

## IVAN D. CHASE

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### Education

Postdoctoral Fellow, Mathematics, Dartmouth College, 1971-73

Ph.D., Sociology, Harvard University, 1972

A.M., Sociology, Harvard University, 1970

B.S., Chemistry, University of South Carolina, 1965

### Academic Honors and Awards

Social Science Research Council Postdoctoral Fellowship, Dartmouth College, 1971-73

National Institute of Mental Health Pre-doctoral Fellowship, Harvard University, 1967-69

Woodrow Wilson Fellowship, Harvard University, 1965-66

Second Ranking Graduate in Class, University of South Carolina, 1965

Phi Beta Kappa, University of South Carolina, 1965

Owens-Corning Fiberglas® Scholarship, University of South Carolina, 1963-65

### Professional Experience

1986	Visiting Scholar, Department of Sociology, Harvard University
1985-present	Associate Professor, Dept. of Sociology, State University of NY at Stony Brook
1982-present	Member of the Graduate Program, Dept. of Ecology and Evolution, State University of NY at Stony Brook
1978-85	Assistant Professor, Dept. of Sociology, State University of NY at Stony Brook
1975-78	Honorary Fellow, Departments of Sociology and Zoology, University of Wisconsin
1974-75	Visiting Scholar, Department of Sociology, Dartmouth College
1973-74	Visiting Scholar, Program in Mathematics and Social Science, Dartmouth College
1971-73	Honorary Fellow, Department of Mathematics, Dartmouth College

## Research Interests

Social relationships in small groups: Dominance hierarchies in animals and humans, theoretical approaches to social structure in small groups, models of relationship formation.

Distribution of resources: Vacancy chain processes, the distribution of wealth, theoretical approaches to resource allocation, models of resource distribution.

Coordination of effort in groups: Behavioral processes of cooperation in small groups, selection of food sources in ants, theoretical approaches to collective action, models of collective action in small groups, distributed decision-making processes in humans and animals.

Methods: Recording of behavioral data (video systems, macro photography, real-time methods, microcomputers), analysis of behavioral data, exploratory analysis methods for social interaction data, graphical methods for visualizing social interaction.

## Published Papers

Chase, Ivan D. 1974. Models of Hierarchy Formation in Animal Societies. *Behavioral Science*.19: 374-382.

Chase, Ivan D. 1975. A Comparison of Men's and Women's Intergenerational Mobility in the United States. *American Sociological Review*. 40: 483-505.

Chase, Ivan D. 1980. Cooperative and Non-Cooperative Behavior in Animals. *American Naturalist*. 115: 825-857.

Chase, Ivan D. 1980. Social Process and Hierarchy Formation in Small Groups: A Comparative Perspective. *American Sociological Review*. 45: 905-924.

Chase, Ivan D. 1981. Social Interaction: The Missing Link in Evolutionary Models. (Commentary), *The Behavioral and Brain Sciences*. 4: 237-238.

Chase, Ivan D. 1982. Behavioral Sequences during Dominance Hierarchy Formation in Chickens. *Science*. 216: 439-440.

Chase, Ivan D. 1982. Dynamics of Hierarchy Formation: The Sequential Development of Dominance Relationships, *Behaviour*. 80: 218-240.

Chase, Ivan D. 1984. Reprint of: Chase, Ivan D. 1980. Social Process and Hierarchy Formation in Small Groups: A Comparative Perspective. *American Sociological Review*. 45: 905-924, in *Status Hierarchies: Essays Toward a Socio-physiological Perspective*. P.R. Barchas, ed. Westport, CT: Greenwood Press. pp. 45-80.

Chase, Ivan D. 1985. The Sequential Analysis of Aggressive Acts during Hierarchy Formation: An Application of the 'Jigsaw Puzzle' Approach. *Animal Behaviour*. 33: 86-100.

Chase, Ivan D. 1986. Explanations of Hierarchy Structure. *Animal Behaviour*. 34: 1265-67.

- Chase, Ivan D., and S. Rohwer. 1987. Two Methods for Quantifying the Development of Dominance Hierarchies in Large Groups with Applications to Harris' Sparrows. *Animal Behaviour*. 35: 1113-1128.
- Chase, Ivan D., and T. DeWitt. 1988. Vacancy Chains: A Process of Mobility to New Resources in Humans and Animals. *Social Science Information*. 27: 81-96.
- Chase, Ivan D., M. Weissberg, and T.H. DeWitt. 1988. The Vacancy Chain Process: A New Mechanism of Resource Distribution in Animals with Application to Hermit Crabs. *Animal Behaviour*. 36: 1265-1274.
- Weissberg, M., L. Roseman, and Ivan D. Chase. 1991. Chains of Opportunity: A Markov Model for Acquisition of Reusable Resources. *Evolutionary Ecology*. 5: 105-117.
- Chase, Ivan D. 1991. Vacancy Chains. *Annual Review of Sociology*. 17: 133-154.
- Chase, Ivan D., C. Bartolomeo, and L. Dugatkin. 1994. Aggressive Interactions and Inter-Contest Interval: How Long Do Winners Keep Winning? *Animal Behaviour*. 48: 393-400.
- Chase, Ivan D. 1998. Vacancy Chains. *Encyclopedia of Housing*. W. van Vliet, ed. Thousand Oaks, CA: Sage. pp. 620-622.
- Chase, Ivan D., C. Tovey, D. Spangler-Martin, and M. Manfredonia. 2002. Individual Differences versus Social Dynamics in the Formation of Animal Dominance Hierarchies. *Proceedings of the National Academy of Sciences*. 99: 5744-5749.
- Chase, Ivan D., and C. Tovey. 2002. Is the Battle Really to the Strong in Fish? *Buntbarsche Bulletin*. No 211: 22-27. (General audience)
- Chase, Ivan D., C. Tovey, and P. Murch. 2003. Two's Company, Three's a Crowd: Differences in Dominance Relationships in Isolated versus Socially Embedded Pairs of Fish. *Behaviour*. 140:1193-1217.
- Chase, Ivan D., A. Deshmukh, and N. Krothapalli. 2003. How Do Ants Decide between Food Sources of Different Values? An Evaluation of the Current Explanation and Associated Mathematical Models. *Proceedings of the 2<sup>nd</sup> International Workshop on the Mathematics and Algorithms of Social Insects*, pp. 41-46, Georgia Institute of Technology, Carl Anderson and Tucker Balch, editors, [http://www.insects.gatech.edu/MASI2003\\_published\\_proceedings.pdf](http://www.insects.gatech.edu/MASI2003_published_proceedings.pdf).
- Chase, Ivan D., and J. Beacham. 2004. Development of Dominance Hierarchies. *Encyclopedia of Animal Behavior*. M. Bekoff, ed. Westport, CT: Greenwood Press.
- Chase, Ivan D. 2006. Music notation: a new method for visualizing social interaction in animals and humans. *Frontiers of Zoology*. 3:18, (<http://www.frontiersinzoology.com/content/3/1/18>).
- Chase, Ivan D. Forthcoming (2007 or 2008). Reprint of : 1982. Dynamics of Hierarchy Formation: The Sequential Development of Dominance Relationships, *Behaviour*. 80: 218-240, in *Benchmarks in Social Research Methods* series, *Social Network Analysis*, Linton C. Freeman, ed. Sage Publications, United Kingdom.

**Paper Submitted**

Lindquist W. Brent & Chase, Ivan D. 2007. Data-Based Analysis of Winner-Loser Models of Hierarchy Formation in Animals, submitted *The Quarterly Review of Biology*.

**Papers in Preparation**

Chase, Ivan D. & Lindquist, W. B. Efficiency and robustness in the formation of animal dominance hierarchies.

Chase, Ivan D. & Murphy, K. A comparison of dominance relationship formation in cloned and non-cloned fish.

**Book Review**

Review of Frans de Waal's *Chimpanzee Politics* in *Politics and the Life Sciences*, 1984, 2: 204-206.

**Papers Presented**

The Formation of Hierarchies in Small Groups: A Cross-Species Perspective. Annual meeting of the American Sociological Association. 1978. San Francisco, CA.

Dynamics of Hierarchy Formation: The Sequential Development of Dominance Relationships in Chickens. Annual meeting of the Animal Behavior Society. 1981. Knoxville, TN.

The Vacancy-Chain Model: A New Approach to Resource Distribution in Animals with an Application to the Allocation of Gastropod Shells in Hermit Crabs. 19th International Ethological Conference. 1985. Toulouse, France (co-authored with Theodore DeWitt).

Testing Theories of Dominance: Hierarchy Formation. 23rd International Ethological Conference. 1993. Torremolinas, Spain.

Non-Linear Dynamics in Agent-Based Systems. 5th Annual Chaos in Manufacturing Conference. Sponsored by the Santa Fe Institute, National Science Foundation, and R. Morely, Inc. 1997. Santa Fe, NM (co-presented with Abhi Deshmukh and N. Krothapalli).

Using Simple Societies as Models for the Study of Social Organization. Festschrift in Honor of Harrison White, Sunbelt Network Conference. 1997. San Diego, CA.

An Empirical Test of Self-Organization in Dominance Hierarchies, International Ethology Conference. 2001. Tübingen, Germany.

How Do Ants Decide between Food Sources of Different Values? 2<sup>nd</sup> International Workshop on the Mathematics and Algorithms of Social Insects. 2003. Georgia Institute of Technology, Atlanta, GA.

**Invited Talks**

- 1974 Department of Sociology, Harvard University
- 1976 Ethology Group, University of Toronto
- 1976 Ethology Group, University of Illinois
- 1977 Mathematics and Social Science Program, Dartmouth College
- 1979 Ethology Group, University of Wisconsin
- 1980 Conference on Attention Structure in Primate and Human Social Behavior, Maison des Sciences de l'Homme, Paris
- 1981 Mathematics and Social Science Program, Dartmouth College
- 1981 Panel on Current Research in Biology and Politics, Association for Politics and the Life Sciences, American Political Science Association's Annual Meeting, New York
- 1981 Department of Psychology, University of Quebec-Montreal
- 1981 Department of Ecology and Evolution, SUNY at Stony Brook
- 1982 Department of Mathematics, Dartmouth College
- 1982 Department of Biology, Boston University
- 1982 Mathematics and Social Science Program, Dartmouth College
- 1983 Winter Animal Behavior Conference, Park City, UT
- 1983 Department of Sociology, Cornell University
- 1983 Department of Neurobiology and Behavior, Cornell University
- 1984 Animal Behavior Group, Rockefeller University
- 1984 Economic Research Bureau Workshop Series, Department of Economics, SUNY at Stony Brook
- 1985 Winter Animal Behavior Conference, Park City, UT
- 1985 Structural Seminar, Department of Sociology, Harvard University
- 1985 Department of Biology, SUNY at Albany
- 1987 Plenary Session Speaker, 20th International Ethological Conference, Madison, WI
- 1988 Behavioral Biology Seminar, Department of Anthropology, Harvard University
- 1989 Cambridge Entomology Club, Cambridge, MA
- 1989 Department of Psychology, University of Quebec at Montreal, Canada
- 1990 Harriman School, SUNY at Stony Brook
- 1992 Nags Head Conference on Aggression, Conflict and Coercive Relationships, Florida Atlantic University
- 1993 European Conference on Artificial Life, Free University of Brussels, Belgium
- 1995 Department of Sociology, Columbia University

1996 Department of Sociology, University of North Carolina

### **Invited Talks (continued)**

- 1997 Annual Meeting of the American Political Science Association, San Francisco, CA
- 1998 Sunbelt Network Meetings, San Diego, CA
- 2001 Departments of Computer Science and Zoology, University of Zurich, Switzerland
- 2002 Self-Organization and Evolution of Social Behaviour, a conference organized by the Artificial Intelligence Laboratory at the Swiss Federal Institute of Technology
- 2006 Age of Simulation: Learning and Researching in the 21<sup>st</sup> Century, a conference organized by FAS Research, Linz, Austria
- 2006 XV Congress of the International Union for the Study of Social Insects, Washington, DC

### **Grants**

- 1973 "Preliminary Investigation of Dominance Hierarchies in Chickens," Sigma Xi/RESA.
- 1974 "Dynamics of Hierarchy Formation in Chickens," National Academy of Sciences.
- 1975-76 "Behavioral Mechanisms of Hierarchy Formation," Harry Frank Guggenheim Foundation.
- 1978-79 "Behavioral Dynamics of Hierarchy Formation," University Awards Program Faculty Fellowship and Grant-in-Aid.
- 1980 "Behavioral Dynamics of Hierarchy Formation," Research Development Fund of SUNY at Stony Brook.
- 1981 "A Comparative Study of Cooperation and Competition," University Awards Program Faculty Fellowship.
- 1982-85 "Dynamics of Hierarchy Formation in Young Children," Harry Frank Guggenheim Foundation (\$51,550).
- 1984 "Behavioral Dynamics of Cooperative Effort," American Philosophical Society (\$1,400).
- 1987-89 "Modeling Aggressive Behavior and the Formation of Dominance Hierarchies," Harry Frank Guggenheim Foundation (\$26,255).
- 1989-90 "The Impact of Observing Aggression in Dominance Relationship Formation," Harry Frank Guggenheim Foundation (\$25,300).
- 1991-92 "The Influence of Social Experience on the Formation of Dominance Relationships," The American Cichlid Association (\$900).
- 1993-96 Research Experience for Undergraduates," National Science Foundation (\$125,417).

2004-05 SGER: "When Clones Attack: Can Identical Fish Form Dominance Relationships," National Science Foundation (\$29,970)

### **Professional Activities**

I review for a variety of granting agencies and journals, including the National Science Foundation, Harry Frank Guggenheim Foundation, *Journal of Theoretical Biology*, *Animal Behaviour*, *Behaviour*, *Ethology*, *Behavioral Processes*, *American Sociological Review*, and *American Journal of Sociology*.

### **Departmental Service**

During my years at Stony Brook I have been on many committees, but my chief departmental service has been six years as Graduate Director: from 1997 to 1999 and from 2003 to 2007. During these two tenures, I spearheaded a number of important changes in the graduate program, including the institution of the Pro-Seminar for acquainting first-year students with faculty research interests and work, a major overhaul of the graduate program requirements, two outside reviews, careful enforcement of the graduate program requirements, and the department's first recruitment event for prospective students. As Graduate Director, I wrote letters nominating a number of faculty and graduate students for various university teaching and mentoring awards and dissertation fellowships. Our faculty and students have gotten well over 80% of the awards we have applied for.

### **University Service**

From 1989 to 1996, I was a member of CORIHS (the Committee on Research Involving Human Subjects), the university's local Institutional Review Board that oversees research on human subjects for both the academic campus and the medical school. In 2007, I served on the Graduate Council Fellowship and Awards Committee which decides upon Graduate Council Fellowships and other awards for graduate students and faculty.