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Institute of New Political Economics
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Ilya Prigogine Center for Studies in Statistical Mechanics and Complex Systems
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Education :

Ph.D. in Physics , 1987, University of Texas at Austin.
Doctoral Dissertation : *Nonlinear Dynamics and Business Cycles*.
Dissertation Supervisor : Prof. Ilya Prigogine, Nobel Laureate in 1987.
B.S. in Physics, 1968. University of Science & Technology of China, Chinese Academy of
Sciences, Beijing, China.

Professional Experiences:

2004 (starting in Fall) –
Professor of Economics and Director
Institute of New Political Economics
Fudan University, Shanghai, China
2001 – present
Co-Director, Virtual Center for Complexity Science
(under National Science Foundation of China)
Peking University, Beijing, China
1999 - 2003
Professor in Economics, Deputy Director (in charge of research)
China Center for Economic Research, Peking University
1999 – present
Professor of Economics
China Center for Economic Research, Peking University
1997-1998
Associated Professor

China Center for Economic Research, Peking University
1995 – present
Research Scientist
Ilya Prigogine Center for Studies in Statistical Mechanics and Complex Systems
University of Texas at Austin
1989 - 1995
Research Associate, I. Prigogine Center for Studies in Statistical Mechanics and Complex Systems, University of Texas at Austin (The Center changed its name in 1989 for accommodating the new fields of complex systems, especially economic systems).
1988 - 1996.
Adjunct Associate Professor, Research Institute of Management Science, Peking University, Beijing, China.
1987-1989. Postdoctoral Fellow, 1983-87. Research Assistant. Ilya Prigogine Center for Studies in Thermodynamics and Statistical Mechanics, University of Texas at Austin.
1974-1980. Research Assistant, Institute of Plasma Physics, Chinese Academy of Science, Hefei, China.
1969- 1973. Electrical Technician, Chengdu Railway Co., Sichuan China.

Research Interests and Main Contributions:

Nonlinear economic dynamics, business cycle theory, and science of complexity:
First empirical and theoretical evidence of monetary chaos from monetary indexes, which supports the Austrian school of endogenous money and challenge the orthodox view of monetarist and new classical school, which assert monetary shocks are the main source of random walks in business cycles (1987);
First report of time-frequency analysis in non-stationary time series analysis of business cycles and developing computational tool in economic diagnosis (1994);
First empirical evidence of color chaos (persistent cycles with narrow frequency band and irregular amplitude) from S&P 500 index and other macro indexes, which supports the Schumpeter's view of business cycles as biological clock, but challenges the main-stream theory of efficient market and random walk model in stock markets (1996);
Found fundamental flaws in the Frisch model of noise-driven harmonic cycles (a winner of the first Nobel prize in economics in 1969) which is against the second law in thermodynamics (1999), and the Lucas model of microfoundations and rational expectations (Nobel economist in 1995) which violates the law of large numbers (1999-2002);
Solve the Adam Smith dilemma discovered by George Stigler in 1951, i.e., the Smith theory of invisible hand and perfect competition is incompatible with the Smith theorem on the division of labor limited by the market extent which implies market monopoly. Proposed a trade-off between stability and complexity based on the new science of complexity. Proposed a generalized Smith theorem that the division of labor is limited by the market extend, resource diversity, and environment fluctuations (1999-2002);
Developing behavioral model of corporate strategy in market-share competition; Evolutionary economics, including two-way evolution of division of labor and economic complexity (1987, 2002).
Found birth-death process is a better alternative model of Brownian motion and random walk in understanding persistent economic fluctuation and economic metabolism (2003).
Developed a new theory of utility and production function, which could produce nonlinear demand and supply curves for understanding economic complexity (2004)
Developing a unified framework based on evolutionary perspective of economic dynamics of

micro, meso, and macro economies.

Economic Policies:

As a young figure among Chinese reformers since 1978. He was one of the reform scientists who systematically criticized Mao's economic policy and global strategy. The major policy proposals in the early stages of China's reform are: promoting Prigogine's concept of "self-organization in open systems" as a scientific philosophy for Deng Xiao-ping's open-door policy and market-oriented reform in the post-Mao era (1979), abolishing compulsive quota system in grain production which paved the way for dissolving the commune system (1979), dismantling the state monopoly system in agriculture for purchasing and marketing (1979), introducing patent system (1980), breaking state monopoly in banking (1996), developing education and research on financial engineering for preparing future liberalization of financial market (1997), trading U.S. government bond as a defense tool during Hong Kong currency crises (1998), increasing the floating range of exchange rate after Asian financial crises (1999). He served as an outside consultant to Shanghai City government on financial policies in 1997, with a proposed project of developing consumer credit system in Shanghai (1997-2001), which was soon adopted nationwide (2001). His critique of the attempt of state-run welfare system and social security in China induced intensive debate in public policy (2002).

His policy analysis and commentary articles widely appeared in leading Chinese media, including *People's Daily*, (Beijing), *Guang Ming Daily* (Beijing), *World Economic Herald* (Shanghai), *United Daily News* (Taipei), *Common Wealth* (Taipei), *Global Views Monthly* (Taipei), *The World Journal Daily News* (New York), *China Times Business Weekly* (Taipei, Hong Kong & New York), *Shanghai Security News* (Shanghai), *Ming Pao Daily News* (Hong Kong & New York). He also appeared in TV interviews and TV lectures by Central TV in China, Phoenix TV in Hong Kong, Voice of America and NBC in U.S. on contemporary issues in China's reform.

Ping' story as a reform-minded scientist was reported by Fox Butterfield, the New York Time reporter in China, in his best seller book "*China: Alive in a Bitter Sea*," *Sekai* (The World) in Japan, and *The New Republic* in USA. His discovery of empirical economic chaos was reported by the *Associated Press* and *The Atlanta Journal and Constitution*.

Professional Activities :

Reviewer for professional journals and publishers, including *Journal of Economic Behavior & Organization*,, *Journal of Economic Dynamics & Control*, *Journal of Evolutionary Economics*, *Chinese Economic Review*, Cambridge University Press.

Member of the Editorial Board (1989-present), *China Economic Review*, *An International Journal*, published by JAI Press.

Co-Editor, *Nonlinear Dynamics and Evolutionary Economics*, Oxford University Press (1993).

Chair of CCER-NBER (National Bureau of Economic Research) Annual Meeting in China, 1999 – present;

Member of Finance Committee of CES, 1997-present;

Chairman, Finance Committee of CES (Chinese Economists Society in North America), a member organization of AEA, 1994-1997;

Founding Senior Fellow of *the Chinese Economist Society (CES)*, a member organization of AEA (American Economic Association), 1992-present;
Member of The Organizing Committee, *The NATO Advanced Workshop on Self-Organization, Emerging Properties and Learning*, Austin, March 1990;
Chair of the Organizing Committee, *International Symposium on Evolutionary Dynamics and Nonlinear Economics*, Austin, April 1989;
President of *the Chinese Young Economist Society (USA)*, 1987 – 88;
Member of the Board of Directors of *the Chinese Young Economist Society (USA)*, May 1986 - May 1987.
Member of *American Economic Association (AEA)*
Member of *American Physical Society (APS)*.

Area of Interests:

Nonlinear dynamics and non-equilibrium statistical mechanics, and their applications in economic-behavioral systems;
Business cycle theory and monetary theory;
Nonlinear and nonstationary time series analysis, and their applications in economic analysis and forecasting;
Evolutionary dynamics of complex systems: the origin of division of labor, the origin of science and capitalism;
Financial economics and option pricing; theory of financial crises;
Comparative studies of economic transition and institutional reform. China's reform policy and strategy;
History of science, economic history of China and the West, philosophy of science;
Art history, cultural anthropology, reading, travel, music, folk dance.

Invited Seminars:

International Symposium on Complexity Science in Shanghai (2002), Workshop on Complexity and Cognitive Science at CNRS in Paris (2001), Annual Meeting of American Economic Association (AEA) in New Orleans (2001), Workshop at European Union (2000), International Conference on Complexity Science in Moscow (1999), Annual Conference of the Western Economic Association (WEA) in San Diego (1995), Annual Conference on Nonlinear Dynamics and Econometrics at the Eastern Economic Association (EEA) in New York (1995), International Conference of IEEE on Time-Frequency and Time-Scale analysis in (1994), International Conference on Dynamical Systems and Chaos in Tokyo (1994), Gordon Conference on Communication & Control in Complex Systems in New England (1990), Annual Conference on Economic Dynamics and Control in Arizona (1990), Workshop on Nonlinear Econometrics (1990), International Symposium on Complex Systems in Austin (1989), International Symposium on Self-Organization in Brussels (1985).
University of Kansas, Central Europe University in Budapest, Moscow University, International Solvay Institute in Physics and Chemistry in Brussels, University of Rome, LBJ School in University of Texas at Austin, Federal Reserve Bank at St. Louis, Santa Fe Institute, University of Chicago, University of Southern California, Texas A&M University, Free University of Brussels, UCLA, Stanford University.
Fudan University in Shanghai, Shanghai Jiao-tong University, Chinese Economic Research Institute in Taipei, Hong Kong University of Science & Technology, University of Hong

Kong, Chinese University in Hong Kong, Shanghai Academy of Social Sciences, University of Science & Technology of China in Hefei, Fuzhou University, the Institute of System Science under Chinese Academy of Sciences, Peking University, Qinghua University, Beijing Normal University, Zhejiang University, Sichuan University, Peking Institute of Control Theory, China Institute of Institutional Reform, Shanghai Academy of Social Sciences, Chinese Academy of Social Sciences.

Other Interests:

Traveling, mountain climbing, swimming, classic and folk music, history of civilization and sciences, ballroom dancing, reading, painting, and literary critics.

Main Publications:

- "A Biological Perspective of Macro Dynamics and Division of Labor: Persistent Cycles, Disruptive Technology, and the Trade-off between Stability and Complexity," in Kurt Dopfer ed., *The Evolutionary Foundations of Economics*, Cambridge University Press, Cambridge (forthcoming).
- "Microfoundations of Macroeconomic Fluctuations and the Laws of Probability Theory: the Principle of Large Numbers vs. Rational Expectations Arbitrage," *Journal of Economic Behavior & Organization*, **49**, 327-344 (2002).
- "A Random Walk or Color Chaos on the Stock Market? - Time-Frequency Analysis of S&P Indexes," *Studies in Nonlinear Dynamics & Econometrics*, **1**(2), 87-103 (1996).
- "Trends, Shocks, Persistent Cycles in Evolving Economy: Business Cycle Measurement in Time-Frequency Representation," in W. A. Barnett, A. P. Kirman, and M. Salmon eds., *Nonlinear Dynamics and Economics*, Chapter 13, pp. 307-331, Cambridge University Press (1996).
- "China's Challenge to Economic Orthodoxy: Asian Reform as an Evolutionary, Self-Organizing Process," *China Economic Review*, **4**, 137-142 (1993).
- "Empirical and Theoretical Evidence of Economic Chaos", *System Dynamics Review*, **4**(1-2), 81-108 (1988).
Also in B. L. Hao ed., *Chaos II*, World Scientific, Singapore (1990).
- "Origin of Division of Labor and Stochastic Mechanism of Differentiation", *European Journal of Operational Research*, **30**(3), 246-250 (1987).

Books:

- Civilization Bifurcation, Economic Chaos, and Evolutionary Economics - Collected Papers by Ping Chen* (in Chinese), Economic Science Publisher, Beijing (2000).
- Nonlinear Dynamics and Evolutionary Economics*, (co-edited with Richard Day), Oxford University Press (1993).
- Close, Shock, and Evolution - Collected Papers by Ping Chen* (in Chinese), Helongjiang Education Press, Harbin, China (1988).

Major Policy Papers on China's Reform (in Chinese):

- "The Debt Chain Problem and the Financial Reform in China," China Center for Economic Research, Peking University, internal mimeo. Prepared for Shanghai City Government, Feb. 1998.
- "Financial Engineering: A New Battle Field of Global Competition in the Post-Cold-War Era," Brief Report No.1, China Center for Economic Research, Peking University, 1998.
- "Development Strategy, Geopolitics and Economic Diplomacy: An Analysis of Sino-America Competition in East Asia, A Economic Perspective of Global Competition," Financial Economic Series, No. 2, Shanghai, China, December 1996.
- "Strategic Choices in China's Financial Reform and Constructive Interactions in Changing Economic Order," Economic Highlights, Chengdu, Oct. 11, 18, and Nov. 1, 1996; Financial Economics, Shanghai, China August 1996.
- "Political Economics of Regional Disequilibrium - A perspective of Mainland and Taiwan Relation," in D. Q. Xu ed., Taiwan Experience and Development Strategy of Both Sides of the Taiwan Strait, China Economic Publisher, Beijing (1996).
- "Political Economics of Chinese Land System and Beyond - an Evolutionary Dynamics under Ecological, Demographic, Technological and Cultural Constraints," in G. J. Wen ed., Mainland China's Contemporary Land System, Science and Technology Publisher of Hunan, China (1994).
- "Development Potential in Pacific Region and China's Global Role in Economic Integration," Economic Forum, Chinese Young Economists Society, May 1988.
- "Stages of Technological Revolutions and Lessons in Economic Development" (in Chinese), Scienology & Management of Science and Technology, No. 1 & No. 2, 1981, Tianjin, China.
- "Historical Sources of the Underdevelopment of Chinese Sciences" (in Chinese), Scienology and Management of Science & Technology, No. 3, 1980, pp. 22-32, Tianjin, China.
- "Historic Lessons and Education Reform, An Investigation of 1500 Scientists and Inventors in History" (co-authored with Wen Yuan-kai), People's Education, No. 1, 1979, Beijing, China.
- "Turbulence, Poverty and Closed-Door Policy Spanning 2000 years in Chinese History Stemming from the Structure of Grain Oriented Small-Scale Peasant Economy" (in Chinese), People's Daily, Nov. 16, 1979, Beijing; Brightness Daily (Guang Min Daily), Nov. 16, 1979; Study and Explore, No. 4, 1979, Helongjiang Academy of Social Sciences, Harbin, China.

References:

Prof. Ziyuan Cui
 Currently visiting at Wissenschaftskolleg
 Institute of Advanced Studies, Berlin, Germany

Prof. Dingding Wang
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 Peking University,
 Beijing 100871, China

Prof. Richard H. Day,
 Dept. of Economics, University of Southern California, University Park,
 Los Angeles, CA 90089-0253
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James K. Galbraith
 Professor of Public Affairs and Government

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