
For "Collective dynamics of small-world networks," which ranked #6 on the list of most highly cited papers in physics for 1998-2008.

2007 Jacob Gould Schurman Professor
A university-wide endowed chair at Cornell.

2007 Communications Award from the Joint Policy Board for Mathematics
A lifetime award, presented jointly by the four major American mathematical societies, "to reward journalists and other communicators who, on a sustained basis, bring accurate mathematical information to non-mathematical audiences. The award recognizes a significant accumulated contribution to the public understanding of mathematics."

2006 Tau Beta Pi Teaching Award
"Professor of the Year" in the College of Engineering.

2001 Robert ’55 and Vanne ’57 Cowie Teaching Award, College of Engineering
2000 President’s Award for Outstanding Contributions in Support of Underrepresented Minorities
1997 J.P. and Mary Barger ’50 Teaching Award, College of Engineering
1991 E. M. Baker Award for Excellence in Undergraduate Teaching
MIT’s highest teaching prize.
1990 NSF Presidential Young Investigator
1986 NSF Postdoctoral Fellowship in Mathematical Sciences
1982 Senior Scholarship and Tripos Prize, Trinity College, Cambridge, England
1980 Marshall Scholar, Trinity College, Cambridge

Prize Lectures and Named Lectures

2019 Dresden Lectures, Swarthmore College
2018 Sowers Distinguished Lecture, Virginia Tech
2012 Evnin Lecture, Princeton University
2011 Louis Clark Vanuxem Lecture, Princeton University
“…a series of public lectures before the University annually on subjects of scientific interest.… Lecturers have included Edwin P. Hubble on “The Exploration of Space” (1931-1932); James B. Conant on “The Mobilization of American Scientists for the War”; and Carl Sagan on “Extraterrestrial Life” (1972-1973).
2011 Simons Lecture Series, MIT
“The Department of Mathematics annually presents the Simons Lecture Series to celebrate the most exciting mathematical work by the very best mathematicians of our time.”
2010 Gerald and Judith Porter Public Lecture, Joint Mathematics Meetings, Washington, DC
2009 Rouse Ball Lecture, University of Cambridge
Previous lecturers include Einstein, Dirac, Pauli, Mandelbrot, Lorenz, and numerous Nobel laureates and Fields Medalists.
2001 I. E. Block Community Lecture, SIAM Annual Meeting, San Diego

Grants

"Transdisciplinary Research in Principles of Data Science (TRIPODS) Program: Data Science for Improved Decision-Making: Learning in the Context of Uncertainty, Causality, Privacy, and Network Structures," Co-PI, National Science Foundation, 10/1/2017-9/30/2020, $1,496,655.

"Research Training Grant: Dynamics, Probability, and Partial Differential Equations in Pure and Applied Mathematics," Principal Investigator, National Science Foundation, 9/1/2017-8/31/2022, $2,494,525.

"Nonlinear dynamics of oscillator networks," Principal Investigator, National Science Foundation, 7/1/2015-6/30/2018, $400,575.

Cyber-Enabled Discovery and Innovation Program, "CDI Type II: Complex dynamics in the Internet: A computational analytic approach," Co-Principal Investigator, National Science Foundation CCF-0835706, 2008-2012, $1,500,000.

"Nonlinear dynamics of oscillator networks," Principal Investigator, National Science Foundation, 2004-2007, $524,061.

Integrative Graduate Education and Research Training (IGERT) grant, "Program in Nonlinear Systems," Co-Principal Investigator, National Science Foundation DGE-0333366, 2003-2008, $3,436,000.

"Nonlinear dynamics of oscillator networks," Principal Investigator, National Science Foundation, 2000-2003, $312,042.

Integrative Graduate Education and Research Training (IGERT) grant, "Program in Nonlinear Systems," Principal Investigator, National Science Foundation, 1998-2003, $2,245,997.

"Mutual synchronization of biological oscillators," Principal Investigator, National Science Foundation, 1996-1999, $180,000.

"Synchronization and communication in nonlinear optical systems," Co-Principal Investigator, National Science Foundation, 1996-1999, $268,123.

"Nonlinear dynamics of oscillator arrays," Principal Investigator, National Science Foundation, 1995-1998, $180,000.

"Large systems of coupled nonlinear oscillators in physics and biology," Principal Investigator, National Science Foundation, 1992-1995, $75,000.

National Science Foundation Presidential Young Investigator Award, 1990–1995, $205,000 ($125,000 base grant + $40,000 grant from AT&T + $40,000 matching money from NSF).

"Large systems of coupled nonlinear oscillators," Principal Investigator, National Science Foundation, 1989–1991, $37,000.

Professional Activities

AMS-MAA-SIAM Committee on the Porter Public Lecture (2017-2020)
Euler Book Prize Committee, Mathematics Association of America (2015)
Science Advisory Board, Quanta Magazine, Simons Foundation (2013–present)
Judge, Math-O-Vision (2013-2014)
Judge, Rosenthal Prize for Innovation in Mathematics Teaching, Museum of Mathematics (2012-2014)
Advisory Council, Museum of Mathematics (2010-present)
Science adviser, RadioLab, WNYC (2006-present)
Advisory Board, SIAM Dynamical Systems Activity Group (2006-2007)
External Faculty, Santa Fe Institute (2004-2010)
Editorial Boards:

- Archimede (Italy), International Committee (2016-present)
- Notices of the American Mathematical Society (2013-2015)
- Math Horizons (2013–present)
- Co-Editor, Princeton Studies in Complexity (2004-present)
- Journal of Nonlinear Science (2003-2006)
- International Journal of Bifurcation and Chaos (1999-present)
- SIAM Review (1997-2002)
- SIAM Journal on Applied Mathematics (1995–1998)

Co-Organizer (with M. Silber), SIAM Conference on Applications of Dynamical Systems (1997)
Director, SIAM Activities Group on Dynamical Systems (1996-1999)
Co-Chairman (with L. Keshet), Gordon Research Conference on Theoretical Biology (1992)

Teaching and Mentoring

Teaching Awards and Summary
Department of Mathematics Teaching Award, Cornell (2012)
Swanson Teaching Award, College of Engineering, Cornell (2009)
Tau Beta Pi Teaching Award ("Professor of the Year" in the College of Engineering) (2006)
Robert `55 and Vanne `57 Cowie Excellence in Teaching Award, College of Engineering, Cornell (2001)
J.P. and Mary Barger `50 Teaching Award, College of Engineering, Cornell (1997)
Awarded MIT's top teaching prize, the E. M. Baker Award for Outstanding Teaching (1991)
Awarded four Certificates for Distinction in Teaching, Harvard University, Committee on Undergraduate Education (1983, 1984, 1985, 1987)

Courses taught at Cornell
Calculus for the Life and Social Sciences (Math 1106)
Mathematical Explorations (Math 1300)
Mathematics and Politics (Math 1340)
Multivariable Calculus (Math 1920)
Differential Equations for Engineers (Math 2930)
Advanced Engineering Analysis (TAM 3100)
Introduction to Analysis (Math 3110)
History of Mathematics (Math 4030)
Differential Equations and Dynamical Systems (Math 4200)
Nonlinear Dynamics and Chaos (Math 4210/MAE5790)
Applied Complex Analysis (Math 4220)
Intermediate Dynamics (TAM 5700)
Methods of Applied Mathematics (TAM 6100, 6110)
Asymptotics and Perturbation Methods (TAM 6130)
Complex Systems (TAM 6780)
Applied Dynamical Systems (Math 7170/TAM 7760)

Courses taught at MIT
18.02 Calculus
18.04 Complex Variables
18.085 Mathematical Methods for Engineers
18.311 Principles of Applied Mathematics
18.385 Nonlinear Dynamics and Chaos

Ph.D. Students and Their Current Affiliations

MIT:	
1. Shinya Watanabe (Applied Mathematics, 1995)	Ibaraki University
2. Mauricio Barahona (Physics, 1996)	Imperial College
Cornell:	
3. Duncan Watts (Theoretical and Applied Mechanics, 1997)	Microsoft Research
4. M.K. Stephen Yeung (Theoretical and Applied Mechanics, 1999)	U. San Francisco
5. Duncan Callaway (Theoretical and Applied Mechanics, 2001)	UC Berkeley

6. Joel Ariaratnam (Applied Mathematics, 2002)	St. Martin's Press
7. Michelle Girvan (Physics, 2003)	U. Maryland
8. Daniel Wiley (Applied Mathematics, 2006)	US Government
9. Danny Abrams (Theoretical and Applied Mechanics, 2006)	Northwestern U.
10. Sam Arbesman (Computational Biology, 2008)	Lux Capital
11. Erik Martens (Theoretical and Applied Mechanics, 2009)	Tech Univ. Denmark
12. Lauren Childs (Applied Mathematics, 2010)	Virginia Tech
13. Seth Marvel (Applied Mathematics, 2011)	U. Michigan
14. Tim Novikoff (Applied Mathematics, 2013)	Google
15. Isabel Kloumann (Applied Mathematics, 2016)	Facebook
16. Danielle Toupo (Applied Mathematics, 2016)	Intel
17. Kevin O'Keeffe (Applied Mathematics, 2017)	MIT
18. Bertrand Ottino-Löffler (Applied Mathematics, 2018)	MIT
19. Irena Papst (Applied Mathematics, expected 2019)	
20. Lindsay Mercer (Applied Mathematics, expected 2021)	
21. David Hathcock (Physics, expected 2021)	
22. Max Lipton (Mathematics, expected 2021)	
23. Ekaterina Kryuchkova (Applied Mathematics, expected 2021)	
24. Stephen Cowpar (Applied Mathematics, expected 2021)	

Master's Students
John Weisenfeld (Theoretical and Applied Mechanics, 1997)

Postdoctoral Fellows
Ricardo Oliva (2001)
Basant Sharma (2004)
Marc Timme (2005)

Diversity
Co-PI of Cornell's Summer Mathematics Institute, (2006-2013), a summer "boot camp" for mathematically talented women and minority undergraduates who are headed for graduate school and desire a stronger foundation in analysis and algebra.

Science Communication and Outreach

New York Times series:

Steven Strogatz on The Elements of Math (a 15-part online series in 2010)
From Fish to Infinity (January 31, 2010)
Rock Groups (February 7, 2010)
The Enemy of My Enemy (February 14, 2010)
Division and Its Discontents (February 21, 2010)
The Joy of X (February 28, 2010)
Finding Your Roots (March 7, 2010)
Square Dancing (March 14, 2010)
Think Globally (March 21, 2010)
Power Tools (March 28, 2010)
Take It to the Limit (April 4, 2010)
Change We Can Believe In (April 11, 2010)
It Slices, It Dices (April 18, 2010)
Chances Are (April 25, 2010)
Group Think (May 2, 2010)
The Hilbert Hotel (May 9, 2010)

Me, Myself and Math (a six-part online New York Times series in 2012)
Singular Sensations (September 10, 2012)
Friends You Can Count On (September 17, 2012)
Proportion Control (September 24, 2012)
It's My Birthday Too, Yeah (October 1, 2012)
Dangerous Intersection (October 8, 2012)
Visualizing Vastness (October 15, 2012)

New York Times Op-Eds:
The real scientific hero of 1953. New York Times, Op-Ed page (March 4, 2003).
How the blackout came to life. New York Times, Op-Ed page (August 25, 2003).
A journey to baseball's alternate universe. (with Sam Arbesman) New York Times, Op-Ed page (March 30, 2008).
Math and the city. New York Times, Wild Side guest column (May 19, 2009).
Loves me, loves me not (Do the math). New York Times, Wild Side guest column (May 26, 2009).
Like water for money. New York Times, Wild Side guest column (June 2, 2009).

New York Times Science Times:
One Giant Step for a Chess-Playing Machine. New York Times, Science Times (December 26, 2018).
How Pi Made Us Modern. New York Times, Science Times (March 14, 2019).

Huffington Post:
S. Strogatz. The 3 Most Confusing Things Your Math Teacher Ever Told You, Huffington Post, December 13, 2012.
S. Strogatz. Could you park safely on the world's steepest street? Huffington Post, August 22, 2014.
S. Strogatz and C. Ratti. Taking rides with strangers. Huffington Post, September 2, 2014.

The New Yorker:
S. Strogatz. Why Pi Matters. The New Yorker, March 13, 2015.
S. Strogatz. Einstein's First Proof. The New Yorker, November 19, 2015.

Scientific American:
S.H. Strogatz and I. Stewart. Coupled oscillators and biological synchronization. Scientific American 269 (6), December, 102–109 (1993).
S. Strogatz. Commuting. Scientific American. October (2012).
S. Strogatz. Outsmarting a virus with math. Scientific American 320 (4), April, 70–73 (2019).

Quanta Magazine:
S. Strogatz. Usain Bolt's split times and the power of calculus. Quanta Magazine. April 3 (2019).

Engadget:
How calculus is helping unravel DNA's secrets. Engadget, April 20 (2019).

Radio and Web Appearances

Radiolab:
"Infective Heredity" (9/20/18)
"For the Love of Numbers" (5/2/14)
"What a Slinky Knows" (9/10/12)
"Loops" (10/4/11)
"The Good Show" (12/14/10)
"Limits" (4/16/10)
"Numbers" (10/9/09)
"Are We Coins?" podcast (6/29/09)
"Yellow Fluff and Other Curious Encounters" (12/12/08)
"(So-Called) Life" (3/14/08)
"Emergence" (2/18/05)

LA Theatre Works:
"Proof" - explores themes of women in math, the nature of genius, creativity, proof, intuition, and elegance
"Arcadia" - about the history and significance of chaos theory and fractal geometry as they relate to the play
"Six Degrees of Separation" - about human connections, the small-world effect, and networks

Science Friday:
“Does Math Matter?” (7/3/2015)
“Hello, Stranger, Wanna Share a Cab?” (9/5/14)
"Celebrating irrational, transcendental pi" (3/14/14)
"Steven Strogatz: The Joy of x" (10/5/12)
"Steven Strogatz Talks Math" (2/26/10)
"Scientists Debate 'Six Degrees of Separation'" (1/25/08)

Other radio and internet appearances:
“Secrets of the Universe Revealed!” Science Talk with Steve Mirsky, Scientific American (5/23/19)
Talk Nerdy podcast (4/25/17)
“Steven Strogatz Brings Math To The Traumatized And Perplexed” - WBUR Edify (4/10/17)
“Teach Better Podcast Episode 45: Inspiring Students With Steven Strogatz” (1/2/17)
“Deep Dive: Is Math Important?” - The Aspen Institute, Aspen Ideas Festival (6/30/15)
“Morality, Math and Movies” - Cain & Cupp, Radio interview (10/11/14)
“Should We Start Sharing Taxis?” - WNYC, The Brian Lehrer Show (9/3/14)
VIP (Very Important Puzzler) on NPR/WNYC quiz show Ask Me Another (8/2/13)
"The heart of the beat" - CBC Radio Ideas (4/22/13)
"The Joy of x" - GigaOm (10/16/12)
"The Joy of x" - Literary New England (10/8/12)
"Pi: A window on infinity" -- Colin McEnroe Show (3/14/11)
Ideas Network -- Wisconsin Public Radio (6/24/10)
"Swarm in here ... or is it just me?" -- SETI (6/21/10)
"Math for the nonmathletic" -- Colin McEnroe Show (3/15/10)
"Who are You Connected To?" -- Morning Edition (6/4/98)

Television

How Kevin Bacon Cured Cancer (also known as Connected: The Power of Six Degrees)
Documentary about networks, aired on ABC Australia, Oct. 28, 2008; Discovery Canada, Jan. 8, 2009; Discovery Science Channel US, Feb. 15, 2009; BBC Two, United Kingdom, May 5, 2009. 2009 winner of the Australian Museum Eureka Prize, the most prestigious award in Australian science. 2010 winner of Best Film, SCINEMA Festival of Science Film Competition.
Sync: The Emerging Science of Spontaneous Order - C-SPAN BookTV, 92nd St Y, Mar. 25, 2003, conversation with Alan Alda

Video

TED Talk on how things in nature tend to sync up (Monterey, CA, Feb. 2004)

Parabolas (etc.) from WNYC/NPR Radio Lab (a video inspired by Radio Lab episode “Yellow fluff and other curious encounters.”)

Simons Lecture Series, Mathematics Department, MIT (2011).
("The Department of Mathematics annually presents the Simons Lecture Series to celebrate the most exciting mathematical work by the very best mathematicians of our time.")
1. Coupled oscillators that synchronize themselves
2. Social networks that balance themselves
3. Blogging about math for the New York Times

Louis Clark Vanuxem Lecture, Princeton University (2011).

Induction speech at American Academy of Arts and Sciences (10/6/12)

The Infinite Mind: Exploring Mathematical Genius, 92nd St Y and World Science Festival (March 11, 2016).

The Brachistochrone, with Steven Strogatz (April 11, 2016)

A Well-Lighted Place (interview about writing)

Math for the Masses (lecture about writing "The Elements of Math" blog for the NY Times)

The Calculus of Friendship (conversation with Alan Alda)

The Calculus of Friendship (trailer on YouTube)

The Calculus of Friendship (one-hour lecture)

Fractal lecture from Chaos: The Teaching Company

SEED Magazine: Salon with architect and designer Carlo Ratti, SEED Magazine, December 2008. Video Transcript

A Simple Rhythm -- Documentary about synchronization in nature
(aired at Calgary International Film Festival and Vancouver International Film Festival, 2010)

Selected Press

Ars Technica (10/30/18) New study sheds light on what caused Millennium Bridge to wobble
New York Times (8/10/18) What's the Right Number of Taxis (or Uber or Lyft Cars) in a City?
Medium.com (7/27/18) Friends, Brains and Crickets: A (Scientific) Love Story
Nature, News and Views (6/19/18) Twenty years of network science
Science News (5/23/18) Fleets of self-driving taxis could be choreographed to cut traffic
Cornell Chronicle (4/25/18) Strogatz, Bethe research papers named to top-50 list
The Atlantic (4/5/18) The Scientific Paper is Obsolete
Quanta (3/1/18) Why Don't Patients Get Sick in Sync? Modelers Find Statistical Clues
SIAM News (3/1/18) Self-organization in Space and Time
The Atlantic (2/20/18) The Controversial Theory That Explains the Structure of the Internet

Nature Physics 14 (2/1/18), p. 108 The discovery of skewness
Plus Magazine (1/22/18) Spaghetti, chance, and typhoid
National Public Radio, 13.7 Cosmos & Culture (11/18/17) The big idea behind big data
Physicsworld.com (11/14/2017) Putting a damper on wobbly bridges
New York Times (4/19/17) How Six Degrees Became a Forever Meme
Nature (3/6/17) Taxi-sharing in cities follows universal maths law
Nautilus (2/17/17) How to Understand Extreme Numbers
Technology Review (1/13/17) Mathematical Model Reveals the Patterns of How Innovations Arise
Business Insider (6/8/16) An Ivy League professor explains chaos theory, the prisoner's dilemma, and why math isn't really boring
The Atlantic (7/1/15) The Dilemma of Math
Science (5/29/15) Rock-paper-scissors may explain evolutionary 'games' in nature
New York Times (4/2/15) The Problem With Math Problems: We're Solving Them Wrong
Wall Street Journal (10/19/14) Billionaires and Mathematicians Crack Jokes at the Geekiest Event of the Season -- Wall Street's Wealthy 'Quants' Gather At Geeky Fundraiser for Math
The Atlantic (10/6/14) Teaching math to people who think they hate it
New York Times (9/1/14) If 2 New Yorkers Shared a Cab...
U.S. News (9/1/14) Going My Way? Taxi-Sharing Offers Big Benefits, Study Finds
Washington Post (8/1/14) The Mathematics of Discovering New Things
Wired (August 2014) The Mathematics of Novelties and Innovations
Physics Today (October 2012) Exotic chimera dynamics glimpsed in experiments
Boston Globe (9/27/12) Steven Strogatz teaches math to the masses
Science News (9/22/12) When networks network
New York Times (11/9/10) Voices: What's next in science
Harvard Business Review (4/29/10) The best New York Times business columnist you've never heard of
Nature Physics (2010) News and Views: Spontaneous synchrony breaking
O, The Oprah Magazine (9/18/09) Social not-working: The perils of too much communication
New York Times (11/8/05) All together now: Synchrony explains swaying
Discovery News (8/21/03) Language's status drives its survival
New York Times (12/26/00) First cells, then species, now the web
New York Times (6/16/98) Mathematicians prove that it's a small world
Nature (6/4/98) News and Views: It's a small world
New York Times (1/6/98) Flirting male crabs found to wave claws in unison
New York Times (8/13/91) A mystery of nature: Mangroves full of fireflies blinking in unison
New York Times (1/8/85) Strange scroll-like wave is linked to biological processes

Other Outreach

Aspen Ideas Festival, Aspen, CO, June 28-30 (2015)
National Math Festival, Smithsonian Institution, Washington DC (April 18, 2015).
Adviser and interviewee on MATHematics Illuminated (2007-08)
A 13-part video and web-based educational series, produced by Oregon Public Broadcasting and funded by the Annenberg Foundation. The series won a WebVisionary Award in 2008, in the "educational/resource" category.

Science adviser, Radio Lab, WNYC (2006-present)
Science consultant, "QED" – a Broadway play about Richard Feynman (2001-2002).
Interviewed and quoted by the New York Times, Washington Post, Baltimore Sun, National Journal, and San Jose Mercury Sun, about how "six degrees of separation" makes us all feel personally affected by the World Trade Center attack (September 2001).

Journal Articles

A. Worcel, S. Strogatz, and D. Riley. Structure of chromatin and the linking number of DNA. Proceedings of the National Academy of Sciences USA 78, 1461-1465 (1981).

S. Strogatz. Estimating the torsional rigidity of DNA from supercoiling data. Journal of Chemical Physics 77, 580-581 (1982).

S. Strogatz. Topology of zig-zag chromatin. Journal of Theoretical Biology 103, 601-607 (1983).

A.T. Winfree and S.H. Strogatz. Singular filaments organize chemical waves in three dimensions. I. Geometrically simple waves. Physica D 8, 35-49 (1983).

A.T. Winfree and S.H. Strogatz. Singular filaments organize chemical waves in three dimensions. II. Twisted waves. Physica D 9, 65-80 (1983).

A.T. Winfree and S.H. Strogatz. Singular filaments organize chemical waves in three dimensions. III. Knotted waves. Physica D 9, 333-345 (1983).

A.T. Winfree and S.H. Strogatz. Singular filaments organize chemical waves in three dimensions. IV. Wave taxonomy. Physica D 13, 221-233 (1984).

S.H. Strogatz, M.L. Prueitt, and A.T. Winfree. Exotic shapes in chemistry and biology. IEEE Computer Graphics and Applications 4 (1), 66-69 (1984).

A.T. Winfree and S.H. Strogatz. Organising centres for three-dimensional chemical waves. Nature 311, 611-615 (1984).

S. Strogatz. Yeast oscillations, Belousov-Zhabotinsky waves, and the non-retraction theorem. Mathematical Intelligencer 7 (2), 9-17 (1985).

S.H. Strogatz and R.E. Kronauer. Circadian wake-maintenance zones and insomnia in man. Sleep Research 14, 219 (1985).

S.H. Strogatz, R.E. Kronauer, and C.A. Czeisler. Circadian regulation dominates homeostatic control of sleep length and prior wake length in humans. Sleep 9, 353-364 (1986).

C.A. Czeisler, J.S. Allan, S.H. Strogatz, J.M. Ronda, R. Sanchez, C.D. Rios, W.O. Freitag, G.S. Richardson, and R.E. Kronauer. Bright light resets the human circadian pacemaker independent of the timing of the sleep-wake cycle. Science 233, 667-671 (1986).

S.H. Strogatz, R.E. Kronauer, and C.A. Czeisler. Circadian pacemaker interferes with sleep onset at specific times each day: role in insomnia. American Journal of Physiology 253, R172-R178 (1987).

S.H. Strogatz. Human sleep and circadian rhythms: a simple model based on two coupled oscillators. Journal of Mathematical Biology 25, 327-347 (1987).

S.H. Strogatz. Author's summary in Open Peer Commentary on "The Mathematical Structure of the Human Sleep-Wake Cycle." Journal of Biological Rhythms 2, 317-321 (1987).

S.H. Strogatz. Love affairs and differential equations. Mathematics Magazine 61, 35 (1988).

S.H. Strogatz and R.E. Mirollo. Phase-locking and critical phenomena in lattices of coupled nonlinear oscillators with random intrinsic frequencies. Physica D 31, 143-168 (1988).

S.H. Strogatz and R.E. Mirollo. Collective synchronisation in lattices of non-linear oscillators with randomness. Journal of Physics A: Mathematical and General 21, L699-L705 (1988).

S.H. Strogatz, C.M. Marcus, R.M. Westervelt, and R.E. Mirollo. Simple model of collective transport with phase slippage. Physical Review Letters 61, 2380-2383 (1988).

S.H. Strogatz, C.M. Marcus, R.M. Westervelt, and R.E. Mirollo. Collective dynamics of coupled oscillators with random pinning. Physica D 36, 23-50 (1989).

C.M. Marcus, S.H. Strogatz, and R.M. Westervelt. Delayed switching in a phase-slip model of charge-density wave transport. Physical Review B 40, 5588-5592 (1989).

S.H. Strogatz and R.M. Westervelt. Predicted power laws for delayed switching of charge-density waves. Physical Review B 40, 10501-10508 (1989).

R.E. Mirollo and S.H. Strogatz. Jump bifurcations and hysteresis in an infinite-dimensional dynamical system of coupled spins. SIAM Journal on Applied Mathematics 50, 108-124 (1990).

S.H. Strogatz. Interpreting the human phase response curve to multiple bright-light exposures. Journal of Biological Rhythms 5, 169-174 (1990).

R.E. Mirollo and S.H. Strogatz. Amplitude death in an array of limit-cycle oscillators. Journal of Statistical Physics 60, 245-262 (1990).

P.C. Matthews and S.H. Strogatz. Phase diagram for the collective behavior of limit-cycle oscillators. Physical Review Letters 65, 1701-1704 (1990).

R.E. Mirollo and S.H. Strogatz. Synchronization of pulse-coupled biological oscillators. SIAM Journal on Applied Mathematics 50, 1645-1662 (1990).

R.E. Mirollo and S.H. Strogatz. Integral representation of a finite spike. American Mathematical Monthly 97, 901-903 (1990).

P.C. Matthews and S.H. Strogatz. Chaotic mappings and probability distributions. College Mathematics Journal 22, 45-47 (1991).

K.Y. Tsang, S.H. Strogatz, and K. Wiesenfeld. Reversibility and noise sensitivity of Josephson arrays. Physical Review Letters 66, 1094-1097 (1991).

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