

J. Doyne Farmer

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EDUCATION

Ph.D., Physics, **University of California, Santa Cruz**, 1981
B.S., Physics, **Stanford University**, 1973
University of Idaho, 1969-1970

PROFESSIONAL EXPERIENCE

Santa Fe Institute, Professor, 1999–Present
Potsdam Institute of Climate Change, Distinguished Fellow, 2010 – Present
LUISS Guido Carli (Rome), Extraordinary Professor, 2007 – 2009.
Prediction Company, 1991–1999
Co-President, 1995–1999
Chief Scientist (head of research group), 1991–1999
Los Alamos National Laboratory, 1981–1991
Leader of Complex Systems Group, Theoretical Division, 1988–1991
Staff Member, Theoretical Division, 1986–1988
Oppenheimer Fellow, Center for Nonlinear Studies, 1983–1986
Post-doctoral appointment, Center for Nonlinear Studies, 1981–1983

PROFESSIONAL ASSOCIATIONS

Editorial Board, *Quantitative Finance* (2003–Present)
Editorial Board, *Artificial Life* (2002–Present)
Editor-in-Chief, *Quantitative Finance* (1999–2003)
Editorial Board, *Nonlinearity* (1988–1991)

PROFESSIONAL INTERESTS

Complex systems, particularly social evolution of financial markets and technological innovation

FELLOWSHIPS

J. Robert Oppenheimer Fellowship
March 1983–February 1986
Hertz Fellowship
September 1978–June 1981
UC Regents Fellowship
September 1973–June 1974

RESEARCH GRANTS

National Science Foundation (Principal Investigator)
Modeling the Dynamics of Technological Evolution
\$391,020
01/0108 – 12/31/11

National Science Foundation (Principal Investigator)
Leverage and Systemic Risk
\$450,000
10/01/2010 – 09/0/2013

Institute for New Economic Thinking (Principal Investigator)
An Agent Based Model of the Current Economic Crisis
\$374,900
01/01/2011 – 12/31/2012

Alfred P. Sloan Foundation (Co-Principal Investigator)
Network Models of Systemic Risk
\$63,255
01/01/2011 – 01/01/20013

European Commission FP7, CRISIS (Complex Research Initiative for Systemic Instabilities – FP7-ICT-2011-288501 (Scientific Coordinator)
2,300,000 euro
01/11/2011 – 01/11/2014

AWARDS

Los Alamos National Laboratory Fellows Prize, 1989 (for best research paper that year at Los Alamos)
Alexander von Humboldt Award, 2011

CITATION RECORD (ISI)

>65 publications; 6461 citations; average citations 110; h-index = 23; top 5 papers: (1387, 1007, 720, 717, 448)

WORKING PAPERS

Galla, T., and J. D. Farmer. “Complex Dynamics in Learning Complicated Games. <http://arxiv.org/abs/1109.4250>.
Caccioli, F., T. A. Catanach, and J. D. Farmer. “Heterogeneity, Correlations and Financial Contagion.” Working Paper #11-09-044, Santa Fe Institute, Santa Fe, NM, 2011. <http://arxiv.org/abs/1109.1213>
Tóth, B., I. Palit, F. Lillo, and J. D Farmer. “Why is Order Flow so Persistent?” <http://arxiv.org/abs/1108.1632>.
Tóth, B., Z. Eisler, F. Lillo, J.-P. Bouchaud, J. Kockelkoren, and J. D Farmer. “How Does The Market React to Your Order Flow?” April 5, 2011. <http://arxiv.org/abs/1104.0587>
Farmer, J. Dooyne, Austin Gerig, Fabrizio Lillo, and Henri Waelbroeck. “How Efficiency Shapes Market Impact.” February 26, 2011. <http://arxiv.org/abs/1102.5457>
La Spada, G., J. D. Farmer, and F. Lillo. “Tick Size and Price Diffusion.” <http://arxiv.org/abs/1009.2329>.

- Schwarzkopf, Yonathan, and J. Doyne Farmer. "What Drives Mutual Fund Asset Concentration?" Santa Fe Institute, Santa Fe, NM, March 16, 2010.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1173046
- Schwarzkopf, Yonathan, and J. Doyne Farmer. "The Cause of Universality in Growth Fluctuations." Santa Fe Institute, Santa Fe, NM, April 28, 2010.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1597504
 Supporting Information:
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1597505
- Thurner, S., J. D. Farmer, and J. Geanakoplos. "Leverage Causes Fat Tails and Clustered Volatility." August 3, 2009.
<http://lanl.arxiv.org/abs/0908.1555>
- Farmer, J. D., and J. Geanakoplos. "Hyperbolic Discounting is Rational: Valuing the Far Future with Uncertain Discount Rates",
http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=278280m 2009.
- Farmer, J. D. "Slippage 1996." Technical Report, Prediction Company, Santa Fe, NM, 1996.
<http://www.santafe.edu/~jdf/papers/slippage.pdf>
- Farmer, J. D. "Sensitive Dependence to Noise without Sensitive Dependence to Initial Conditions. Technical Report LA-UR-83-1450, Los Alamos National Laboratory, Los Alamos, NM, 1983.

PUBLICATIONS

- McNerney, James, J. Doyne Farmer, Sid Redner, and Jessika Trancik. "Role of Design Complexity in Technology Improvement. *PNAS* 108(22) (2011): 9008-9013.
- McNerney, James, J. Doyne Farmer, and Jessika Trancik. "Historical Costs of Coal-Fired Electricity and Implications for the Future. *Energy Policy* 39(6) (2011): 3042-3054.
- Nagy, Béla, J. Doyne Farmer, Jessika E. Trancik, and John Paul Gonzales. "Superexponential Long-Term Trends in Information Technology. *J. of Technological Forecasting and Social Change* 73 (2011): 1061-1083.
- Bence, Tóth, Fabrizio Lillo, and J. Doyne Farmer. "Segmentation Algorithm for Non-Stationary Compound Poisson Processes." *Eur. Phys. J. B* 78 (2010): 235-243.
- Schwarzkopf, Yonathan, and J. Doyne Farmer. "An Empirical Study of the Tails of Mutual Fund Size." *Phys. Rev. E* 81 (2010): 066113
- Moro, E., J. Vicente, L. G. Moyano, A. Gerig, J. D. Farmer, G. Vaglica, F. Lillo and R. Mantegna. "Market Impact and Trading Profile of Hidden Orders in Stock Markets." *Phys Rev. E* 80(6) (2009): 1-8.

- Farmer, J. Dooyne, and John Geanakoplos. "The Virtues and Vices of Equilibrium and the Future of Financial Economics." *Complexity* 14(3) (2009): 11-38.
- Cherkashin, Dmitriy, J. Dooyne Farmer, and Seth Lloyd. "The Reality Game." *Journal of Economic Dynamics and Control* 33(5) (2009): 1091-115.
- Tóth, Bence, János Kertész, and J. Dooyne Farmer. "Studies of the Limit Order Book around Large Price Changes." *Eur. J. Phys. B* 71 (2009): 499-510.
- La Spada, G., J. D. Farmer, and F. Lillo. "The Non-Random Walk of Stock Prices: The Long-Term Correlation between Signs and Sizes." *Eur. Phys. J. B* (2008): 1-8.
- Mike, S., and J. D. Farmer. "An Empirical Behavioral Model of Liquidity and Volatility." *J Economic Dynamics and Control* 32(1) (2008): 200-234.
- Farmer, J. D., and N. Zamani. "Mechanical vs. Informational Components of Price Impact." *European Physical Journal B* 55(2) (2007): 189-200.
- Gillemot, Laszlo, J. Dooyne Farmer, and Fabrizio Lillo. "There' More to Volatility than Volume." *Quant. Fin.* 6(5) (2007): 371-384.
- Farmer, J. D., A. Gerig, F. Lillo, and S. Mike. "Market Efficiency and the Long-Memory of Supply and Demand: Is Price Impact Variable and Permanent or Fixed and Temporary?" *Quant. Fin.* 6(2) (2006): 107-112.
- White, D. R., N. Kejzar, C. Tsallis, J. D. Farmer, and S. White. "Generative Model for Feedback Networks." *Phys. Rev. E* 73(1) (2006): Art. No. 016119 Part 2.
- Farmer, J. D., D. E. Smith, and M. Shubik. "Is Economics the Next Physical Science?" *Physics Today* 58(9) (2005): 37-42.
- Lillo, F., and J. D. Farmer. "The Key Role of Liquidity Fluctuations in Determining Large Price Fluctuations." *Fluctuations and Noise Lett.* 5 (2005): L209-L216.
- Lillo, F., S. Mike, and J. D. Farmer. "Theory for Long Memory in Supply and Demand." *Phys. Rev. E* 7106(6 pt 2) (2005): 287-297.
- Farmer, J. D., P. Patelli, and I. Zovko. "The Predictive Power of Zero Intelligence in Financial Markets." *PNAS USA* 102(6) (2005): 2254-2259.
- Farmer, J. D., L. Gillemot, F. Lillo, S. Mike, and A. Sen. "What Really Causes Large Price Changes?" *Quant. Fin.* 4(4) (2004): 383-397.
- Lillo, F., and J. D. Farmer. "The Long Memory of the Efficient Market." *Studies in Nonlinear Dynamics & Econometrics* 8(3) (2004): 1226.
- Farmer, J. D., and F. Lillo. "On the Origin of Power-Law Tails in Price Fluctuations." *Quant. Fin.* 314 (2004): 7-10.
- Iori, G., M. G. Daniels, J. D. Farmer, L. Gillemot, S. Krishnamurthy, and E. Smith. "An Analysis of Price Impact Function in Order-Driven Markets." *Physica A* 324(1-2) (2003): 146-151.

- Smith, E., J. D. Farmer, L. Gillemot, and S. Krishnamurthy. "Statistical Theory of the Continuous Double Auction." *Quant. Fin.* 3(6) (2003): 481-514.
- Lillo, F., J. D. Farmer, and R. N. Mantegna. "Master Curve for Price-Impact Function." *Nature* 42 (2003): 129-130.
- Daniels, M. G., J. D. Farmer, L. Gillemot, G. Iori, and D. E. Smith. "Quantitative Model of Price Diffusion and Market Friction Based on Trading as a Mechanistic Random Process." *Phys. Rev. Lett.* 90(10) (2003): 108102-108104.
- Zovko, I., and J. D. Farmer. "The Power of Patience: A Behavioral Regularity in Limit Order Placement." *Quant. Fin.* 2(5) (2002): 387-392.
- Sato, Y., E. Akiyama, and J. D. Farmer. "Chaos in Learning a Simple Two-Person Game." *PNAS USA* 99(7) (2002): 4748-4751.
- Farmer, J. D., and S. Joshi. "The Price Dynamics of Common Trading Strategies." *J. Econ. Behav. & Org.* 49(2) (2002): 149-171.
- Farmer, J. D. "Market Force, Ecology, and Evolution." *Ind. & Corp. Change* 11(5) (2002): 895-953.
- Newman, M., M. Girvan, and J. D. Farmer. "Optimal Design, Robustness, and Risk Aversion." *Phys. Rev. Lett.* 89(2) (2002): 028301.
- Farmer, J. D. "Physicists Attempt to Scale the Ivory Towers of Finance." *Comp. Sci. & Eng. (IEEE)* 1(6) (1999): 26-39.
- Farmer, J. D., and A. W. Lo. "Frontiers of Finance: Evolution and Efficient Markets." *PNAS USA* 96(181) (1999): 9991-9992.
- Theiler, J., B. Galdrikian, A. Longtin, S. Eubank, and J. D. Farmer. "Detecting Nonlinear Structure in Time Series." *Physica D* 58 (1992): 77-94.
- Gibson, J., J. D. Farmer, M. Casdagli, and S. Eubank. "An Analytic Approach to Practical State Space Reconstruction." *Physica D* 57 (1992): 1-30.
- Dressler, U., and J. D. Farmer. "Lyapunov Exponents for Higher Order Derivatives." *Physica D* 59 (1992): 365-377.
- Deissler, R. J., and J. D. Farmer. "Deterministic Noise Amplifiers." *Physica D* 55 (1992): 155-165.
- Casdagli, M., S. Eubank, J. D. Farmer, and J. Gibson. "State Space Reconstruction in the Presence of Noise." *Physica D* 51 (1991): 52-98.
- Farmer, J. D., and J. J. Sidorowich. "Optimal Shadowing and Noise Reduction." *Physica D* 47 (1991): 373-392.
- Farmer, J. D. "A Rosetta Stone For Connectionism." *Physica D* 42 (1990): 153-187.
- Bagley, R. J., J. D. Farmer, S. A. Kauffman, N. H. Packard, A. S. Perelson, and I. M. Stadnyk. "Modeling Adaptive Biological Systems." *Biosystems* 23 (1989): 113-138.

- Ecke, R. E., J. D. Farmer, and D. K. Umberger, "Scaling of the Arnold Tongues." *Nonlinearity* 2 (1989): 175-196.
- Farmer, J. D., and J. J. Sidorowich. "Predicting Chaotic Time Series." *Phys. Rev. Lett.* 59(8) (1987): 845-848.
- Farmer, J. D., S. Kauffman, N. Packard, and A. Perelson. "Adaptive Dynamic Networks as Models for the Immune System and Autocatalytic Sets." *Perspectives in Biological Dynamics and Theoretical Medicine Ann. NY Acad. Sci.* 504 (1987): 118-131.
- Keeler, J. D., and J. D. Farmer. "Robust Space-Time Intermittency and $1/f$ Noise." *Physica D* 23(1-3) (1986): 413-435.
- Crutchfield, J. P., J. D. Farmer, N. H. Packard, and R. S. Shaw. "Chaos." *Sci. Am.* 254(12) (1986): 46-57.
- Bagley, R. J., J. D. Farmer, and G. Mayer-Kress. "Mode Locking, the Belousov-Zhabotinsky Reaction, and One-Dimensional Mappings." *Phys. Lett.* 114A(8) (1986): 419-423.
- Farmer, J. D., S. Kauffman, and N. H. Packard. "Autocatalytic Replication of Polymers." *Physica D* 22(1-3) (1986): 50-67.
- Farmer, J. D., N. H. Packard, and A. Perelson. "The Immune System, Adaptation, and Machine Learning." *Physica D* 22(1-3) (1986): 187-204.
- Farmer, J. D., I. I. Satija, and D. K. Umberger. "A Universal Strange Attractor Underlying the Quasiperiodic Transition to Chaos." *Phys. Lett. A* 114(7) (1986): 341-345.
- Umberger, D. K., and J. D. Farmer. "Fat Fractals on the Energy Surface." *Phys. Rev. Lett.* 55(7) (1985): 661-664.
- Farmer, J. D. "Sensitive Dependence on Parameters in Nonlinear Dynamics." *Phys. Rev. Lett.* 55(4) (1985): 351-355.
- Farmer, J. D., and I. I. Satija. "Renormalization of the Quasiperiodic Transition to Chaos for Arbitrary Winding Numbers." *Phys. Rev. A* 31(5) (1985): 3520-3522.
- Campbell, D., J. Crutchfield, J. D. Farmer, and E. Jen. "Experimental Mathematics: The Role of Computation in Nonlinear Studies." *Comm. ACM* 28(4) (1985): 374-384.
- Burks, C., and J. D. Farmer. "Towards Modeling DNA Sequences as Automata." *Physica D* 10(1-2) (1984): 157-167.
- Brandstater, A., J. Swift, H. L. Swinney, A. Wolf, J. D. Farmer, E. Jen, and J. P. Crutchfield. "Low-Dimensional Chaos in a Hydrodynamic System." *Phys. Rev. Lett.* 51(16) (1983): 1442-1445.
- Farmer, J. D., E. Ott, and J. A. Yorke. "The Dimension of Chaotic Attractors." *Physica D* 7(1-3) (1983): 153-180.
- Crutchfield, J., J. D. Farmer, and B. Huberman. "Fluctuations and Chaotic Dynamics." *Phys. Reports* 92(2) (1982): 47-82.
- Farmer, J. D. "Information Dimension and the Probabilistic Structure of Chaos." *Z. Naturforsch* 37A (1982): 1304-1325.

- Farmer, J. D., J. Hart, and P. Weidman. "A Phase Space Analysis of Baroclinic Flow." *Phys. Lett. A* 91(1) (1982): 22-24.
- Farmer, J. D. "Chaotic Attractors of an Infinite-Dimensional Dynamical System." *Physica D* 4(3) (1982): 366-393.
- Froehling, H., J. P. Crutchfield, J. D. Farmer, N. H. Packard, and R. Shaw. "On Determining the Dimension of Chaotic Flows." *Physica D* 3(3) (1981): 605-617.
- Farmer, J. D. "Spectral Broadening of Period-Doubling Bifurcation Sequences." *Phys. Rev. Lett.* 47(3) (1980): 179-182.
- Farmer, J. D., J. Crutchfield, H. Froehling, N. Packard, and R. Shaw. "Power Spectra and Mixing Properties of Strange Attractors." *Ann NY Acad. Sci.* 375 (1980): 453-472.
- Packard, N. H., J. P. Crutchfield, J. D. Farmer, and R. S. Shaw. "Geometry from a Time Series." *Phys. Rev. Lett.* 45(9) (1980): 712-716.
- Crutchfield, J., J. D. Farmer, N. Packard, R. Shaw, G. Jones, and R. Donnelly. "Power Spectral Analysis of a Dynamical System." *Phys. Lett. A* 76(1) (1980): 1-4.

BOOK CHAPTERS

- Bais, F. Alexander, and J. Dooyne Farmer. "The Physics of Information." In *Philosophy of Information*, 609-684. Eds. Pieter Adriaans, Johan Van Benthem. Elsevier, 2008.
- Bouchaud, Jean-Philippe, J. Dooyne Farmer, and Fabrizio Lillo. "How Markets Slowly Digest Changes in Supply and Demand." In *Handbook of Financial Markets: Dynamics and Evolution*, 57-156. Eds. Thorsten Hens and Klaus Schenk-Hoppe. Elsevier: Academic Press, 2008.
- Farmer, J. Dooyne and Jessika Trancik. "Dynamics of Technological Development in the Energy Sector. In *London Accord Final Publication*. Eds. J-P Onstwedder and M Mainelli. (2007).
- Zovko, Ilija I., and J. Dooyne Farmer. "Correlations and Clustering in the Trading of Members of the London Stock Exchange." In *Complexity, Metastability and Nonextensivity: An International Conference*. Eds. S. Abe, T. Mie, H. Herrmann, P. Quarati, A. Rapissarda, and C. Tsallis. AIP Conference Proceedings. Springer, 2007.
- Farmer, J. D., L. Gillemot, G. Iori, S. Krishnamurthy, D. E. Smith, and M. G. Daniels. "A Random Order Placement Model of Price Formation in the Continuous Double Auction." In *The Economy as an Evolving Complex System, III*, eds. L. Blume and S. Durlauf, 133-173. New York: Oxford University Press, 2005.
- Farmer, J. D. "Toward Agent-Based Models for Investment." In *Developments in Quantitative Investment Models*. AIMR Conference Proceedings, ed. R. Max Darnell. Boston, MA: AIMR, 2001.

- Bagley, R. J., J. D. Farmer, and W. Fontana. "Evolution of a Metabolism." In *Artificial Life II*, eds. C. Langton, C. Taylor, J. D. Farmer, and S. Rasmussen, 141-158. Santa Fe Institute Studies in the Sciences of Complexity. Redwood City, CA: Addison Wesley, 1991.
- Bagley, R. J., and J. D. Farmer. "Spontaneous Emergence of a Metabolism." In *Artificial Life II*, eds. C. Langton, C. Taylor, J. D. Farmer, and S. Rasmussen, proc. 93-140. Santa Fe Institute Studies in the Sciences of Complexity. Redwood City, CA: Addison Wesley, 1991.
- Casdagli, M., D. DesJardins, S. Eubank, J. D. Farmer, J. Gibson, N. Hunter, and J. Theiler. "Nonlinear Modeling of Chaotic Time Series: Theory and Applications." In *Applied Chaos*, ed. J. H. Kim and J. Stringer, 335-359. Proceedings from the International Workshop on Applications of Chaos, December 4-7, 1990, San Francisco, CA. Wiley & Sons, 1991.
- Casdagli, M., S. Eubank, J. D. Farmer, and J. Gibson. "State Space Reconstruction in the Presence of Noise." In *Information Dynamics*, eds. H. Atmanspacher and H. Scheingraber, NATO ASI Series B 256 (1991): 61-96.
- Farmer, J. D., and A. d'A. Belin. "Artificial Life: The Coming Evolution." In *Artificial Life II*, eds. C. Langton, C. Taylor, J. D. Farmer, and S. Rasmussen, 815-840. Santa Fe Institute Studies in the Sciences of Complexity. Redwood City, CA: Addison-Wesley, 1991.
- Eubank, S., M. Casdagli, J. D. Farmer, and J. Gibson. "State Space Forecasting and Noise Reduction." In *Proceedings of the 29th IEEE Conference on Decision and Control*, 641. 1990.
- Eubank, S., and J. D. Farmer. "An Introduction to Chaos and Prediction." In *1989 Lectures in the Sciences of Complexity*, ed. E. Jen. Santa Fe Institute Studies in the Sciences of Complexity, Lect. Vol. II. Redwood City, CA: Addison-Wesley, 1990.
- Farmer, J. D., and J. J. Sidorowich. "Exploiting Chaos to Predict the Future and Reduce Noise." In *Evolution, Learning and Cognition*, ed. Y. C. Lee, 277-330. Singapore: World Scientific, 1988.
- Farmer, J. D., and J. J. Sidorowich. "Predicting Chaotic Dynamics." In *Dynamic Patterns in Complex Systems*, eds. J. A. S. Kelso, A. J. Mandrell, and M. F. Shlesinger. Singapore: World Scientific, 1988.

- Farmer, J. D. “Scaling Fat Fractals.” In *Dimensions and Entropies in Chaotic Systems*, ed. G. Mayer-Kress. Berlin: Springer-Verlag, 1986.
- Farmer, J. D., and N. Packard. “Evolution, Games and Learning: Models for Adaptation in Machines and Nature—Proceedings of the 5th Annual International Conference.” *Physica D* 22(1-3) (1986): R7-R12.
- Farmer, J. D., A. S. Lapedes, N. Packard, and B. Wendroff, eds. *Evolution, Games, and Learning: Models for Adaption in Machines and Nature*. Amsterdam: North Holland Physics Publishing, 1986.
- Farmer, J. D. “Sensitive Dependence on Parameters, Fat Fractals, and Universal Strange Attractors.” In *Fluctuations and Sensitivity in Non-Equilibrium Systems*, eds. W. Hostemke and D. Kondipudi, 172-180. New York: Springer-Verlag, 1984.
- Farmer, J. D., T. Toffoli, and S. Wolfram, eds. *Cellular Automata, Proceedings of an Interdisciplinary Workshop, Los Alamos, New Mexico 87545, USA, March 7-11, 1983*. Amsterdam: North Holland Physics Publishing, 1984.
- Farmer, J. D., J. L. Hudson, and O. E. Rossler. “Noodle-Map Chaos: A Simple Example.” In *Stochastic Phenomena and Chaotic Behavior in Complex Systems*, 30-37. New York: Springer-Verlag, 1983.
- Campbell, D., J. D. Farmer, and H. Rose. “Order in Chaos: Review of the CNLS Conference on Chaos in Deterministic Systems.” *Los Alamos Science* 3 (1982): 66.
- Farmer, J. D. “Dimension, Fractal Measures, and Chaotic Dynamics.” In *Evolution of Order and Chaos in Physics, Chemistry and Biology*, ed. H. Haken, 228-249. Berlin: Springer-Verlag, 1982.

COMMENTARY AND REVIEWS

- Farmer, J.D., and A. Makhijani. Counterpoint to: “A US Nuclear Future.” “Not Wanted, Not Needed.” *Nature* 467 (2010): 391-393.
- Farmer, J.D. Opinion: Obama Focusing on Wrong Energy .
Albuquerque Journal February 21, 2010.
- Farmer, J.D. and D. Foley, The Economy Needs Agent-based Modeling,
Nature 460 (2009): 685-686.
- Farmer, J. D. Review of *Physicists on Wall Street and Other Essays on Science and Society*. Jeremy Bernstein. Springer, 2008. The Two Cultures of Wall Street. *Nature* 456 (2008): 173-174.
- Farmer, J. D. Comment on “Large Stock Price Changes: Volume or Liquidity?” by P. Weber and B. Rosenow.
<http://arxiv.org/abs/cond-mat/0401132>.
- Farmer, J. D., M. Shubik, and E. Smith. “On the Merits of Mathematical Models” – Farmer, Shubik, and Smith reply. *Physics Today* 59(6) (2006): 11-11.
- Farmer, J. D. “Cool is Not Enough: There’s More to Life than the Second Law of Thermodynamics.” Review of *Into the Cool*:

Energy Flow, Thermodynamics, and Life, by Eric D. Schneider and Dorion Sagan. *Nature* 436 (2005): 627-628.

Farmer, J. D. "Avoiding Getting Lost in the Wilderness of Bounded Rationality: The Path from Zero Intelligence to No Arbitrage." *Quant. Fin.* 3(4) (2003): C64-C65.

Farmer, J. D. "Looking Forward to the Future." *Quant. Fin.* 3(3) (2003): C30-C30.

Farmer, J. D., and S. Kauffman. "Biological Modeling – Whats Evolving in Artificial Life." *Nature* 331(6155) (1988): 390-391.

Kauffman, S. A., J. D. Farmer, and N. H. Packard. "Autocatalytic Sets of Proteins." *Origins of Life and Evolution of the Biosphere* 16(3-4) (1986): 446-447.

Farmer, J. D. "The Deterministic Random-Walk." *Bull. Amer. Phys. Soc.* 26(3) (1981): 242-242.

**LITERATURE
CRITICISM**

Farmer, J. D. "The Evolution of Adventure in Literature and Life." Presented on November 11, 2005, at a conference organized by Margaret Cohen titled "Adventure," at Stanford's Center for the Study of the Novel.

CONSULTANT

UK Treasury Study "Future of Computer Trading," led by Sir John Beddington

**CURRENT Ph.D.
STUDENTS**

Yonathan Schwarzkopf, Physics, California Institute of Technology, expected 2010

James McNerney, Physics, Boston University, expected 2010

**COMPLETED Ph.D.
STUDENTS**

Todd Kaplan, Computer Science, University of New Mexico (2008)

Neda Zamani, Computer Science, University of Sydney (2008)

Adlar Kim, Computer Science, MIT (2008)

Ilya Zovko, Economics, University of Amsterdam (2008)

Austin Gerig, Physics, University of Illinois (2007)

Laszlo Gillemot, Physics, Budapest University of Technology and Economics (2007)

Dmitri Cherkashin, Mathematics, University of Chicago (2007)

Szabolcs Mike, Budapest University of Technology and Economics (2007)

Paolo Patelli, Economics, Sant'Anna School of Advanced Studies, Pisa (2005; one of three advisors)

Richard Bagley, Chemistry, U. C. San Diego (1992)

John Sidorowich, Physics, U. C. Santa Cruz (1991)

David Umberger, Physics, University of Arkansas (1989)

FILMS (16mm)

Crutchfield, J., J. D. Farmer, H. Froehling, N. Packard, and R. Shaw. "A Friendly Introduction to Strange Attractors." 10min.

Farmer, J. D., J. Crutchfield, N. Packard, and R. Shaw. "Mixing Properties of Chaotic Attractors." 10min.

VIDEO

"The Sounds of Chaos." Color, 30-min.

SCREENPLAY

"The Eudaemonic Pie." With P. Golding (Warner Bros.).

**COMMUNITY
SERVICE**

Forest Guardians, Board of Directors, 1998–2007.

Board President, 2003–2007.

Monte del Sol High School, Mentor on Global Sustainability, 2004–2005.

Eli Farmer Fund, New Mexico Community Foundation.

**SELECTED
POPULAR PRESS**

Bass, Thomas A. *The Eudaemonic Pie*. Boston, Houghton Mifflin, 1985

Gleick, James. *Chaos: Making a New Science*. Toronto: Penguin, 1987.

Waldrup, Mitchell. *Complexity: The Emerging Science at the Edge of Order and Chaos*. New York: Simon & Schuster, 1992.

Bass, Thomas. *The Predictors: How a Band of Maverick Physicists Used Chaos Theory to Trade Their Way to a Fortune on Wall Street*. London: Penguin, 2001.