The Mathematical Sociologist

Newsletter of the Mathematical Sociology
* Section of The American Sociological Association *
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Spring, 1999

1998-1999 Officers and Council Members

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Note from the Newsletter Editor

This issue has information about next August's ASA sessions, the Journal of Mathematical Sociology, nominations for section officers and other section business, announcements, and also some discussion about the definition and direction of the field. We expect to have a summer issue, with deadline for submission of items in mid-June. Please send news items, suggestions, letters to the editor, etc to me at meeker@bss1.umd.edu or by snail-mail: Barbara F Meeker, Sociology Department, University of Maryland, College Park, MD 20742.

Chair's Statement

Tom Fararo

In this statement I want to do two things: summarize and comment on some section developments and suggest a sociological problem that might be addressed by interested readers in a later issue of our section newsletter. Let me begin with some section developments. First, we have initiated an awards process. One award will go the author of an outstanding book or article; the other will go to the author of an outstanding graduate student paper. Details about these awards are reported elsewhere in this issue. On behalf of the section membership, I wish to thank those who agreed to serve on the two awards committees. In particular, I am grateful to Willie Jasso and Gene Johnsen for agreeing to serve as chairs.

Second, our election process for next year's section officer vacancies is underway, with a report from Phil Bonacich on his committee's slate of nominees appearing in this issue. Third, our sessions for the 1999 ASA meetings have been finalized and these are listed in this issue. One of these is the invited session that I organized and the other was organized by Aage Sorenson, whom I thank for agreeing to take on that task. In addition, Dave Willer has organized a regular session on mathematical sociology. All of these sessions should be of considerable interest to section members and I would urge you to try to attend.

Another matter of great interest to section members is discussed by Pat Doreian, namely the status of the flagship journal of our field that he edits, The Journal of Mathematical Sociology. In the previous issue of this newsletter, I reported on initial optimistic signs of interest in a successor quarterly journal or annual by another publisher. Since that time, the publisher was taken over by the huge Elsevier organization, after which interest in the project faded. I would not count on a revival of interest. My recommendation is that we put all our efforts into maintaining and enhancing JMS. As a positive sign, Pat Doreian reports in his message in this issue that a special individual subscription rate has been agreed upon. Perhaps in the future the publisher will do something about its library rate.

Concerning JMS, I would like to urge each section member to help in making it more connected to the section. I think there are at least two ways in which a member can do so. One way is to submit a paper to JMS. Of course, the visibility of a JMS publication cannot compare with that of a paper placed in a comprehensive journal such as AJS or ASR. But this is true of any specialty journal. And, in the latter category, JMS has considerable prestige as well as a very good in-citation rate. More can be done to enhance its attractiveness to members as a place to publish and Pat's message indicates one such step. I'm sure he would welcome other suggestions. The other thing you can do is subscribe to JMS. The special rate cited by Pat is not excessive when compared with that of other journals put out by commercial publishers.

While journals such as Social Networks and Rationality and Society appeal to structuralists and rational choice theorists, respectively, JMS can bridge these and other

interests and thereby help to foster constructive integrative contributions. Your support of the journal in the next few years will help to determine if it can survive and fulfill this important mission. And, to sum up, support has two manifestations: contributing to it and subscribing to it.

I turn now to the sociological problem. A section is a social means toward certain collective ends. Surely, the major and ultimate end is to advance the state of knowledge in the field to which the section members are committed. With that in mind, I will pose a sociological problem with the hope that it will stimulate some readers to respond in a future issue of the newsletter. Such a response might cite and discuss work that addresses this sort of problem in an effective way or it may suggest a direction of new work, perhaps with some illustration, thereby advancing our knowledge.

The problem occurred to me in re-reading some chapters of Homans's classic book, *The Human Group,* namely Chapters 9 and 10 that treat systems of interpersonal relations. The topic emerges out of his description and analysis of the kinship system of Tikopia. Homans notes that the Tikopia classify kinship relations using a binary distinction: restrained or unrestrained. In the latter, but not the former, persons feel at ease, e.g., they use first names and tell jokes to each other. In the former, this is not the case. The prototypical unrestrained relation is between equals who interact frequently and have affection for each other, as between brothers in Tikopia. The prototypical restrained relation is between unequals, as between father and son in Tikopia. A notable aspect of the Tikopia system of relationships is that a boy's relation to his mother's brother is unrestrained. In the Trobriand case that Homans's employs for contrast, it is the mother's brother who exercises authority over the boy and it is father to whom the boy relates in an unrestrained mode. Hence, Homans hypothesizes that the emotional tone of a relationship depends upon the extent of "origination of interaction," by which he means giving and taking orders. In short, in a comparative statics mode, the equilibrium interpersonal relations are a function of another aspect of the society, taken as a parameter.

While undertaking this analysis, Homans also develops a qualitative theory of triadic balance, suggesting a number of interesting hypotheses. For instance, he writes that "if the relationships between A and B and between B and C are both marked by constraint and relatively infrequent interaction, the relationship between A and C may be easy, affectionate, and marked by frequent interaction" (p. 251). If the "constraint" or "restrained type of relation" is coded as minus and the unrestrained as plus, the following are examples balanced triads – those where the product of the signs is positive – in the Tikopia system of kinship:

(1) father (f), mother's brother (mb) and boy (b):
fRmb = minus, fRb = minus, mbRb = plus

(2) father (f), mother (m) and boy (b)
fRm = minus, fRb = minus, mRb = plus

(3) father (f), father's sister (fsi) and boy (b)
fRfsi = plus, fRb = minus, fsiRb = minus

(4) father (f), grandfather (gf) and boy (b)
fRgf = minus, fRb = minus, gfRb = plus

The neat way that these triads exemplify the idea of a balanced triad suggests the hypothesis that the system of kinship relations in Tikopia has the property of structural balance in the sense of the Cartwright-Harary mathematical theory with plus and minus identified as indicated. The plausibility of this hypothesis is indicated by the fact that we are not dealing with relationships between particular persons, but with a relational system that has endured for numerous generations without change. That is, the interrelations of the relations form a stable equilibrium. It does seem likely that a system that can be institutionalized in this way must be compatible with fundamental social psychological and structural constraints of the sort that are formalized in balance theory.

But the overall system appears <u>not</u> to be structurally balanced in the formal sense. Some triads appear not to satisfy the product rule for balance. Homans tells us that Firth (the original ethnographer) indicates that in-laws interact on a restrained basis, as is illustrated above in (1) for father and mother's brother. But then this seems to mean that grandfather and mother are in a restrained relation and we have:

(5) grandfather (gf), mother (m) and father (f):
gfRm = minus, gfRf = minus, mRf = minus

So here we have three negatives. At first encounter it appears that we can resolve the problem by adopting Davis's generalization of balance theory, in which a triad with three negatives is treated as balanced. However, consider the following additional triad:

(6) grandfather (gf), mother (m) and boy (b):
gfRm = minus, gfRb = plus, mRb = plus

This is imbalanced both in the Cartwright-Harary theory and in Davis's generalized theory. Hence, the overall system is not structurally balanced, if we assume that in-laws in Tikopia interact on a restrained basis.

Balance theory is a pure theory of interpersonal structures of sentiments that are treated in a binary mode. The standard interpretation of the theory is that "plus" means "positive sentiment" and "minus" means "negative sentiment." What I have been exploring is a different interpretation, suggested by the Tikopian's own binary categorization of their relations. I was not supposing that unrestrained vs. restrained simply amounted to positive and negative sentiments. The interpretation is not devoid of the element of sentiment, but more is involved in this institutionalized form of interaction.

A good number of triads are balanced under this interpretation, but some are not. Hence, the problem is that structural balance, in the formal sense, does not hold in Tikopia despite the fact that this system of kinship relations is best interpreted as in a state of stable equilibrium. Is there a way to come to grips with this tension between theory and reality that builds on structural balance theory but that goes beyond it? Is there something in the literature that already solves this sort of problem?

Discussion and Opinions

As newsletter editor, I suggested the following question to officers of the Section:

I sometimes talk to mathematicians, who are invariably surprised to find there is a field called "mathematical sociology" and always ask "what kind of mathematics?" usually followed by "I teach a course to non-

majors, and I'm looking for examples of mathematical applications to other fields- can you recommend a single article or book that is a good example of sociological applications of mathematics?", and "How much and what kind of mathematics does a person need to know in order to understand 'mathematical sociology' "? Below is a reply by Tom Fararo. What do other section members think? Send answers to me at meeker@bss1.umd.edu. Barbara Meeker

On all questions about "what kind of mathematics" and "good examples" we should be able to refer people to textbooks, since this is what the latter should be conveying. One problem with the current state of mathematical sociology is that the textbooks are not up to date. For instance, the Leik-Meeker text and the Lave-March texts go back to the mid-1970s. In the early 1980s, Anatol Rapoport produced a wide-ranging text, but I can't think of anything since that time.

It would be very difficult for any one or two persons to produce a text that could address the full range of mathematical models in sociology. Rational choice theory, social network analysis, economic sociology, group processes -- these are just a few of he thriving research areas that are routinely producing new descriptive and theoretical models employing one or another branch of mathematics. It would be appropriate, I think, for some section members to put their heads together to plan and implement the production of a collaborative textbook. Such a plan should include sounding-out prospective publishers; but a problem is that there may be a chicken-and-egg relationship to courses (and hence sales, to lure the publisher into a contractual relation). Presently, I suspect that courses in mathematical sociology are not very common in most places in the USA. A good textbook that prospective teachers would learn from as well as teach from would help provide an initial boost to the production of such courses and thus provide income to the venturesome publisher. Since some teachers might be in mathematics departments and others in social science units, the text would have to be a deft combination of teaching both some mathematics and some sociology and providing the sort of linkage of the two to sustain motivation on the part of both sorts of teachers, not to mention students. I would hope that such a text also would reflect something of the history of the field, so that the early and still outstanding contributions of Anatol Rapoport, Herbert Simon, and James Coleman – just to name the three that come to mind immediately -- would be conveyed in the spirit of building cumulatively upon their work in a scientific spirit. At the same time, the special feature of mathematical sociology -- as contrasted with the use of mathematics in the contexts of statistical description and inference -- is its direct representational tie-in to the conceptual structure of sociological thinking and to the imaginative framing of questions and proposed solutions to empirical problems.

So the answer to the questions "what kind of mathematics" and "what are some good examples" is either the ad hoc pointer to some part of the forest of papers and books with the proviso "and see the references" OR it is taken as a challenge for some subset of people in the field to take a new look at that body of literature and come up with a substantial answer in the form of an up-to-date textbook addressing the sorts of concerns I have mentioned above.

These remarks also relate to another question that arises: "How much and what of mathematics does a person need to know in order to understand 'mathematical sociology'? Unlike mathematical physics with its partial differential equations, there is no one absolutely fundamental branch of mathematics one must study in order to understand the literature. If anything, what is required might be called "abstract intuition," in the sense of a diffusely based competence to master new abstract ideas and see their inter-connections to those already mastered. For instance, if one has studied elementary set theory, and one has abstract intuition, then one is ready for an applicaton that begins with "let A be a set and let R1 through RN be binary relations on A, i.e., sets of ordered pairs from A." If one has studied elementary matrix algebra and elementary probability theory, then with abstract intuition one is ready to understand a model that begins, "Consider a transition matrix among N states of a system, where the rows contain conditional probabilities, namely pij is the chance that a system in state i at time t will be in state j at time t+1." If the latter model employs some standard prior results, such as those relating to absorbing Markov chains, then a detour into some text that explains the latter is necessary. So much for the discrete side of things, to which one could have added abstract algebraic concepts.

On the continuous or differential side, matters are more complex because exposure to the differential and integral calculus is required before one can even comprehend the notational-level significance of a system of differential equations. For instance, when Jim Coleman developed his ingenious generalizations of the birth-and-death stochastic processes (as in his 1964 book), the reader without calculus can follow the argument only to the point where suddenly the dreaded calculus makes its appearance in the form of the derived equations of a continuous-time stochastic contagion process or the like. From Jim's point of view, the use of calculus becomes central to sociology because its processes cannot be partitioned into discrete time points without distortion (in contrast to repeated trials in social psychological experiments where one can safely assume that nothing happens between trials). And much of recent mathematical model-building does take off in this direction.

From another point of view, suppose we say that the conceptual schemes of sociology take two forms (as Parsons proposed in his famous Structure of Social Action book of 1937): (1) structural relations among parts of an empirical system and (2) analytical relationships among variables in an analytical theory. Then for category (1) conceptual schemes, the whole apparatus of graph theory, abstract algebra and the other parts of discrete mathematics have been of enormous importance. The journal Social Networks would be the essential reference. For category (2), on the other hand, the concept of process becomes central, with equilibrium theories as special cases. The relevant mathematics is open-ended here as well, but definitely the continuous-variable formulations loom large and, with dynamics in focus, differential or difference equations may be derived from some assumptions about transitions among states.

Finally, there is the whole question of the linkage of all these matters to computational sociology with its emphasis on complex models whose properties are explored by

computer simulation. Once again, process is at the forefront, and two forms of such simulation models seem to prevail. One is the direct simulation of equations, as in Bob Hanneman's book on computer-assisted theory-building, using Forrester- type models. The other type is, in my opinion, more fundmental and has been stressed by various people, including my colleague Norm Hummon. Namely, we posit a set of transition rules over states. No equations as such are ever posed at the set-up level of assumptions. Instead the complex evolving system history is generated by repeated appeal to the rule base. A simple but still very influential example of this type was in one of the first issues of The Journal of Mathematical Sociology, namely Thomas Schelling's justly famous segregation model -- a form of model that today one would say is characterized by distributed parallel processing in that each agent with its own knowledge and rules of behavior contributes to the evolution of the system state, until some attractor is reached -- if it is.

These remarks have been stimulated by a set of questions posed by Barbara Meeker and I want to thank her for prompting my thoughts on these matters.

Tom Fararo

ASA August 1999

The Mathematical Sociology Section will sponsor two sessions:

Formal Models and Research Programs: Reflections from Experience (Co-sponsor: Theory Section)
Organizer: *Thomas J. Fararo*, University of Pittsburgh
Presider: *Guillermina Jasso*, New York University
Panel: *Peter Abell*, London School of Economics
Joseph Berger, Stanford University
David Heise, Indiana University
Harrison White, Columbia University
Discussion: *John Skvoretz*, University of South Carolina

Modeling Social Mechanisms
Organizer: *Aage B. Sørensen*, Harvard University
Presider: *Aage B. Sørensen*, Harvard University
Presentations:
Peter Hedström, Stockholm University "Mechanisms, Models, and the Micro-to-Macro Problem"
James Montgomery, London School of Economics "Role Theory as Dynamical System of Fuzzy Logic"
Ivar Vermeulen, University of Amsterdam, and *Jeroen Bruggeman*, University of Groningen "Axiomatizing Resource Partitioning Theory"
Joseph M. Whitmeyer "Effects of Positive Reputation Systems"
Discussion: *Christofer Edling*, Stockholm University

There is also a regular ASA session on **Mathematical Sociology**:
Organizer: *David Willer*, University of South Carolina
Presider: *Brent Simpson*, Cornell University
Presentations:
Barbara Meeker, University of Maryland "Non-Linear Dynamical Models of the Emergence of Inequality in Discussion Groups."
John Angle, Cabin John, MD "The Dynamics of the Inequality Process"
Michael A. Faia College of William and Mary "A Less that Harmonious Paradox: Lorenz, Gini and Wilson on Socioeconomic Inequality among Black Americans"
Daniel J. Myers University of Notre Dame "The Opposing Forces Diffusion Model: A Theory of Collective Violence Diffusion"
Discussion: *Patrick Doreian,* University of Pittsburgh

Comments on The Journal of Mathematical Sociology

Pat Doreian, editor of JMS, has the following statement:

Gordon and Breach, the publisher of the Journal of Mathematical Sociology, has agreed to a special subscription rate of $60 for members of the ASA. It is possible to go to the Gordon and Breach web page now and subscribe to JMS at this rate. I encourage you to do so at:

http://www.gbhap.com

While we have no formal arrangement with Gordon and Breach whereby Section membership is coupled to a subscription to JMS, the publisher is willing to explore the idea of establishing such a tie with the Section. If there is enough interest and there is a clear gain for us from such an arrangement, I suggest that we pursue the idea.

Given our concerns for the continuity of our ASA section and having a visible, institutionalized and reputable outlet for some of our work, the now available subscription price for JMS can only be seen as a positive development. Further, from conversations with Tom Fararo, I have learned that there is little hope in finding another publisher who would have an interest in publishing another journal in the broad area of mathematical sociology. Our task, then, is to increase the journal's relevance for our Section's members.

The aims and scope of JMS (as listed on the inside front cover of each issue) are as follows:

> "This Journal publishes articles in all areas of mathematical sociology. It also welcomes papers in areas of mutual interest to sociologists and other social and behavioral scientists, and papers, which may encourage fruitful connections between sociology and other disciplines.
> Articles dealing primarily with the use of mathematical models in social science, the logic of measurement, computers and computer programming, applied mathematics, statistics, or quantitative methodology are welcome insofar as they make some contribution to the understanding of substantive social phenomena.
> The editors will consider speculative articles that are not mathematical but are sufficiently precise, general, and abstract to stimulate mathematical treatment of problems that have heretofore been dealt with only verbally. Reviews of new or developing areas of mathematics and mathematical modeling which may have significant applications in sociology will also be considered."

This statement is sufficiently broad to suggest that JMS can serve a wide audience and its goals and aims are consistent with the objectives of the Mathematical Sociology

Section. I am open to suggestions for changing the aims and scope of the journal. The issues aired in our recent e-mail exchanges remain pertinent and I am open also to suggestions for restructuring the editorial board. For example, having associate editors with responsibilities for well-defined sub-domains has considerable appeal. However, if we do reorganize the structure of the editorial board, one feature that I will want to retain is the international representation in the board and a commitment to an international audience.

With a subscription to JMS at $60, the journal should be more accessible on an individual basis. No doubt you have seen the report in Footnotes where JMS was ranked 25th in a list of journals serving the field. This is encouraging and I would like to make JMS even more relevant to the field. The device of devoting special issues to important topics - as we have done with baseline models, mathematics and theory construction, evolution of social networks, computational sociology, sociological algorithms, computational and mathematical organizational theory - has worked in recent years. It provides an opportunity to define and focus research agendas for the field. Even so, special issues should not become the sole format and I encourage you to submit manuscripts to JMS.

I would welcome the opportunity to talk with the Section Council at the next ASA meetings about ways of making JMS a more significant journal and a better vehicle for our research and scholarly communication.

Contents of Recent Issues of JMS

Vol 23, Number 1, 1998:
David B. Bahr and Eve Passerini Statistical Mechanics of Opinion Formation and Collective Behavior: Micro-Sociology
David B. Bahr and Eve Passerini Statistical Mechanics of Collective Behavior: Macro-Sociology
Guang-Zhen Sun A Note on the Substitution Process as an Interactive Markov Chain
Diane J. Reyniers Deprivation in Heterogeneous Organizations
Volume 23/Number 2/1998
Hermann Singer Continuous Panel Models with Time Dependent Parameters
Martin Karlberg Triad Count Estimation in Digraphs
C.F. Acedo, A. Plastino and A.N. Proto Mass Media Influence in Option Strategies
Marcel A.L.M. van Assen Effects of Individual Decision Theory Assumptions on Predictions of Cooperation in Social Dilemmas

Candidates for Section Offices

This slate was developed by Phil Bonacich, chair of the nominations committee. Section elections are included in the general ASA ballot, so be sure to look for them and to vote when you get the ballot from ASA. More complete biographical information about candidates will appear with the ASA ballot. We are grateful to all candidates for their willingness to run.

Section Office: Chair-Elect

1) Name: Ronald L. Breiger
Present Position: (since 1995) Goldwin Smith Professor of Sociology, Cornell University, and (for 1998-99) Visiting Research Scholar, University of California at Santa Barbara. **Education:** A.B., Brandeis University (1970); Ph.D., Harvard University (1975). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Chair, Max Weber Award Selection Committee, Section on Organizations, Occupations, and Work (1998-99); Member of Council, Section on Mathematical Sociology (1997-2000); Member of Council, Section on Methodology (1983-86); Secretary-Treasurer, Section on Methodology (1988-91); Advisory Editor, *American Sociological Review* (1990-91); Advisory Editor, *Sociological Methodology* (1985-89). **Publications and Professional Accomplishments:** "Dimensions of Corporate Social Capital: Toward Models and Measures" (with Shin-Kap Han), in R.T.A.J. Leenders and S. Gabbay (eds.), *Corporate Social Capital* (1999); "Solidarity and Social Networks" (with John M. Roberts, Jr.), in P Doreian and T. J. Fararo (eds.), *The Problem of Solidarity: Theories and Models* (1998); "Generalized Exchange in Social Networks: Statistics and Structure" (with James G. Ennis), *L'Année sociologique* (1997); "Social Structure and the Phenomenology of Attainment," *Annual Review of Sociology* (1995); *Social Mobility and Social Structure*, ed. R.L. Breiger, Cambridge (1990).
2) Name: Noah Friedkin
Present Position: Professor of Sociology, University of California, Santa Barbara (1978-present). **Education:** B.A. University of Chicago (1969), Ph.D. University of Chicago (1977). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Editorial Board, *American Sociological Review*, 1998-2000; Editorial Board, *Social Psychology Quarterly* 1993-1996; Editorial Board, *American Journal of Sociology*, 1992-1994. **Publications and Professional Accomplishments:** *A Structural Theory of Social Influence*, Cambridge University Press (1998); "Unequally Valued Exchange Relations" (with P. Bonacich), *Social Psychology Quarterly* (1998); "Social Positions in Schooling" (with S. L. Thomas), *Sociology of Education* (1997); "Social Positions in Influence Networks" (with E. C. Johnsen), *Social Networks* (1997); "The Incidence of Exchange Networks," *Social Psychology Quarterly* (1995).
3) Name: John Skvoretz
Present Position: Carolina Distinguished Professor of Sociology, University of South Carolina (1/1975 - present). **Education:** Ph.D., University of Pittsburgh (1976). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Secretary-Treasurer, Mathematical Sociology Section; Editorial Board, *Social Psychology Quarterly*; Editorial Board, *American Sociological Review*. **Publications and Professional Accomplishments:** "The Evolution of Trust and Cooperation Between Strangers: A Computational Model" (with M.W. Macy), *American Sociological Review* (1998); "Conflict in Networks" (with J. Szmatka, T. Sozanski, and J. Mazur), *Sociological Perspectives* (1998); "Theoretical Models: Sociology's Missing Links," in A. Sica, (ed.), *What is Social Theory? The Philosophical Debates*, Blackwell (1998); "Solidarity, Social Structure, and Social Control." in P. Doreian and T.J. Fararo (eds.), *The Problem of Solidarity:*

Theories and Models, Gordon and Breach (1998); *Status, Network, and Structure: Theory Development in Group Processes*. Co-edited with J. Szmatka and J. Berger, Stanford University Press (1997).

Section Office: Council Member

1) Name: Elisa Jayne Bienenstock
Present Position: Assistant Prof. Stanford University (1996-present); **Education:** Ph, D. University of California, Los Angeles (1992). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Nominations Committee, Mathematical Sociology Section, 1997. **Publications and Professional Accomplishments:** "Strategy in Exchange Networks: Exploitation versus Accommodation" (with P. Bonacich), in Jacek Szmatka, John Skvoretz and Joseph Berger (eds.), Status*, Networks and Structure: Theory Development in Group Processes*, Stanford University Press (1997); "Response to `Network Games'." *Rationality and Society* (1997); "Network Exchange as a Cooperative Game." (with P. Bonacich), *Rationality and Society* (1997); "Latent Classes in Exchange Networks: Sets of Positions with Common Interest" (with P. Bonacich), *Journal of Mathematical Sociology* (1997); "An Empirical Test of the Cultural Capital Hypothesis" (with J. H. Johnson Jr and J. A. Stoloff), *The Review of Black Political Economy* (1995).

2) Name: Douglas D. Heckathorn
Present Position: Professor of Sociology and Economics, University of Connecticut (1990 to present). **Education:** Ph.D.,University of Kansas (1974). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Award Committee and Membership Committees (Theory Section), Chair (Rational Choice), Editorial Board, *American Sociological Review*; **Publications and Professional Accomplishments:** "Collective Action, Social Dilemmas, and Ideology," *Rationality and Society* (1998); "Harnessing Peer Networks as an Instrument for AIDS Prevention" (with Robert Broadhead, et al.), *Public Health Reports* (1998); "Respondent-Driven Sampling: A New Approach to the Study of Hidden Populations," *Social Problems* (1997); "Dynamics and Dilemmas of Collective Action," *American Sociological Review* (1996); Lon Fuller Prize in Jurisprudence (1989).

3) Name: Michael Macy
Present Position: Professor of Sociology, Cornell University (1996-present). **Education:** Ph. D. Harvard (1985). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Chair, Rational Choice Section; Editorial Board, *Social Psychology Quarterly*; Editorial Board, *American Sociological Review*. **Publications and Professional Accomplishments:** "Trust and Cooperation Between Strangers" (with John Skvoretz), *American Sociological Review* (1998); "Structural Learning: Attraction and Conformity in Task-Oriented Groups" (with James Kitts and Andreas Flache), *Computational and Mathematical Organization Theory* (in press); "Dependence, Selectivity, and Cooperation" (with R. Thomas Boone), Social Psychology (1999); "Social Order in an Artificial World." Journal of Artificial Societies and Social Simulation (1998); "The Weakness of Strong Ties: Collective Action Failure in Highly Cohesive Groups" (with Andreas Flache), Journal of Mathematical Sociology (1996).

4) Name: Aage B. Sørensen
Present Position: Professor of Sociology, Harvard University (1984-present). **Education:** Ph.D. Social Relations, Johns Hopkins University (1971). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Committee on Award for Distinguished Career in Sociology (1990-1992); Council, Section on Methodology (1978-1981). **Publications and Professional Accomplishments:** "The Structural Basis of Social Inequality," *American Journal of Sociology* (1996); "Career Trajectories and the Older Worker." in K. Warner Schaie and Carmi Schooler (eds.), *Impact of Work on Older Individuals,* Springer Publishing Company (1998); "Theoretical Mechanisms and the Empirical Study of Social Processes," in Peter Hedström and Richard Swedberg (eds.) *Social Mechanisms*, Cambridge University Press (1998); "On Kings, Pietism and Rent-seeking in Scandinavian Welfare States." *Acta Sociologica*, (Forthcoming);. "School Effects: Theoretical and Methodological Issues" (with Stephen L. Morgan), in Maureen Hallinan (ed.) *Handbook of Sociology of Education.* Plenum Publishing Company (Forthcoming).

5) Name: Murray Webster
Present Position: Professor of Sociology, University of North Carolina, Charlotte (1993-present). **Education:** Ph.D. Stanford (1968). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Secretary-Treasurer, Social Psychology Section (1985 - 89); Newsletter Editor, Social Psychology Section (1984 - 88); Chair, Student Award Committee, Social Psychology Section (1994 - 95); ASA Committee to promote social science at the American Association for the Advancement of Science (1992 - 1995); Chair, Theory Prize Committee, Theory Section, ASA (1998). **Publications and Professional Accomplishments:** "A Theory of Second-Order Expectations and Behavior" (with Joseph Whitmeyer), *Social Psychology Quarterly* (in press); "Status Orders in Task Discussion Groups" (with John Skvoretz, and Joseph Whitmeyer), in Edward J. Lawler, Michael Macy, Shane Thye, and Henry A. Walker (eds.) *Advances in Group Processes* (1999); *Status Generalization: New Theory and Research* (with Martha Foschi), Stanford University Press (1988); "Accepting Significant Others: Six Models" (with Lynne Roberts, and Barbara Sobieszek), *American Journal of Sociology* (1972);

Section Office: Secretary-Treasurer

1) Name: Mark Mizruchi
Present Position: Professor of Sociology And Business Administration, University Of Michigan (1991-present). **Education:** B.A., Washington University (1975); M.A., Suny-Stony Brook (1977); Ph.D, Suny-Stony Brook (1980). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Awards Committee, Section On Rational Choice (1998-present); Council, Section On Organizations, Occupations, And Work (1992-95); ASA Nominations Committee (1991-93). **Publications and Professional Accomplishments:** "Centrality And Power Revisited: Actor Success In Group Decision Making" (with Blyden B. Potts), *Social Networks* (in press); "What Do Interlocks Do? An Analysis, Critique, And

Assessment Of Research On Interlocking Directorates," *Annual Review Of Sociology* (1996); *The Structure Of Corporate Political Action: Interfirm Relations And Their Consequences*. Harvard University Press (1992); "Similarity Of Political Behavior Among Large American Corporations," *American Journal Of Sociology* (1989); "Techniques For Disaggregating Centrality Scores In Social Networks" (with Peter Mariolis, Michael Schwartz, And Beth Mintz), *Sociological Methodology* (1986).

2) Name: James Montgomery
Present Position: Lecturer in Management, London School of Economics
(1996-present). **Education:** Ph.D. Economics, MIT (1989). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** None. **Publications and Professional Accomplishments:** "Toward a Role-Theoretic Conception of Embeddedness," *American Journal of Sociology* (1998); "The Structure of Social Exchange Networks: A Game-Theoretic Reformulation of Blau's Model," *Sociological Methodology* (1996); "The Dynamics of the Religious Economy: Exit, Voice, and Denominational Secularization," *Rationality and Society* (1996); "Weak Ties, Employment, and Inequality," *American Journal of Sociology* (1994); "Job Search and Network Composition: Implications of the Strength-of-Weak-Ties Hypothesis," *American Sociological Review* (1992).

3) Name: Joseph Whitmeyer
Present Position: Associate Professor, Dept. of Sociology, University of North Carolina, Charlotte (1993 - present). **Education:** Ph.D., University of Washington (1993). **Offices, Committee Memberships and Editorial Appointments Held in ASA:** Membership Committee of Social Psychology Section (1998-99); Graduate Student Paper Award Committee of Mathematical Sociology Section (1998-99). **Publications and Professional Accomplishments:** "A Theory of Second-Order Expectations and Behavior," (with Murray Webster Jr.) *Social Psychology Quarterly* (Forthcoming); "Power and Interest-Network Structures in Exchange Networks," *Sociological Perspectives* (Forthcoming); "A Human Actor Model for Social Science," *Journal for the Theory of Social Behavior* (1998); "Endogamy as a Basis for Ethnic Behavior," *Sociological Theory* (1997); "The Power of the Middleman--A Theoretical Analysis." *The Journal of Mathematical Sociology* (1997).

Section Office: Student member of Council

1) Name: Alison J. Bianchi
Present Position: Graduate student, Stanford University. **Publications and Professional Accomplishments:** "Understanding the Nature of Scope Conditions: Some Considerations and Consequences, Including Hybrid Theories as a Step Forward" (with G. Tootell and P. Munroe), in *Advances in Group Processes*, E. J. Lawler (ed). JAI Press (1998).

2) Name: Carter T. Butts
Present Position: Graduate student, Carnegie-Mellon University. **Publications and Professional Accomplishments:** "A Bayesian Model of Panic in Belief," *Computational and Mathematical Organization Theory* (1998).

Nominations Sought for Graduate Student Award

The Graduate Student Paper Award is for the best paper in mathematical sociology written or published during the previous three calendar years. The award consists of sufficient funds to cover the roundtrip travel for one person to the ASA Annual Meeting at which the award is conferred.

All authors of a nominated paper must have been graduate students at the time the paper was written. An award for a multiply authored paper will be shared equally by the authors. For each author the following information must be supplied by the nominator: name, address, telephone number, e-mail address (if available), institutional and departmental affiliation while a graduate student, title of graduate degree and date at which award of the degree occurred or is expected.

Papers may be published or unpublished. A thesis or dissertation chapter or a paper based on a thesis or dissertation, but not the entire thesis or dissertation, is eligible provided its content and references are self contained and its comprehension does not require the reading of parts of the thesis or dissertation not represented in the paper.

Awardees need not be members of the ASA, nor of the Mathematical Sociology Section, and may be graduate students in any department of any university in the world. Papers submitted for nomination should be written in English, should adhere to the guidelines of the American Sociological Review or similar sociological journals, and should not have been submitted for this award in a previous year (the latter does not apply to the 1999 award). A nomination may come from any qualified nominator and self nominations by authors are permitted and encouraged.

A nomination consists of a cover letter, in which the nominator gives a detailed justification for granting the award for the nominated paper, plus five copies of the paper and an associated abstract of up to 250 words, including the author information specified above. Nominations for papers written or published in calendar years 1996, 1997 and 1998 should be sent to Eugene C. Johnsen, Graduate Student Award Committee Chair, Department of Mathematics, University of California, Santa Barbara, CA, 93106, e-mail: johnsen@math.ucsb.edu, fax: +(805) 893-2385, to arrive no later than **April 15, 1999**.

Announcements of New Programs

The Three Rivers Network is please to announce the **Certification and Award Program in Social and Organizational Networks**

Background. Since the mid 80's several departments and schools at the University of Pittsburgh (Pitt) and Carnegie Mellon University (CMU) have worked together to foster a viable program in the area of social and organizational networks. Part of our on-going program includes a range of courses in the area of social and organizational networks at both universities. A second aspect of this program is that the faculty are engaged in extensive collaboration and have served on the dissertation committees of students in the different units. A third feature of our program is a joint research seminar series. This seminar series has had two major benefits.

First, it has strengthened intellectual ties among faculty from different disciplines and has facilitated research collaboration both within and between the two universities. Second, it has enhanced the training of many graduate students -- by exposing them to cutting-edge research, by increasing their knowledge of course and seminar options outside their own units, and by introducing them to faculty from other disciplines who can provide research advice and serve on doctoral committees. By providing information on the graduate courses and coordinating, within institutional limits, when they are offered, we have been able to provide the students with an intellectual program that is both more broad and deeper, than any one program is able to provide on its own.

Current Status. Since 1990 the number of graduate students and faculty across the various programs interested in the area of social and organizational networks has grown. The faculty in this area are spread across the H.J.Heinz III School of Public Policy and Management at CMU, the Social and Decision sciences Department at CMU, the Graduate School of Industrial Administration at CMU, and the department of Sociology at the University of Pittsburgh. Currently, between the groups there are nine core faculty in this area and a number of faculty with strongly related interests. Several courses are offered on a regular basis. Six students have taken qualifiers in this area. During the past four years, seven dissertations and 12 student papers have been completed in this area. Faculty are active in organizing sessions at international meetings and in serving on the editorial boards for journals in the area of social and organizational networks.

Social and Organizational Network Program. Given the important role that social and organizational networks have come to play in the graduate training at CMU and the University of Pittsburgh, the sponsoring units have decided to establish a more formal collaborative mechanism for fostering research training in the area of social and organizational networks. Educational and research opportunities will be enhanced through the coordination of courses and the provision of certifications and awards to students in this area who meet the requirements. Students who participate in the Social and Organizational Network Program will be expected to meet all the requirements of their own doctoral programs. In addition, they will be expected to: 1) Take 4 courses in the area of social or organizational networks. 2) Do a research paper or dissertation in the area of social or organizational networks. 3) Attend the social and rganizational network research seminar. 4) Prepare and present a paper at a Sunbelt Social Network Meeting or other recognized conference in the area.Students can apply for certification at any point in their graduate careers.

Core Faculty. Kathleen Carley SDS/Heinz CMU; Patrick Doreian, Sociology, U. of Pittsburgh; Thomas Fararo, Sociology, U. of Pittsburgh; Norman Hummon, Sociology, U. of Pittsburgh; David Krackhardt, Heinz CMU; Bill Mcevily, GSIA CMU; Ray Reagans, GSIA CMU; Thomas Schott, Sociology ,U. of Pittsburgh; Shelby Stewman, Heinz CMU

Related Faculty:Linda Argote, GSIA CMU; Paul Ingram, GSIA CMU; Robert Kraut, GSIA/SDS/SCS CMU

Status of Certification and Award. As certification that they have completed the Social and Organizational Networks Program in good standing, graduate students will be receive an award for Meritorious Achievement in Social and Organizational Networks. This award is a recognition of in-depth study and research in the area of social and organizational networks. It is not, and should not be construed as, a degree from either institution. Nor is it a pre-PhD nor continuing education certificate. Students who receive this award can list it on their vitas as an award and under education as a note of certification.

Application to Ph.D. Training Program: Students interested in pursuing a Ph.D. that focuses on network analyis or that utilizes network analysis as an important component are encouraged to apply to any of the following degree programs. Once admitted to any of these programs, the students should then apply for the program in social and organizational networks. The URL for each program's graduate program or application form is listed as is a Three Rivers Network contact for that program. Applicants should note on their applications that they wish pursue research in the area of social and organizational networks. Carnegie Mellon University Programs Graduate School of Industrial Administration Bill Mcevily
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bighurt.gsia.cmu.edu/Phd/Contents.html
Heinz School of Public Policy and Management David Krackhardt krack+@andrew.cmu.edu
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Social and Decision Sciences Kathleen M. Carley
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www.pitt.edu/~socdept/sociology.html

CASOS - A Multi-disciplinary Center for Computational Analysis of Social and Organizational Systems

The past decade has witnessed the initial blending of computer science and social science. On the one hand, there has been an emergence of computational analysis as a sub-field within each of the Social and Organizational Sciences; to wit, computational organizational theory, computational sociology, computational economics. On the other hand, there has been a growing need to incorporate social factors into computer science; to wit, multi-agent systems, distributed artificial intelligence, socially intelligent agents. Mathematical and computational methods can be used to study human and engineered systems as computational entities. Human systems, such as groups or organizations, and engineered systems, such as WebBots and robots, can be viewed as inherently computational because many of their activities transform information from one form to another, and because individual and collective activity is frequently information driven. This parallel development of a computational social science and a social computer science is reshaping the way in which we theorize about, explain, analyze, plan, and develop policies and technologies for groups, organizations, markets, institutions and societies.

In response to this changing scientific climate Carnegie Mellon has established a multi-isciplinary center for Computational Analysis of Social and Organizational Systems

(CASOS). CASOS is a multi- disciplinary university wide center situated within ICES, the Institute for Complex Engineered Systems. CASOS brings together more than 18 faculty and associated students interested in examining social and organizational systems as computational entities. Faculty are drawn from 5 colleges at CMU: Humanities and Social Sciences (H&SS), Heinz School of Public Policy and Management (Heinz), Graduate School of Industrial Administration (GSIA), School of Computer Science (SCS), and College of Engineering (CIT).

GOALS - Our goal is to create an integrated research and education environment in which students and faculty can engage in the ethical conduct of high impact research building on both computer science and social science in a state-of-the-art intelligent and wireless office and classroom of the future. CASOS aims to foster multidisciplinary research on high impact projects by: [1] Identifying and supporting new directions and unexploited synergies within the CMU community by linking the social / organizational community and the engineering / computer science community. [2] Providing a forum for disseminating new results both within and beyond CMU.[3] Fostering research linkages between CMU and the University of Pittsburgh, [4] Providing an interface to industry and government for multidisciplinary work that combines social and computational analysis. [5] Enhancing graduate education by providing a multidisciplinary education and research infrastructure that combines social science and computational science.

Current Research Thrusts - There are a number of ongoing research projects in CASOS that are focused on:1) Organizational Design - This is a large area comprised of a number of projects including those on: searching for fundamental principles of organizing, coordination and cooperation; large scale qualitative simulation; comparison and extension of constraint based optimization for extremely complex and dynamically changing performance surfaces; optimal and flexible coordination structures for different types of agents (humans, corporations, WebBots, or robots) and tasks; virtual testbeds for determining the social impacts of information technology and its prospects for diffusion, organizational and multiagent learning; tradeoffs between agent quantity and computational complexity, developing tool kits for designing and building agent based models of organizations, teams, markets, and social systems. 2) Adaptation and Evolution - Faculty interests in this area include individual, group, organizational and machine learning. Research is done to develop new concepts, theories, and knowledge about organizing and organization, coordination, adaptation, and evolution at the agent, machine, group, network, organization, market, institution, and societal level. Three areas of particular attention include: adaptive multi-agent models, artificial life, societies and organizations, and organizational learning. 3) Social and Organizational Networks - Faculty interests here include empirical analysis, development of simulation and network based tools and metrics that can be used within and among organizations to better measure and manage the interlocked activities of people and intelligent technologies in terms of their communication and knowledge networks, team mental models and group effectiveness. Work includes the development of empirically driven theory in the areas of diffusion, adaptive and evolutionary social networks, knowledge networks, and inter-and intra-organizational networks. 4) Electronic Commerce - A large number of research projects are being carried out focusing on agent based models to develop tools to facilitate and evaluate electronic commerce. Specific topics include intelligent broker agents, trust and e-commerce, and locating the determinants of the economic success or failure of attempts to sell or buy goods and services on the internet. 5) Vulnerability Analysis - Research here includes developing simulation, multi-agents, social network models for critical infrastructure analysis, vulnerability analysis and information security. A second project is in development of socially sophisticated information technology systems.6) Validation and Analysis - Many of the projects in CASOS are tightly linked to data. Researchers are interested in not only developing models, but in their validation and analysis. Thus fundamental research is also being conducted on developing tools and procedures for the computer assisted intelligent validation and analysis of computational models of distributed agent and constraint based optimization systems.

Ph.D. Training Program - Potential graduate students interested in working in the area of computational analysis of social and organizational systems are encouraged to apply to one or more of the following degree programs. Students are admitted to any of these graduate programs and then work inter-disciplinarily and across colleges. Student committees can be drawn from CASOS faculty in various departments, regardless of the student's home department. Also students can, and are encouraged to attend, CASOS related courses outside of their home department. After being admitted to CMU, students can also take part in the certification program in social and organizational networks. Students are encouraged to apply to any of the programs listed below. For each graduate program, the URL for program's graduate application form and a CASOS contact is listed. Applicants should note on their applications that they wish to be associated with CASOS. Additionally, applicants should send a letter or email note to Kathleen Carley describing their interest in the CASOS Ph.D. training program.

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