

Academic c.v. (Short Version)

Professor Scott Archer Boorman

Born: February 1, 1949
Peking, China (of U.S. parents; father was U.S. Foreign Service officer)

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Education:

Doctoral: Ph.D., Department of Sociology, Harvard University, 1973.

(Summary of dissertation analysis of cascade effect in coupled nonlinear dynamic systems: communicated by Professor Kenneth J. Arrow to *Proceedings of the National Academy of Sciences, USA*, 1974, 71, 2103-2107.)

Legal: J.D., Yale Law School, 1978.

College: B.A. *summa cum laude* in Applied Mathematics, Harvard College, 1970.

Academic Positions:

1976- Professor of Sociology, Department of Sociology and Cowles Foundation for Research in Economics, Yale University.

1974-1976 Professor of Public Policy and Economics, Wharton School of Public and Urban Policy, University of Pennsylvania.

1973-1974 Assistant Professor of Sociology, Department of Sociology, Harvard University.

1970-1973 Junior Fellow, Society of Fellows, Harvard University.

Academic Honors:

2008 Recipient, the James S. Coleman Award Distinguished Career Award in Mathematical Sociology, Mathematical Sociology Section, American Sociological Association.

Peres Prize, Yale Law School (1978) for best student contribution to *The Yale Law Journal*: Note, “A Spreading of Receipts Formula for Creating a Capital Gains/ Ordinary Income Brightline: Contract Termination Payments and Business-Versus-Investment Assets,” 87 YALE L.J. 729 (1978).

Editor, *The Yale Law Journal* (1977-1978).

Graduate Research Associate, Center for International Affairs, Harvard University (1970-1973).

Sophia Freund Prize (Valedictorian), Harvard College Class of 1970.

Phi Beta Kappa, Junior Year at Harvard College (1969).

Selected Research Interests:

1. Research areas as summarized in “Four Fundamental Structures: Selected Research Foci” (March 28, 2003), a one-page analytical diagram.

In clockwise order in this diagram – which emphasizes interrelationships among the four research areas – these areas are:

- bureaucracy & complex organizations;
- social networks;
- information technology applications (& their effects);
- complex statutes.

For further details, reference is made to substance of this March 28, 2003 diagram.

2. “Alternatives to rational choice” as area of analysis.

For further details, reference is made to the following two papers:

Scott A. Boorman, “Alternatives to Rational Choice: Analytical Outline of Substantive Area. Part I,” Cowles Foundation for Research in Economics, Yale University, Cowles Foundation Preliminary Paper No. 001013 (October 13, 2000).

Scott A. Boorman, “Alternatives to Rational Choice: Analytical Outline of Sub-

stantive Area. Parts II & III,” Cowles Foundation for Research in Economics, Yale University, Cowles Foundation Preliminary Paper No. 030116 (January 16, 2003).

Selected Publications:

Accepted for publication: “Fundamentals of Strategy: The Legacy of Henry Eccles,” Naval War College Review, forthcoming. (This article includes a simplified version of the March 28, 2003 analytical diagram.)

Publications below are grouped according to the four areas identified in that diagram:

I. Bureaucracy & Complex Organizations

Scott A. Boorman, *The Protracted Game: A Wei-ch'i Interpretation of Maoist Revolutionary Strategy*. New York&London: Oxford University Press, 1969. 242 pp.

Paperback edition, 1971. Authorized translations include: French (Paris, Éditions du Seuil, 1972); Italian (Florence: Guaraldi Editore, 1973).

“Deception in Chinese Strategy,” in William W. Whitson (ed.), *The Military and Political Power in China in the 1970s* (New York: Praeger, 1972), pp. 313-37.

II. Social Networks (all book and journal article publications listed in this section represent research supported by the U.S. National Science Foundation [NSF])

Note: Because the contemporary social network analysis field contains a number of interlocking but distinct lines of mathematical model-building and/or computer simulation, the research work below is further categorized as follows (if work could be assigned to more than one category, one main category is designated):

II.A = Mathematical models for comparative research on social behavior cases across the animal kingdom (both invertebrate and vertebrate);

II.B = Blockmodels (for pertinent technical concepts&definitions see “Appendix of Definitions,” pp. 55-57 of Arabia, Boorman, and Levitt, 1978 paper)

II.C = Algebraic models for comparative research on social networks;

II.D = Weak ties and search models;

II.E = Network matching;

II.F = Structural measures and cognitive aspects.

Book:

(with Paul R. Levitt) *The Genetics of Altruism*. New York and London: Academic Press, 1980. 459 pp. (II.A)

Reviewed in mathematical literature: *SIAM Review* (publication of the Society for Industrial and Applied Mathematics [SIAM]), 1982, 24, 366-68.

Articles:

(with Phipps Arabie) “Structural Measures and the Method of Sorting,” in R.N. Shepard, A.K. Romney, and S.B. Nerlove (eds.), *Multidimensional Scaling: Theory and Applications in the Behavioral Sciences*, Vol. 1: *Theory* (New York: Seminar Press, 1972), pp. 225-49. (II.F)

Japanese translation: Tokyo, 1976.

“Mathematical Ecology and Its Place among the Sciences. II. Analogues in the Social Sciences,” *Science*, 1972, 172, 391-394 (review essay building on Robert H. MacArthur, *Geographical Ecology: Patterns in the Distribution of Species*, New York, Harper and Row, 1972).

(with Donald C. Olivier) “Metrics on Spaces of Finite Trees,” *Journal of Mathematical Psychology*, 1973, 10, 26-59. (II.F)

(with Phipps Arabie) “Multidimensional Scaling of Measures of Distance Between Partitions,” *Journal of Mathematical Psychology*, 1973, 10, 148-203. (II.F)

(with Paul R. Levitt) “Group Selection on the Boundary of a Stable Population,” *Proceedings of the National Academy of Sciences, USA*, 1972, 69, 2711-13. (II.A)

(with Paul R. Levitt) “Group Selection on the Boundary of a Stable Population,” *Theoretical Population Biology*, 1973, 4, 85-128. (II.A) (This is an expanded version of the previous paper published in *Proceedings of the National Academy of Sciences, USA*.)

(with Paul R. Levitt) “A Frequency-Dependent Natural Selection Model for the Evolution of Social Cooperation Networks,” *Proceedings of the National Academy of Sciences, USA*, 1973, 70, 187-89. (II.E)

“Island Models for Takeover by a Social Trait Facing a Frequency-Dependent Selection Barrier in a Mendelian Population,” *Proceedings of the National Academy of Sciences, USA*, 1974, 71, 2103-107. (II.A) (See also p. 1 above.)

“A Combinatorial Optimization Model for Transmission of Job Information Through Contact Networks,” *The Bell Journal of Economics* (then published by the American Telephone and Telegraph Co.; 1984- published by The RAND Corporation as *The RAND Journal of Economics*), 1975, 6, 216-49. (II.E)

Reprinted: Gernot Grabher and Walter W. Powell (eds.), *Networks*, Vol. II, lead article, assigned there to Part I.A, “Network Dynamics: Access and Leverage” (Cheltenham, UK/Northampton, MA: Edward Elgar Publishing, Nov. 2004/Jan. 2005).

(with Ronald L. Breiger and Phipps Arabie) “An Algorithm for Clustering Relational Data with Applications to Social Network Analysis and Comparison with Multidimensional Scaling,” *Journal of Mathematical Psychology*, 1975, 12, 328-83. (II.B)

Reprinted: John Scott (ed.), *Social Networks* (London: Routledge, 2002), Vol. 1, pp. 333-390.

(with Harrison C. White and Ronald L. Breiger) “Social Structure from Multiple Networks. I. Blockmodels of Roles and Positions,” *American Journal of Sociology*, 1976, 81, 730-80. (II.B)

Reprinted: John Scott (ed.), *Social Networks* (London: Routledge, 2002), Vol. 2, pp. 3-53.

(with Harrison C. White) “Social Structure from Multiple Networks. II. Role Structures,” *American Journal of Sociology*, 1976, 81, 1384-1446. (II.C)

Reprinted: John Scott (ed.), *Social Networks* (London: Routledge, 2002), Vol. 2, pp. 54-118.

“Informational Optima in a Formal Hierarchy: Calculations Using the Semigroup,” *Journal of Mathematical Sociology*, 1977, 5, 129-147. (II.C)

(with Phipps Arabie and Paul R. Levitt) “Constructing Blockmodels: How and Why,” *Journal of Mathematical Psychology*, 1978, 17, 21-63. (II.B)

“Mathematical Theory of Group Selection: Structure of Group Selection in Founder Populations Determined from Convexity of the Extinction Operator,” *Proceedings of the National Academy of Sciences, USA*, 1978, 75, 1909-13. (II.A)

(with Paul R. Levitt) “The Comparative Evolutionary Biology of Social Behavior,” *Annual Review of Sociology*, 1980, 6, 213-34. (II.A)

(with Phipps Arabie) “Future Prospects of Blockmodels,” in H.C. Hudson (ed.), *Classifying Social Data* (San Francisco: Jossey-Bass, 1982), pp. 177-98. (II.B)

(with Phipps Arabie) “Algebraic Approaches to the Comparison of Concrete Social Structures Represented as Networks,” *American Journal of Sociology*, 1980, 86, 166-74. (II.C)

(with Paul R. Levitt) “The Network Matching Principle: A Model of Efficient Resource Allocation by Informal Social Networks in Non-profit and Other Non-market Social Structures,” *Economics Letters*, 1982, 10, 1-7. (II.E)

(with Paul R. Levitt) “Blockmodeling Complex Statutes: Mapping Techniques Based on Combinatorial Optimization for Analyzing Economic Legislation and Its Stress Points Over Time,” *Economics Letters*, 1983, 13, 1-9. (II.B)

III. Information Technology Applications (& their effects)

(with Paul R. Levitt) “Deadly Bugs,” *Chicago Tribune* magazine *Sunday*, May 3, 1987, text starting on p. 19.

Reprinted by United States Department of Defense for distribution throughout the defense establishment: *Department of Defense Current News – Supplemental (Items of Special Interest)*, May 14, 1987, pp. 34ff.

(with Paul R. Levitt) “Software Warfare and Algorithm Sabotage,” *Signal* (Journal of the Armed Forces Communications and Electronics Association [AFCEA]), May 1988, Vol. 42, No. 9, pp. 75ff.

Reprinted by United States Department of Defense: *Department of Defense Current News – Supplement*, May 19, 1988, pp. B27ff.

IV. Complex Statutes

(work done while on leave from Yale University with United States Department of the Treasury, Internal Revenue Service, following graduation from the Yale Law School)

Co-author: *Estimates of Income Unreported on Individual Income Tax Returns* (Department of the Treasury, Internal Revenue Service, Publication 1104 (9-79)). 166 pp.

Selected Federal Funding History:

1980-1984 Principal Investigator, National Science Foundation Grant SES80-

Selected Federal Funding History (cont.):

04815 to Yale University (“Mathematical Models of Social Networks: Matching, Efficiency, and Structure”).

1975-1980 Principal Investigator, National Science Foundation Grant SOC76-24512 and predecessor grants to Yale University and to the University of Pennsylvania (“Mathematical Models of Social Structure and Process”).
