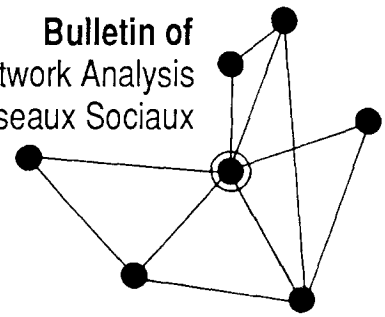
CONNECTIONS

Volume XIII Number 3 Fall/Winter, 1990

Bulletin of
The International Network for Social Network Analysis
Le Réseau International pour l'Analyse des Réseaux Sociaux



C O N N E C T I O N S

Volume XIII **Number 3**

Fall,Winter, 1990

CONTENTS

From the Editor 3
Ties & Bonds
Barry Wellman 4
Meetings 9
Article 10
Distribution of Measures of Centrality: Enumerated Distributions of Freeman's Graph Centrality Measures
Keiko Nakao 10
Abstracts 23
Books 23
Chapters 32
Journal Articles 35
Papers, Theses 65

© Alvin W. Wolfe for INSNA 1990
ISSN 0226-1776

CONNECTIONS

EDITORIAL OFFICES: Center for Applied Anthropology
University of South Florida, Tampa, FL 33620

EDITOR: Alvin W. Wolfe

INSNA COORDINATOR: Alvin W. Wolfe

TIES AND BONDS SPECIALIST: Barry Wellman

ASSOCIATE EDITORS: Susan D. Greenbaum, University of South Florida
Walter Carroll, Bridgewater State University

EUROPEAN EDITORS: Hans Hummell, University of Duisburg
John Scott, University of Leicester

COMPUTER EDITOR: John Sonquist, University of California-Santa Barbara

GRADUATE ASSISTANTS: Joelle Nisolle, Edward J. Ford, Wendy Cox Perry,
Marvin Chinnery, Honggang Yang

VOLUNTEERS: Honggang Yang, Charles Price-Reavis,
Jiqian Xu, John Murphy, Alice Warner,
Carla Marshall, Steve Gouldman

CONNECTIONS is published three times a year by the International Network for Social Network Analysis at the Center for Applied Anthropology, University of South Florida. All articles published have been recommended by peer reviewers. INSNA correspondence and CONNECTIONS subscriptions should be sent to the Editorial Offices.

CONNECTIONS is produced by the Editors with voluntary assistance and is supported entirely by subscriptions. The facilities and assistance of the University of South Florida Department of Anthropology and College of Arts and Sciences are gratefully acknowledged.

CONNECTIONS subscription rate: per volume $30.00 for individuals including INSNA membership fee.
Membership/subscription form is at the back of each issue.

INSTITUTIONAL RATES: per volume $30.00, US or Canadian dollars. Back issues are available.

PLEASE MAKE ALL REMITTANCES PAYABLE TO INSNA. Subscribers outside North America, please make sure that money order or bank draft is drawn on US currency.

SOCIAL NETWORKS is published quarterly, in association with INSNA, by Elsevier Science Publishers. **Individual INSNA members are entitled to a reduced subscription rate to SOCIAL NETWORKS when combined with a subscription to CONNECTIONS.** Subscriptions and renewals to SOCIAL NETWORKS will be accepted through INSNA at a special discount of $80.00 for SOCIAL NETWORKS plus CONNECTIONS.

MANUSCRIPTS and contributions of all kinds are encouraged, from members and colleagues: research papers of any length, reviews of applications of networks in different fields, comments and critiques, survey articles, computer programs, conference information, abstracts, teaching aids, etc.

FOR ANY SUBMISSION that is larger than four (4) double-spaced pages, please send a floppy disk (5 1/4" or 3 1/2") containing either a Wordstar, WordPerfect, or ASCII file along with hard copy.

FROM THE EDITOR

We continue to struggle against time with meager resources in our effort to get onto and to reach a better publication schedule for CONNECTIONS. This issue, a month into 1991, is the last one for 1990. We hope to do better with Volume 14, perhaps mailing Issue Number 1 in May, Number 2 in September, and Number 3 in December.

If you have not paid your subscription for 1991, please use the form at the end of this issue: $30 for CONNECTIONS only, $80 for CONNECTIONS and SOCIAL NETWORKS. Expensive, but still a bargain, considering all the valuable information on network studies you get in both publications. I think you will agree that there is no other way to keep up, given the totally interdisciplinary nature of network analysis.

Please continue to send us notes on your activities and those of organizations to which you belong. If they are to be helpful to others, we need them in a timely fashion. Even a relatively simple operation like CONNECTIONS proves to require a lot of lead time before publication. Again, we are doing our best to cut it down so that we can publish news and not merely history. Of course, there is nothing wrong with history. Since CONNECTIONS is not ephemeral, it can also serve as historic documentation.

Finally, let me remind you that we are now developing a referee process for manuscripts submitted for publication in CONNECTIONS. We have had no complaints about the quality of papers selected for publication previously, but we believe there is some advantage to be able to assure everyone that articles are selected after peer review.

Alvin W. Wolfe
Editor, CONNECTIONS, and
Coordinator, INSNA

TIES & BONDS

Barry Wellman, University of Toronto

TAKING THINGS SERIOUSLY

Recommended reading for jaded academics this year: The Riddle of the Third Mile, and Inspector Morse mystery by Colin Dexter. Tells the grisly outcome of what happens when two Oxford dons (professors, to you Americans) don't get elected to the headship of their college. Perhaps the ultimate playing out of themes in C.P. Snow's wonderful The Masters. Will provide nice sustaining thoughts when things get too bloody in your department this year. Thanks to David Morgan for turning me on to Morse.

And speaking of wars in North American departments, consider the argument in William Beer's Social Forces (6/90) review of Civil War on Campus, by Lionel Lewis. Beer contends that the ultimate cost of the McCarthy era was that administrators took over from faculty. We became driven by ideological tests for appropriate behaviour rather than by the old professorial standards of excellence. Interesting argument, and it helps put my congenital disdain for deans in new light.

But, wait! Who got to decide what was excellence in the old days, and what sort of professor made an excellent one. I got cautioned when I arrived in Toronto not to engage in pushy Jewish behaviour – intellectual as well as social. That was more than 20 years ago. Now my dean's name is Cohen, and my former dean was a woman (Nancy Howell, by the way). I don't like the new, administratively-driven ways, but I probably wouldn't have had a chance in the old days.

INFO FLOWS

Karen Altergott tenured at Family Studies, Purdue....Russ Bernard on sabbatical, 1990-1991. Last seen heading for Patmos, Greece with Carol, allegedly to do field research....Colin Bell chair of Sociology at Edinburgh....Tony Coxon moved to a professorship at Soc, U Essex (Eng)....Howard Newby now chief grant-giver in UK, as head of the ESRC....Toni Antonucci promoted to Full Prof at Inst for Soc Res, U Mich....Michael Argyle (Psych, Oxford) & George Levinger (Psych, Mass) each received a Distinguished Career Award at the 5th International Conf on Personal Relationships, Oxford, 7/90....Michael Useem has moved to Soc, U Penn....Alaina Michelson has Ph.D. at Irvine and is now a post- doc at Psych, Illinois....Steve Borgatti has Ph.D. at Irvine and is now Asst Prof of Soc, U South Carolina....Steve Berkowitz (Soc, Vermont) now a grandfather....Steve Duck (Communic, Iowa) named Fellow of the American Psychological Association's Division 8....Former INSNA ace typist had her first play produced at Toronto's Theatre Passe Muraille. Clutching the Heart is a steamy tale of incest & such in an Italian-Canadian family....Kinuthia Macharia has Ph.D. at Berkeley and is now Asst Prof of Soc, Harvard. A Kikuyu from Kenya, he tells me he's Harvard's 1st tenure-track African appointee....Jim Katz has taken a 3-year leave from Bellcore to go to Temple U, in either Soc or Communic....Vicente Espinoza has returned from Toronto to SUR, Santiago, Chile, where he's a board member & key researcher, analyzing housing, households & social networks....Jeanine Anderson has left the Ford Foundation in Peru. She continues working with grassroots community networks in Lima....Pearl Dykstra now at the Netherlands Interdisciplinary Demographic Institute (NIDI) in Den Haag (The Hague to uitlanders)....Janet Abu-Lughod won the Distinguished Scholarship Award, 1990, of the Am Soc Assoc's section on the Political Economy of the World System, for her book Before European Hegemony: The World System A.D. 1259-1350 (Oxford U Pr, 1989)....Harrison White in Russia, 10/90, lecturing on markets. Will Moscow replicate Harvard Soc Rel by forming HCW study groups?....Rebecca Adams (North Carolina-Greensboro) developing a major research interest in followers of the band, The Grateful Dead, as a complement to her longstanding gerontological interests. Do the 2 intersect?....Louis Althusser died in Paris at 72, 10/90. Originally known for his didactic Marxist sociology, he lost reputation in 1980 after he murdered his wife (sociologist Helene Rytmann).

SAYONARA?

I've had absolutely no takers to my offer to organize a network session at the International Inst. of Sociology conference in Japan, June 91. Possibly because lots of folks – like me – are going to the European Social Network conf. in Paris, 20-22 June 91. If anybody wants to organize a Japanese session, please contact me immediately. Otherwise, I'll cancel with the IIS.

SHORT SCHTICKS

Suggested Bumper Sticker: Real network analysts do it with ties and bonds. Contributed very late at an Oxford pub, 7/90.

Actual Kinship-Oriented T-shirt (seen in L.A.): "Bo Knows Your Sister".

The 1st Structuralist President?: Bulgaria's new President, Zhelyu Zhelev, earned his Ph.D. in 1988, with the thesis, "A relational theory of personality." Zhelev has been the leader of the anti-Communist United Democratic Front.

Visitors may find it useful to know that Western-made cares can only be officially repaired in Bulgaria at the garage of the nation's former Security and Protection Dept. (Sofia News 19-25 July 90)

Gianfranco Ferre after-shave ($30/bottle) comes from the Via Gramsci, in Cormano Italy.

Never Been the Same since Harrison Left: A cardiologist about to be appointed to Harvard Medical School in 1986 was found to have published 129 fraudulent papers, some in the highest-status medical journals. Investigators found an average of 12 errors/paper: some people were described as being both alive & dead, time spans varied between paragraphs. Investigators concluded that the errors were originally overlooked because the papers were "incredibly long and boring." (Toronto Globe & Mail, 18 Oct 1990)

Post-Network Analysis? "You know, 1 of the things I'm looking forward to most about dying? I won't have to talk about relationships anymore." ('Blaine' in Carrie Fischer's novel, Surrender the Pink, 1990).

A nifty idea? I caught a classicist (name unknown) on a Toronto educational radio station suggested we construct a kinship model of all of the divisions of biblical Israel – based on the prominence & social distance of the wives & concubines of Jacob.

If You Can't Bound a Community Network, Can it Exist? Some Chinese students coming to the Univ of Toronto (including at least 1 sociologist) initially get nervous. "There is no wall around the campus. Where is the main gate? Where are we safe?" they ask. From the university's International Insights, Fall 90.e

In Case You Were Doubting Katie Faust: "Ramsay Theory: The brilliant mathematician Frank Plumpton Ramsay proved that complete disorder is an impossibility. Every large set of numbers, points or objects necessarily contains a highly regular pattern." For more, see Scientific American, 7/90, pp. 112-117.

Networks are the New Athletic Supporters: "The wives are ... very much the critical support system of the hockey club." (Coach Mike Keenan, Chicago Blackhawks, NY Times, 8 May 90)

Sounds Like a Hockey Team: "The players in the Guarneri (string quartet) have learned to be very tough with one another but to back off when it gets too personal. They can shout about the music but never talk about one another. They'll say something's too loud, but not call it a function of someone's personality. They understand that getting close can sometimes endanger a relationship." (Documentary filmmaker Allan Miller, NY Times, 19 Sept 89)

Perhaps They should Play Hockey? A convicted prisoner "not suffering from any bona fide mental disorder can still have poor mental health – the offender serving his (sic) sentence in the community, without financial resources, with little employable skills, lacking an emotional support system & generally dissatisfied with life." (Correctional Service Canada Task Force on Mental Health, Toronto Globe & Mail, 31 May 90)

Perhaps They should Marry Hockey Players? Impact Training Associates runs free workshops, "Who Calms the Bride," for brides with "pre-alter anxiety." They teach techniques for coping with tensions that might exist among relatives & attendants. (Los Angeles Times 7 Oct 90).

I wanted to say something cutely cynical about this, but the quote is just obscene, when I read it the night before the scheduled US-Iraqi war. It took a while for (George Bush) to market his ingratiating Presidential personality. He deals with allies & opponents on a personal basis, which produces results slowly. "Inside the Beltway, there's no substitute for personal relations," argues Robert Teeter, Bush's pollster. "That means he's been able to get thru a number of fights & not have them last."

But You Can Still Make $$s Thru Networks: "It became obvious very quickly that business analysis was the study of formal organizations & social networks. Markets looked to me more & more like organization fields. It was obvious to me that many of the most egregious strategic errors made by corporations, & an impressive number

of their managerial problems, were due to their ignorance of sociology." (Kenneth Donow, Public Service Satellite Consortium, Amer Soc Assoc Footnotes, 4/90)

The Biggest Revolution – Economists Recognize Networks: A recent World Bank report on Africa argued that "informal economies," not state-controlled, are the "seedbed for entrepreneurship, not the hotbed for racketeers." (NY Times, 6 Feb 90).

But Pathologists Abandon Networks for the Market: "Forensic pathologists doing post-mortem examinations of bodies found in suspicious circumstances are to compete for business at market rates....Most of this work had been done for the police at little charge by about 45 medical academics as a loss-leader for well- paid non-criminal post-mortems." (The Guardian, UK, 20 July 90)

Chief Node: Toronto media person Peter Herndorf was recently described as "a walking nexus" – the face most likely to turn up at a tribute, theatre opening, board or committee meeting. He's on 24 committees. (Toronto Magazine, 9/90)

EVEN MVPs NEED SOCIAL SUPPORT

"I've got some close friends in Toronto but not on the team. I'm talking close friends as the person to be around when you need someone, when you're depressed or hurt, have family problems. I think a close friend is when you're sleeping, they wake you up and you still feel like you want to talk to them. That's good friends." George Bell, star left fielder for the Toronto Blue Jays (Steve Milton, "Hard Man, No Apologies," Blue Jays Scorebook 14, Sept. 13, 1990, p. 198). (Note to unAmericans: "MVP" means "Most Valuable Player," which George was voted a few years ago.)

COSTS OF COMMUNITY LIBERATED

In the US & Japan, theatres, restaurants, etc. are increasingly asking patrons to turn off their portable cellular telephones. One San Francisco restaurant has created a separate section for cellular phone users, just as there are separate smoking sections. 18 Florida theatres have banned their use: "Let's face, you're in the middle of a tense love scene and someone's phone ring, and a guy says, 'Hi, sweetheart. How're you doing?' We feel that it's a disturbing effect to the patrons," says John Wray, manager of the Wometco chain. (Toronto Star, 17 Sept 90)

USEFUL WRITING TOOLS

- (1) Jim Dickinson (Soc, Rider) has a form letter. "Thank you for your request for a copy of my paper.... At present I am working on a new & improved version. A copy will be sent to you: ___immediately; ___as soon as possible; ___in the near future; ___in the distant future."
- (2) "An American visitor once approached James Joyce in Paris, saying he wanted the kiss the hand that had written Ulysses. 'Please yourself,' replied the novelist, 'but remember it's done a lot of other things besides." (Private Eye, 6 July 90)
- (3) Susan Sim & I have produced a newer version (1.3) of the Cites system for using Word Perfect macros to compile a reference list. As all attentive INSNA-niks noticed, the version printed in the last issue of Connections was prepared in 1988. Since then, Susan and I have adapted the macros to Word Perfect 5.0 and 5.1, cleaned up and expanded the tidying-up process (those pesky e.g.'s, et al.), and have added a searcher for non-parenthetical citations within footnotes and endnotes. This improved version is available (on disc and print) for $37.50 from National Collegiate Software, Duke University Press, Durham NC 27708 (dbooks@tucc). I'm working on a further improvement which would add an optional way of removing keywords from annotated reference lists.
- (4) Do I dare
  Disturb the universe?
  In a minute there is time
  For decisions and revisions which a minute will reverse.
  (From T.S. Eliot's The Love Song of J. Alfred Prufrock, & taped to my word processor)

WAS RONALD REAGAN MORE TECHNICALLY PROFICIENT THAN OLIVER NORTH?

At least Ronnie knew how to get on & off his horse. Remember Watergate & the pivotal role e-mail played in getting the goods on Ollie & co? It was their messages on the White House's PROFS (an IBM product) that provided much key evidence. I always have thought that this happened because the Watergaters didn't know about daily tape backups when they deleted their incriminating files. But an e-mail industry source tells me that Ollie & co. were even more ignorant. They thought that when they printed their message, that was the end of it. So, they carefully shredded all their print-out. Meanwhile back on the hard disk...

WHILE WE'RE ON THE SUBJECT OF IBM

Ever notice that IBM insists on using the term "fixed disks" for what the rest of us call "hard disks". My usually informed source says it's because IBM is afraid of an anti-porn backlash. Wonder who invented the term, "floppy disk"?

MORE ON THE PORN BEAT

By newspaper accounts, the most persuasive member of the jury which acquitted rap group 2 Live Crew on obscenity charges was Helena Bailie, a 76-year old retired sociologist from New York City. The Ft. Lauderdale (FL) prosecuting attorney complained:

"She hated me. I could just feel it. She was extremely liberal. She was a sociologist, and I don't like sociologists. They try to reason things out too much." (NY Times, 22 Oct 90)

ANNALS OF MODERN COMMUNICATION (& SOCIAL) NETWORKS

- (1) The phone rang last November. It sounded as a call from Mars. "It's Eric Single," a friend said. "I'm calling from my car phone on the highway – 50 km. away near Guelph." Ten minutes later, another call, sounding as if it, too, came from Mars. "Is it from Eric, again?" I asked my assistant. No, it's from Bulgaria!
- (2) A week later, I read the following Northern Telecom ad: "Heightened communications performance can give you the competitive edge. That's the power of networking."
- (3) "Rumor & samizdat have replaced the Haitian media. Haitians call the rumor mill teledyol, Creole for word of mouth (literally, telephone-mouth). Teledyol is like the children's game of Telephone: after 3 calls, or 300, the news – if there was any – has been completely distorted.... "No one is at home in Port-au-Prince. Phones ring & no one picks up. If you get an answer, you cannot ask for the person you are looking for by name. 'Our friend,' you say or 'the master of the house,' or 'that tall fellow,' or simply 'Monsieur.' A friend of a friend lets you know where to meet someone, & another friend tells you when. No one is sleeping in his own bed. At night, a massive game of musical houses is going on." (Amy Wilentz, New Republic, 19 Feb 90)

RHYMES FOR NETWORKS

Chuck Tilly contributed the following this summer for our 25th anniversary:

- Folks who study human networks
  know just how a fuzzy set works.
  Those who study tensioned backs now
  know just what our living lacks now.
  Hordes of friends and kin to soothe us,
  tell our varied troubles to, thus
  foiling every foul adversary.
  Hugs upon your anniversary.

I think it's great poetry – and thanks to Bev for making it possible.

LETTER FROM OXFORD

I'm beginning to feel like the Truman Capote of INSNA. Here I am (July, 1990) languidly punting on the Thames – at St. Catharine's College, Oxford, studying "personal relationships" officially (and even more fun) unofficially. I'm at the biannual "International Conference on Personal Relationships," run by the International Society for the Study of Personal Relationships (more on them anon). I'm not the only networker around – Rebecca Adams, Graham Allan and Dave Morgan are punting with me; Toni Antonucci & Clyde Mitchell showed up near the end.

P.R. scholars are distinguished from network analysts because they focus on the dyad. In principle, this should mean that they study all sorts of informal ties while we network analysts stand above it all, looking at relational/structural patterns.

In practice, things are more myopic. A large chunk of the papers are devoted to the mating rites of American university students - - a topic of immense importance to my acne-clad self 30 years ago, but boring to my parents then and to me now. Most of the other papers are on "intimacy" – a term dear to my community question heart – but largely restricted here to wife-husband interactions.

Moreover, the American papers – at least half of those presented – glaringly ignore social & historical context. There's little sense in them that the exigencies of life might affect anything in different ways outside of George Bush's USA. Thus intimate ties are studied only for emotional stroking (or help for the ill and elderly). They are never studied for how they help each other to survive economically, deal with the police or bureaucrats, or connect with kin & friends. In this cognitive universe, intimates rarely do power trips or cheat each other; they are rated only in terms of their perceived closeness & emotional disclosure.

All is not lost. Some "intimacy" papers get outside of the household to look at close friends & siblings. A few even realize that there's a world outside with which people have to deal. One of the best was by Meredith Aldritch – an American who's lived in South Africa for much of her adult life. She had nice personal community data, comparing men & women, Xhosa & Anglo South Africans.

Ann Auhagen, from Berlin, had some decent analyses of sibling & friendship ties. She used a novel "double diary" method. Each sib (or friend) kept a record of their interaction, including when they thought about each other. Friends related to each other in terms of emotional support; sibs more in terms of instrumental aid. (The latter differs some from my "Different Strokes" Toronto data – see the Am J Soc, 11/90)

The last session of the conference was on network analysis, organized by Dave Morgan & me. About 50 people showed up. Clyde gave us wisdom on how to study networks, Toni did a cross- cultural review of social relations and well- being, Dave reported on his study of widows & Alzheimer's caregivers, & I gave a version of "Different Strokes" – about the varieties of support & supportive ties. (For me, the most fun was the night before when Clyde told war stories: He was a RAF pilot in WWII, supplying Yugoslav partisans thru night flights into farmers' fields.)

Some personal relationship people don't seem to get along very well. For one thing, social psychologists controlled the conference. No anthropologist or sociologist gave a featured paper. I realized how smart INSNA's been in not giving awards when I watched this group give out some: For every person who was honoured, at least 5 people were hurt that they hadn't been. I also thought (smugly) how we keep trying to be substantively open – at this conference, the Executive Committee ran things like the old Politburo.

Most seriously, there are 2 feuding groups: the (rather formal) ISSPR which ran this conference, and the Iowa/International Network for Personal Relationships – an INSNA-like outfit founded & headed by Steve Duck. Each group has about 300 members – like INSNA. Fortunately, there are serious moves underway to bring the two bodies together (many of us belong to both). Indeed, I've done some merde disturbing to help bring folks together, in the interests of peace, brotherhood, & we've all got better things to do than fight.

This year's conference is being run by the International/Iowa Network. I've had good reports about earlier ones. It's 16-20 May 1991, Normal IL. (These PRs are serious conferees!) For info, contact Susan Sprecher, INPR Conf., Dept of Communic, Illinois St. U, Normal IL 61761.

PARIS & NETWORKS IN JUNE – ACT NOW!

Alexis Ferrand advises that registration for the European network conference, 20-22 June, 1991 is almost filled. (They already have 270 registrants & the Sorbonne rooms have capacity limits.) So, if you want to go (& I sure do), register now. Send 400 francs (200 for students) to Secretariat de la Conference sur l'Analyse des Reseaux Sociaux, LASMAS, IRESCO, 59-61 rue Pouchet, 75849 Paris Cedex 17. Tel: 33-1-40.25.10.03; Fax: 33-1-42.28.95.44

MEETINGS

- February 14-18, 1991. Sunbelt XI: International Sunbelt Social Network Conference.
  Radisson Bay Harbor Inn, Tampa, Florida. Registration through Jeffrey C. Johnson, Institute for Coastal and Marine Resources, East Carolina University, Greenville, NC 27858. (919)757-6220.
- March 13-17, 1991. Society for Applied Anthropology/American Ethnological Society.
  Sheraton Charleston Hotel, Charleston, SC. SfAA Business Office, Box 24083, Oklahoma City, OK 73124. (405)232-4902.
- April 4-7, 1991. Society for Economic Anthropology.
  Bloomington, Indiana. Indiana University Conference Bureau, SEA Meeting, Bloomington, IN 47405.
- May 16-20, 1991. Third International Network Conference on Interpersonal Relatioships (INPR).
  Jumer's Chateau, Normal/Bloomington, Illinois. INPR Conference, Dept of Communication, Illinois State University, Normal IL 61761.
- June 2-6, 1991. International Sociological Association.
  University of Missouri, Columbia, MO. Theme: The Globalization of Agriculture and Food Order. Dept of Rural Sociology, UM-C, Columbia, MO 65211.
- June 20-22, 1991. European Network Conference.
  Sorbonne, Paris. Send 400 francs (200 for students) to Secretariat de la Conference sur l'Analyse des Reseaux Sociaux, LASMAS, IRESCO, 59=61 rue Pouchet, 75849 Paris Cedex 17. Tel: 33-1-40.25.10.03; Fax: 33-1-42.28.95.44
- June 20-22, 1991. International Institute of Sociology.
  Japan. Contact Barry Wellman, Dept of Sociology, University of Toronto, Toronto Canada.
- June 25-28, 1991. The Fourth Australian and Pacific Researchers in Organization Studies International Colloquium.
  Kobe, Japan. Contact: Yoshiaka Ueda, University of Marketing and Distribution Sciences, 3-1 Gakuen-Nishimachi, Nishi-ku, Kobe 651- 21 Japan.
- August 23-27, 1991. American Sociological Association Annual Meeting.
  Cincinnati, Ohio. Contact ASA Executive Office, 1722 N Street NW, Washington, DC 20036.
- November 20-24, 1991. American Anthropological Association Annual Meeting.
  Chicago Marriott Hotel, Chicago, Illinois. Contact AAA Executive Office, 1703 New Hampshire Ave NW, Washington, DC 20009.

ARTICLE

Distribution of Measures of Centrality: Enumerated Distributions of Freeman's Graph Centrality Measures

Keiko Nakao
University of Southern California

Introduction

In many areas of network research, the idea of centrality has been considered as one of the most important and intuitive structural characteristics of a network or network actors. In fact, centrality is one of the concepts that was introduced in early literature of network research (Bavelas 1948, Leavitt 1951). Whether a degree of centralization is described for a network as a characteristic of a system or for network actors as positional measures (e.g., measures of social integration), the application of centrality concepts are numerous and various measures of structural centrality have been developed in different contexts (e.g., Coleman et al. 1966, 1982; Bonacich, 1972; Laumann and Pappi 1976; Laumann, Marsden, and Galaskiewicz 1977; Freeman 1979; Galaskiewicz 1979; Knoke and Laumann 1982; Marsden 1982; Cook, et, al. 1983; Berkowitz, 1988).

Freeman (1979) reviewed various measures of centrality from a graph-theoretic point of view and identified three distinct measures: (l) degree-based centrality, (2) betweenness-based centrality, and (3) closeness-based centrality. These measures were distinct in the sense that Freeman related each measure to a different interpretable characteristic of the network.

For example, the degree-centrality may be interpreted as an index of its communications activity, where the graph relations between nodes are taken to be communication. The degree-centrality value for a graph, then, indicates the extent to which a single point in the graph dominates it in communications.

Likewise, the betweenness-centrality of a point identifies the dependency of the graph on that point for communication; the betweenness-centrality value for a graph indicates the uniqueness of such dependencies within the network. Thus, a high betweenness value points to a potential for the control of a network by a single site or node.

Finally, the closeness-centrality of a point reveals the efficiency with which a message from that source can saturate the network. Applied to a graph, closeness-centrality reveals the extent to which the efficiency of communication within a network depends on the source of the messages.

The conceptual aspect of these measures are very useful in applying them to situations in which the researchers wish to measure specific attributes of centrality. However, the use of these measures is limited probably because of the lack of knowledge about their behavior. For example, these measures might be used inferentially instead of only descriptively if we knew their individual and joint distributions. Currently, although one may describe the degree of centralization of a given network by computing the theoretically appropriate measure of centrality, one cannot be certain how significant the value is.

There are other open issues in the use of the current measures of centrality. First, although there are conceptual differences among the three measures, it is not clear how strongly they will be reflected as differences in the values resulting from calculations. Freeman (1979) notes that the three measures differ in their relative ranking when the values are not extreme. However, not enough is known about the implication of such relative ranking between the measures. What does it imply, in terms of the network structure, to have a large value on one centrality measure while having small values on the others? The exemplars of various graph-theoretic centrality values would be useful in order to make a substantive use of the information obtained. Further research is needed that compares these measures empirically (e.g., Bolland 1986) and theoretically in order understand the behavior of the network being measured.

Secondly, not enough is known about the relationship between the centrality values and the density of a network. In many situations the number of relationships is susceptible to change by various factors, some of which

are due to minor changes in data elicitation. For example, if we construct a dichotomous adjacency matrix from ordinal or interval matrices, the decision to set the threshhold for "1" responses could easily affect the density of the network. We need to know more about the extent to which the centrality values are affected by the number of existing relations in the network.

The objectives of this paper, therefore, are as follows: First, to enumerate the distribution of each measure of graph centrality proposed by Freeman for use in tests of significance, indexed both by the number of nodes and by the number of arcs. This proved to be a computationally difficult task, as the measurement requires exponential time. Secondly, the enumerated distributions of the three centrality measures are compared with one another to reveal any relationships among them. I seek some statistical confirmation that the three measures in fact differed, and differed in an interpretable way. Finally, I examine the effect of network density (i.e., the number of arcs present) on the relationships between the measures.

Method

First I review the three measures of centrality proposed by Freeman (1979) in extending the work of previous researchers such as Shaw (1954) on degree-centrality, Sabidussi (1966) on closeness-centrality, and Anthonisse (1971) and Freeman (1977) on betweenness-centrality.

- Degree-based measure of (relative) point centrality:

$$C'_D(P_k) = \frac{\Sigma\, a(P_i,P_k)}{n-1}$$

where

$a(P_i,P_k) = 1$ if and only if P_i and P_k are connected

otherwise

n = the number of points in the network.

- Betweenness-based measure of (relative) point centrality:

$$C'_B(P_k) = \frac{2\,\Sigma\Sigma\, b_{ij}(P_k)}{n^2-3n+2}$$

where

$$b_{ij}(P_k) = \frac{(\#\text{ geodesics } i \geq k \geq j)}{(\#\text{ geodesics } i \geq j)}$$

- Closeness-based measure of (relative) point centrality:

$$C'_C(P_k) = \frac{n-1}{\Sigma\, d(P_i,P_k)}$$

where

$d(P_i,P_k)$ is the number of edges in the geodesic linking P_i and P_k.

Let

n = number of points (nodes) in a graph
$C'(P_i)$ = one of the (relative) point centralities
$C'(P^*)$ = largest value of $C'(P_i)$ for any point.

Then the following graph-centrality measures follow:

- Degree-based measure of graph centrality

$$C_D = \frac{\Sigma\, [C'_D(p^*)-C'_D(P_i)\,]}{n-2}$$

• Betweenness-based measure of graph centrality

$$C_B = \frac{\Sigma\,[C'_B(p^*) - C'_B(P_i)\,]}{n-1}$$

• Closeness-based measure of graph centrality

$$C_C = \frac{\Sigma\,[C'_C(p^*) - C'_C(P_i)\,]}{(n^2-3n+2)/(2n-3)}$$

The above measures of graph centrality were determined so that: (1) they should index the degree to which the centrality of the most central point exceeds the centrality of all other points, and (2) they should each be expressed as a ratio of that excess to its maximum possible value for a graph containing the observed number of points (Freeman 1979). Thus, the maximum possible graph centrality would be 1.00 in each of the above measures, and could be obtained if and only if the network was "star" or "wheel" shaped, i.e., one point is connected to all other points and no relation exists among any other points.

The enumeration of a distribution of a graph measure depends on the method of counting. The "brute force" approach would be to articulate all possible adjacency matrices. Each arc may be present or absent from a particular graph (there are n choose 2 (i.e., n*(n–1)/2 arcs); thus, the number of graphs to examine when enumerating networks of size n are on the order of:

$$2^{2(n^2-n)/2}$$

which corresponds to the result in Harary (1972). Harary refers to such graphs as labeled graphs.

The problem with this method is two-fold. First, there are a horrendous number of labeled graphs to examine for a network of any size. For example, the enumeration of a network of size five requires the examination of (the centrality of) approximately 1000 graphs, while a network of size ten requires the examination of over 35,000,000,000,000 labeled graphs. Even using a VAX 11/785, I was limited to the enumeration of a network of size seven, which have approximately 2,000,000 labeled graphs (which took about 5 hours of CPU time to compute). In retrospect, a network of size six is a more practical limit; this takes about 2 hours to examine on an IBM XT with an 8087 coprocessor.

A second problem with this method is that it is computationally wasteful, since the number of unique graphs is far less than the total number of graphs. A counting method that articulated only unique graphs (and which then weighted the totals appropriately) would be far less redundant and more efficient. In this approach, the weight given to a particular unique graph would be proportional to the size of the "stabilizer" of the graph – i.e., the set of permutations leaving the structure unchanged. Polya's Enumeration Theorem, described in Harary (1972), describes such a method, although it was not implemented in this current effort.

An alternative method is that of simulation. By sampling from the set of all graphs, the problem of redundancy is sharply reduced and a relatively small number of graphs are needed to produce an accurate distribution. In addition, there is no need to count the number of ways a given graph can be labeled, since the proper weight will naturally be reflected in the frequency of a graph's sampling.

I examined only connected graphs and obtained distributions of the three graph centrality measures by the enumeration method for graphs of size up to seven and by the simulation method for graphs of size 8. The computer program used to calculate the centrality values was written in the "C" language using Microsoft "C" (Version 3.0) on the IBM XT running PC-DOS. The same program without modification was also compiled and run on a VAX 11/785, showing one of the advantages of the "C" language (ready portability). The algorithms for computing centrality were based on Freeman's (1979) formulas. Some routines used in the programs were adapted from the University of California, Irvine series of Social Network programs, UCINET (MacEvoy and Freeman 1987).

Results

1. Probability distributions of measures of centrality.

When determining the level of significance of an obtained graph-centrality value, the question being asked is as follows: Given the number of points, n, in a network, what is the likelihood that the observed centrality value would have occurred by chance? Notice that the number of relations is not specified so that we could examine the

aggregated distributions of centrality measures. Cumulative probability distributions are shown in Table 1 (n=6) and in Table 2 (n=7). The graphical representations of the probability distributions are shown in Figures 1 to 6.

The sparseness of values made it difficult to determine precise significance levels for small size networks. At the 5 % one-tailed, for example, the critical values for the sizes 6 and 7 are shown in Table 3:

Table 3 shows that the closeness-based graph centrality has the largest critical value at 5% of significance level. On the average, betweenness-based graph centrality has the lowest mean value, degree-based second, and closeness-based graph centrality has the highest mean value. (For example, the means are 0.34 for C_D, 0.27 for C_B, and 0.40 for C_C, for n=7.)

2. Effects of Number of Arcs

Recall that these measures of centrality are standardized so as to vary between 0 and 1, where the value 1 indicates the perfectly centralized network based on the asterisk-shaped model. Therefore, the perfectly centralized network would be obtained only when the number of relations equals n–1. As the number of relations increases, the degree of centralization of a network decreases. Thus, there is an upper-bound of a graph centrality value for a given number of relations for a given number of points. (See Table 4)

It is observed in Table 4 that the closeness-based centrality measure has higher upper limits than the other two types of measures for a given number of relations and a given number of nodes.

In the comparison among different measures of centrality, the important parameter to consider is the number of relations (or arcs), since each measure seems to be affected by it differently. I computed the mean of the enumerated distribution for a given number of relations and for a given size of the network. Figures 7 and 8 show the distribution of means of graphs of size 6 and 7 respectively.

Observation of these figures prompts the following statements: is as follows: when the number of relations is small (close to n–1), the betweenness-based measure has the largest value on the average, the closeness-based measure the next, and the degree- based measure the smallest. However, the values of C_B seems to be more susceptible to the change (increase) of the number of relations than the other two measures are. As the number of relations increases, the order changes from $C_B > C_C > C_D$ to $C_C > C_D > C_B$, and this order remains until the graph becomes saturated or becomes a clique. On the average, the closeness-based measure seems to be always greater than the degree-based measure.

3. Correlations

One way to compare measures of centrality is to apply correlation coefficients. For all possible connected graphs enumerated or simulated, the correlation coefficients between a pair of measures of centrality were computed. The result is in Table 5:

These correlations show that the betweenness-based centrality measure behaves somewhat differently from the other two measures, indicated by lower correlations. The degree-based measure and the closeness-based measure are related very closely in a linear manner.

4. Comparison by Order of Magnitude

The above analysis is based on aggregated information, taking the means of distributions. I have also examined each possible graph in terms of the order of magnitude of the three measures. The result is summarized in Table 6.

Table 6 shows the proportion of graphs over all possible graphs which resulted in specified orders of centrality measures. Overall, as we would expect from the previous aggregated observations, the large proportion of graphs produce the largest C_C, C_D second, and the smallest C_B. Another noticeable order is $C_B > C_C > C_D$.

Let me exemplify some graphs of the above two orders, $C_C > C_D > C_B$ and $C_B > C_D > C_C$, which are shown in Figures 9 and 10.

For each graph ratios of different centrality values were computed and the above two examples produced largest ratio values (meaning most extreme exemplars). The observations of the above examples as well as many other exemplars may be summarized as follows: The graphs whose order of centrality values is $C_B > C_C > C_D$ tend to be divided into sub-clusters that are connected to each other by a line or via a focal point. This type of graph may be characterized as decentralized network, in the manner defined in organizational research. On the other hand, the graphs which produces $C_C > C_D > C_B$ would be described as one- cluster network which contains a circle involving a large proportion of points in the network. The exception of the above characterization of network

structure is the graph known as a chain. A chain would produce the order of $C_B > C_C > C_D$; however, we would not call this network decentralized in the same sense of the term used in organizational research.

Finally, I examined some constraints which one centrality measure would place on the other two measures. If a network has a large graph centrality value based on, say, betweenness, does this imply that this network is highly centralized in terms of degree and/or closeness? The answer is, to a certain degree, yes. Table 7 shows the upper-bounds and the lower-bounds of C_D and C_C for given C_B values.

According to Table 7, which is based on our enumerated distributions, for a given the betweenness-based graph centrality value, there are upper-bounds and lower-bounds for the other two centrality values, which are not far different from the given C_B value. For example, a network with C_B of 0.8 cannot produce C_D lower than 0.7 or higher than 0.8, and C_C lower than 0.73 or higher than 0.88.

Summary and Discussion

In this paper, enumerated distributions of the three measures of graph centrality proposed by Freeman (1979) are examined. Based on these enumerations, probability distributions were obtained for use in tests for significance. It was found that distributions of Betweenness-based graph centrality, C_B, were more skewed than that of the closeness-based measure, C_C, and, for the average graph C_C will be the largest value among the three measures.

All measures are affected by the number of relations in the network; however, C_B seems to be more susceptible to the change of the number of relations than the other two are. As the number of relations increases, i.e., as the graph becomes more saturated, its centrality decreased.

The three measures are found to be related to each other. Correlation coefficients showed an extremely high linear association between degree-based and closeness-based graph centrality measures, while the betweenness-based measure seems to behave slightly differently from the other two. The three measures are also found to be related in the sense that for a given centrality value of one kind there are upper- and lower- bounds of values for the other two measures. There is no network which is highly centralized in one measure and yet extremely low in the degree of centralization in other measures.

The order of the three measures which one network would produce may indicate a structural characteristics of the network, namely decentralization. A decentralized network consists of sub- clusters that are connected to each other, and results in a large C_B value, but smaller C_D and C_C values.

Centrality is a fundamental concept in describing the structure and hence behavior of a network. However, more information is needed about measures of centrality and more understanding is needed about their substantive implications in order to enhance the utility of such theoretically and conceptually relevant measures. This paper is a first step toward such direction by examining the distribution of graph centrality measures.

Future research may include the following: 1. Research may be extended to include further use of both simulation and Polya's enumeration theorem, which will allow us to examine larger networks. 2. A comparison of the relative magnitudes of the three measures found in extreme/prototypical cases may be further investigated. This will extend the use of centrality measures to allow a more conceptual and substantive understanding of networks in concern. 3. Finally, we believe that the use of ordinal rather than dichotomous relations would be more informative, and a centrality calculation on such graphs would be valuable.

Acknowledgments

I am grateful to C. Rogers Saxon for assistance in programming and computational procedures.

References Cited

Anthonisse, J.M. The Rush in a Graph, 1971, Amsterdam: Mathematisch Centrum.

Berkowitz, S.D. "Markets and Market-areas: Some Preliminary Formations." In Social Structures: A Network Approach. IN B. Wellman and S.D. Berkowitz, eds., 1988, Cambridge University Press.

Bolland, J.M. "Sorting Out Centrality: An Analysis of the Performance of Four Centrality Measures in Real and Simulated Networks." Paper presented at the Annual Meeting of the Sunbelt Network Conference, 1986, Santa Barbara.

Coleman, J.S., E. Katz, and H. Menzel Medical Innovation: A Diffusion Study, 1966, Indianapolis:Bobbs-Merrill.

Cook, K.S., M.R. Gillmore, and T. Yamagishi "The Distribution of Power in Exchange Networks: Theory and Experimental Results." American Journal of Socioloay, 1983, 89:275-305.

Freeman, L.C. "A Set of Measures of Centrality based on Betweenness," Sociometry, 1977, 40:35-41.

Freeman, L.C. "Centrality in Social Networks: Conceptual Clarification." Social Networks, 1979, 1:215-239.

Galaskiewicz, J. Exchanqe Networks and Community Politics, 1979, Beverly Hills:Sage.

Harary, F. Graph Theory, 1972, Reading, Mass:Addison-Wesley.

Knoke, D. and E.O. Laumann "The Social Organization of National Policy Domains: An Exploration of Some Structural Hypotheses." In Social Structure and Network Analysis, IN P.V. Marsden and N. Lin, eds., 1982, Beverly Hills: Sage.

Laumann, E.O. and F.U. Pappi Networks of Collective Action: A PersPective on community Influence Systems. 1976, NY: Academic.

MacEvoy, B. and L. Freeman UCINET: A Microcomputer Package for Network Analysis. Mathematical Social Science Group, School of Social Sciences, University of California, Irvine.

Marsden, P.V. "Brokerage Behavior in Restricted Exchange Networks." In Social Structure and Network Analysis. P.V. Marsden and Nan Lin, eds., 1982, Beverly Hills:Sage.

Polya, G. "Kombinatorische Anzahlbestimmungen fur Gruppen, Graphen und Chemische Verbindungen," Acta Math, 1937, 68:145-254.

Sabidussi, G. "The Centrality Index of a Graph," Psychometrika, 1966, 31:581-603.

Shaw, M.E. "Group Structure and the Behavior of Individuals in Small Groups," Journal of Psychology, 1954, 38:139-149.

Table 1: Cumulative Probability Distribution (n = 6)

Value	C_D	C_C	C_B
0	0.0055	0.0055	0.0089
0.01	0.0055	0.0055	0.0095
0.02	0.0055	0.0055	0.0134
0.03	0.0055	0.0055	0.0134
0.04	0.0055	0.0055	0.0157
0.05	0.0055	0.0055	0.0225
0.06	0.0055	0.0055	0.0641
0.07	0.0055	0.0055	0.0663
0.08	0.0055	0.0259	0.0867
0.09	0.0055	0.0282	0.0867
0.1	0.0671	0.0282	0.1094
0.11	0.0671	0.0384	0.1094
0.12	0.0671	0.0384	0.1638
0.13	0.0671	0.0384	0.1638
0.14	0.0671	0.0486	0.1927
0.15	0.0671	0.0491	0.1927
0.16	0.0671	0.0559	0.2080
0.17	0.0671	0.0559	0.2080
0.18	0.0671	0.0559	0.2590
0.19	0.0671	0.0626	0.2590
0.2	0.2284	0.1033	0.2855
0.21	0.2284	0.1209	0.2855
0.22	0.2284	0.1345	0.3065
0.23	0.2284	0.1345	0.3065
0.24	0.2284	0.1390	0.3318
0.25	0.2284	0.1424	0.3318
0.26	0.2284	0.1628	0.3454
0.27	0.2284	0.1900	0.3454
0.28	0.2284	0.1968	0.4200
0.29	0.2284	0.2521	0.4200
0.3	0.4784	0.2538	0.4540
0.31	0.4784	0.2946	0.4540
0.32	0.4784	0.2946	0.4991
0.33	0.4784	0.3205	0.4991
0.34	0.4784	0.3341	0.5467
0.35	0.4784	0.3588	0.5467
0.36	0.4784	0.3915	0.5993
0.37	0.4784	0.3915	0.5993
0.38	0.4784	0.4125	0.6537
0.39	0.4784	0.4461	0.6537
0.4	0.7143	0.4461	0.6943
0.41	0.7143	0.4665	0.6943
0.42	0.7143	0.5068	0.7147
0.43	0.7143	0.5204	0.7147
0.44	0.7143	0.5476	0.7571
0.45	0.7143	0.5748	0.7571
0.46	0.7143	0.5748	0.7702
0.47	0.7143	0.6103	0.7702
0.48	0.7143	0.6234	0.8189
0.49	0.7143	0.6307	0.8189
0.5	0.8746	0.6658	0.8441
0.51	0.8746	0.6743	0.8441
0.52	0.8746	0.7151	0.8668
0.53	0.8746	0.7196	0.8668
0.54	0.8746	0.7355	0.8736
0.55	0.8746	0.7627	0.8736
0.56	0.8746	0.7867	0.8906
0.57	0.8746	0.8003	0.8906
0.58	0.8746	0.8003	0.9180
0.59	0.8746	0.8105	0.9180
0.6	0.9556	0.8106	0.9202
0.61	0.9556	0.8174	0.9202
0.62	0.9556	0.8446	0.9338
0.63	0.9556	0.8854	0.9338
0.64	0.9556	0.8950	0.9601
0.65	0.9556	0.8950	0.9601
0.66	0.9556	0.8950	0.9601
0.67	0.9556	0.8950	0.9601
0.68	0.9556	0.9091	0.9669
0.69	0.9556	0.9091	0.9669
0.7	0.9873	0.9227	0.9692
0.71	0.9873	0.9397	0.9692
0.72	0.9873	0.9556	0.9828
0.73	0.9873	0.9601	0.9828
0.74	0.9873	0.9601	0.9896
0.75	0.9873	0.9601	0.9896
0.76	0.9873	0.9601	0.9896
0.77	0.9873	0.9601	0.9896
0.78	0.9873	0.9646	0.9896
0.79	0.9873	0.9805	0.9896
0.8	0.9975	0.9873	0.9930
0.81	0.9975	0.9873	0.9930
0.82	0.9975	0.9873	0.9975
0.83	0.9975	0.9873	0.9975
0.84	0.9975	0.9873	0.9975
0.85	0.9975	0.9873	0.9975
0.86	0.9975	0.9873	0.9975
0.87	0.9975	0.9941	0.9975
0.88	0.9975	0.9975	0.9975
0.89	0.9975	0.9975	0.9975
0.9	0.9998	0.9975	0.9998
0.91	0.9998	0.9975	0.9998
0.92	0.9998	0.9975	0.9998
0.93	0.9998	0.9975	0.9998
0.94	0.9998	0.9998	0.9998
0.95	0.9998	0.9998	0.9998
0.96	0.9998	0.9998	0.9998
0.97	0.9998	0.9998	0.9998
0.98	0.9998	0.9998	0.9998
0.99	0.9998	0.9998	0.9998
1	1.0000	1.0000	1.0000

Table 2: Cumlative Probability Distribution (n = 7)

Value	C_D	C_C	C_B	Value	C_D	C_C	C_B
0	0.0004	0.0004	0.0004	0.5	0.9024	0.7704	0.9202
0.01	0.0004	0.0004	0.0023	0.51	0.9024	0.7809	0.9292
0.02	0.0004	0.0015	0.0044	0.52	0.9024	0.8024	0.9378
0.03	0.0037	0.0015	0.0113	0.53	0.9275	0.8239	0.9481
0.04	0.0037	0.0016	0.0159	0.54	0.9275	0.8388	0.9509
0.05	0.0037	0.0027	0.0233	0.55	0.9275	0.8465	0.9543
0.06	0.0037	0.0079	0.0368	0.56	0.9275	0.8590	0.9565
0.07	0.0108	0.0097	0.0517	0.57	0.9534	0.8666	0.9612
0.08	0.0108	0.0104	0.0740	0.58	0.9534	0.8733	0.9691
0.09	0.0108	0.0104	0.1002	0.59	0.9534	0.8873	0.9722
0.1	0.0303	0.0104	0.1116	0.6	0.9723	0.9065	0.9750
0.11	0.0303	0.0143	0.1445	0.61	0.9723	0.9150	0.9760
0.12	0.0303	0.0394	0.1742	0.62	0.9723	0.9166	0.9808
0.13	0.0628	0.0394	0.2066	0.63	0.9799	0.9206	0.9836
0.14	0.0628	0.0408	0.2269	0.64	0.9799	0.9292	0.9843
0.15	0.0628	0.0445	0.2486	0.65	0.9799	0.9353	0.9859
0.16	0.0628	0.0533	0.2764	0.66	0.9799	0.9443	0.9893
0.17	0.1047	0.0643	0.3045	0.67	0.9912	0.9553	0.9893
0.18	0.1047	0.0865	0.3202	0.68	0.9912	0.9588	0.9913
0.19	0.1047	0.0971	0.3421	0.69	0.9912	0.9595	0.9926
0.2	0.1837	0.1036	0.3765	0.7	0.9926	0.9609	0.9929
0.21	0.1837	0.1152	0.3981	0.71	0.9926	0.9664	0.9945
0.22	0.1837	0.1325	0.4062	0.72	0.9926	0.9760	0.9958
0.23	0.2441	0.1454	0.4311	0.73	0.9977	0.9805	0.9961
0.24	0.2441	0.1588	0.4686	0.74	0.9977	0.9805	0.9968
0.25	0.2441	0.1823	0.4851	0.75	0.9977	0.9812	0.9968
0.26	0.2441	0.2048	0.5287	0.76	0.9977	0.9827	0.9984
0.27	0.3579	0.2294	0.5590	0.77	0.9978	0.9871	0.9984
0.28	0.3579	0.2421	0.5957	0.78	0.9978	0.9926	0.9986
0.29	0.3579	0.2541	0.6191	0.79	0.9978	0.9927	0.9986
0.3	0.4426	0.2855	0.6373	0.8	0.9995	0.9927	0.9987
0.31	0.4426	0.3165	0.6577	0.81	0.9995	0.9928	0.9994
0.32	0.4426	0.3477	0.6867	0.82	0.9995	0.9950	0.9994
0.33	0.5448	0.3835	0.7076	0.83	0.9995	0.9978	0.9997
0.34	0.5448	0.4007	0.7251	0.84	0.9995	0.9978	0.9997
0.35	0.5448	0.4219	0.7445	0.85	0.9995	0.9978	0.9997
0.36	0.5448	0.4390	0.7591	0.86	0.9995	0.9978	0.9997
0.37	0.6506	0.4655	0.7764	0.87	0.9999	0.9988	0.9998
0.38	0.6506	0.5199	0.7836	0.88	0.9999	0.9995	0.9999
0.39	0.6506	0.5400	0.8102	0.89	0.9999	0.9995	0.9999
0.4	0.7124	0.5604	0.8186	0.9	0.9999	0.9995	0.9999
0.41	0.7124	0.5780	0.8365	0.91	0.9999	0.9995	0.9999
0.42	0.7124	0.5998	0.8450	0.92	0.9999	0.9999	0.9999
0.43	0.8080	0.6307	0.8567	0.93	1.0000	0.9999	1.0000
0.44	0.8080	0.6564	0.8681	0.94	1.0000	0.9999	1.0000
0.45	0.8080	0.6722	0.8781	0.95	1.0000	0.9999	1.0000
0.46	0.8080	0.6977	0.8898	0.96	1.0000	1.0000	1.0000
0.47	0.8426	0.7208	0.8962	0.97	1.0000	1.0000	1.0000
0.48	0.8426	0.7412	0.9052	0.98	1.0000	1.0000	1.0000
0.49	0.8426	0.7557	0.9146	0.99	1.0000	1.0000	1.0000
				1	1.0000	1.0000	1.0000

Table 3

Critical Values of Graph Centrality
5 % Significance Level, One-tailed (upper-tail)

	n = 6	n = 7
Degree-based graph centrality	0.60	0.57
Betweenness-based graph centrality	0.64	0.54
Closeness-based graph centrality	0.72	0.67

Table 4

Upper Limits of Graph Centrality Values
by the number of relations (arcs)

# of Arcs	n = 6 C_D	C_C	C_B	n = 7 C_D	C_C	C_B
5	1.00	1.00	1.00			
6	0.90	0.94	0.90	1.00	1.00	1.00
7	0.80	0.88	0.80	0.93	0.96	0.94
8	0.70	0.80	0.70	0.87	0.92	0.87
9	0.60	0.72	0.60	0.80	0.88	0.80
10	0.50	0.64	0.42	0.73	0.83	0.73
11	0.40	0.54	0.40	0.67	0.78	0.63
12	0.30	0.44	0.12	0.60	0.73	0.60
13	0.20	0.30	0.04	0.53	0.67	0.53
14	0.10	0.15	0.01	0.47	0.61	0.36
15	0.00	0.00	0.00	0.40	0.55	0.34
16				0.33	0.47	0.33
17				0.27	0.39	0.11
18				0.20	0.32	0.04
19				0.13	0.21	0.02
20				0.07	0.10	0.00

Table 5

Correlation Coefficients among Graph Centrality Measures

	n=6	n=7	n=8
$r(C_D, C_B)$	0.672	0.608	0.578
$r(C_B, C_C)$	0.702	0.680	0.636
$r(C_D, C_C)$	0.942	0.923	0.934

Table 6

Comparison of Centrality Values (Proportion of # of graphs over all possible graphs)

	n = 4	n = 5	n = 6	n = 7
$C_D=C_B=C_C$	0.211	0.066	0.006	.000
$C_B=C_C>C_D$	0.000	0.077	0.027	0.017
$C_B=C_D>C_C$	0.000	0.000	0.023	0.006
$C_C=C_D>C_B$	0.000	0.000	0.034	0.046
$C_D>C_B=C_C$	0.000	0.000	0.000	0.009
$C_C>C_B=C_D$	0.316	0.090	0.018	0.021
$C_B>C_C=C_D$	0.000	0.000	0.000	0.002
$C_B>C_C>C_D$	0.316	0.249	0.214	0.127
$C_B>C_D>C_C$	0.000	0.000	0.012	0.010
$C_D>C_B>C_C$	0.000	0.000	0.007	0.011
$C_D>C_C>C_B$	0.000	0.097	0.090	0.064
$C_C>C_B>C_D$	0.000	0.083	0.092	0.083
$C_C>C_D>C_B$	0.158	0.338	0.478	0.603

Table 7
Upper-bounds and Lower-bounds of C_D and C_C for given C_B

C_B	C_D		C_C	
	Lower-bound	Upper-bound	Lower-bound	Upper-bound
0.00 - 0.09	0.00	0.40	0.00	0.54
0.10 - 0.19	0.10	0.40	0.08	0.54
0.20 - 0.29	0.20	0.50	0.19	0.63
0.30 - 0.39	0.10	0.60	0.20	0.71
0.40 - 0.49	0.20	0.60	0.33	0.72
0.50 - 0.59	0.30	0.70	0.36	0.79
0.60 - 0.69	0.40	0.70	0.56	0.80
0.70 - 0.79	0.60	0.80	0.68	0.87
0.80 - 0.89	0.70	0.80	0.73	0.88
0.90 - 1.00	0.90	0.90	0.94	0.94

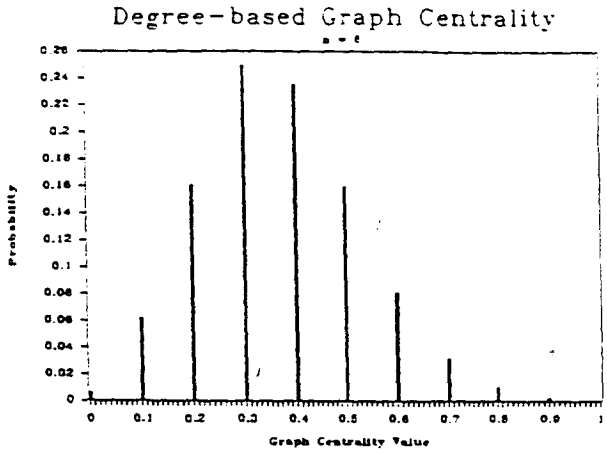


Figure 1. Degree-Based, n=6.

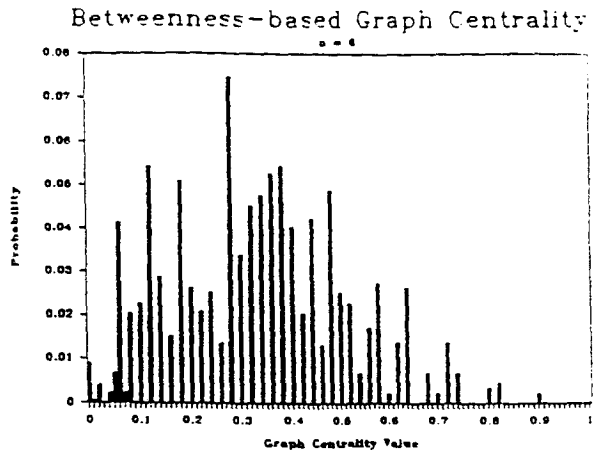


Figure 2. Betweenness-Based, n=6.

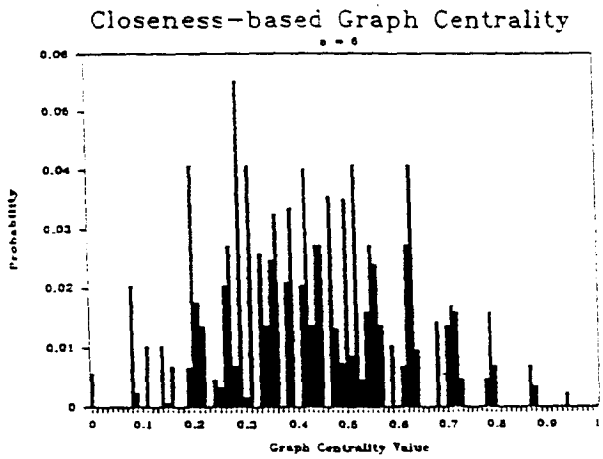


Figure 3. Closeness-Based, n=6.

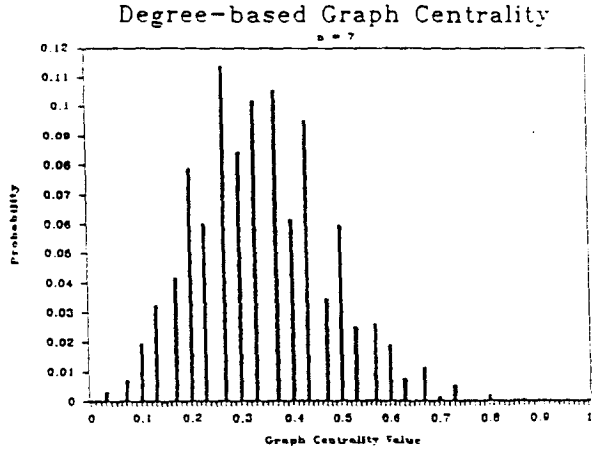


Figure 4. Degree-Based, n=7.

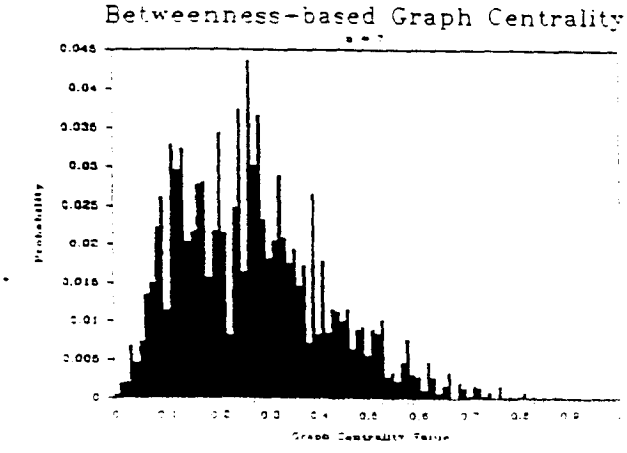


Figure 5. Betweenness-Based, n=7.

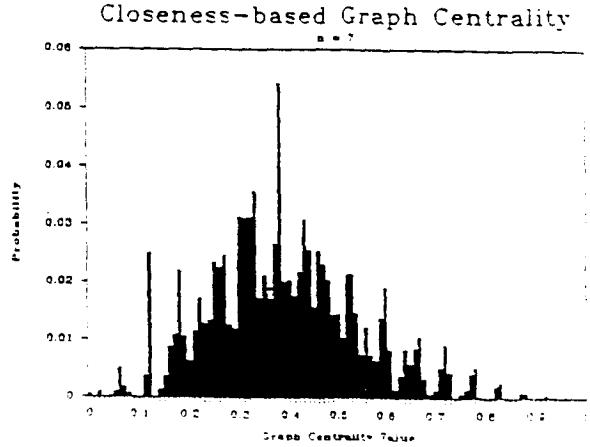


Figure 6. Closeness-Based, n=7.

Figure 7

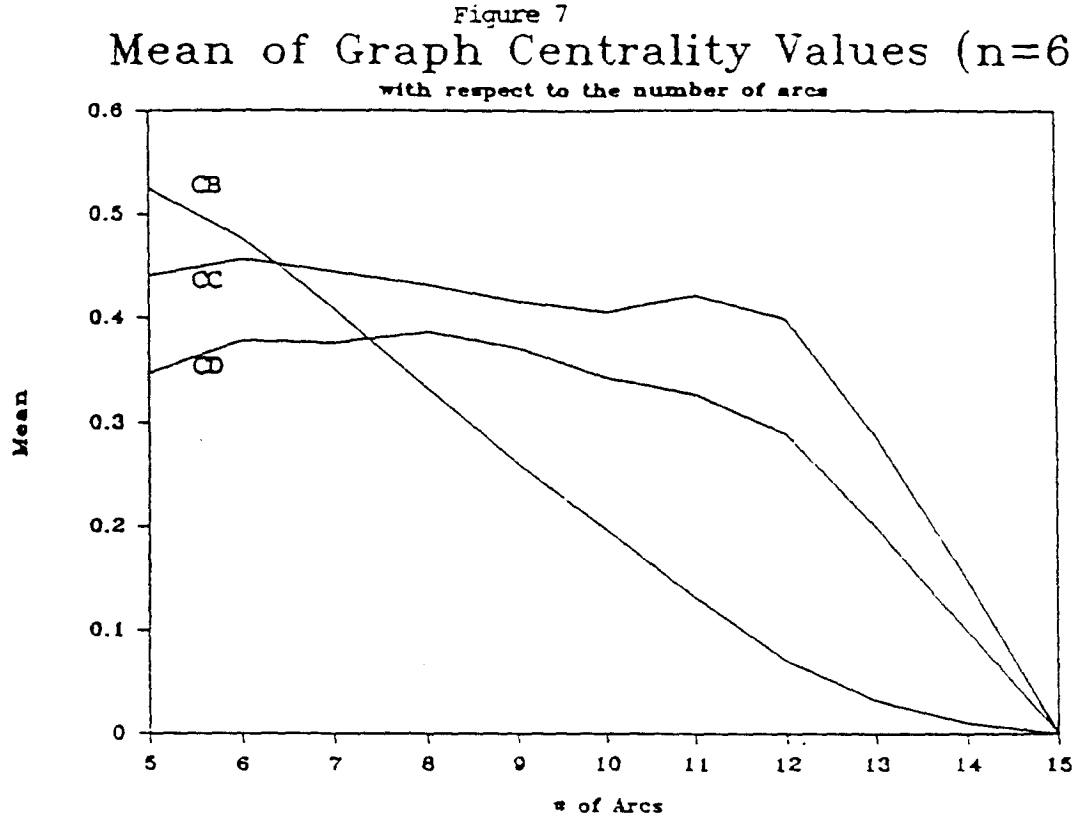
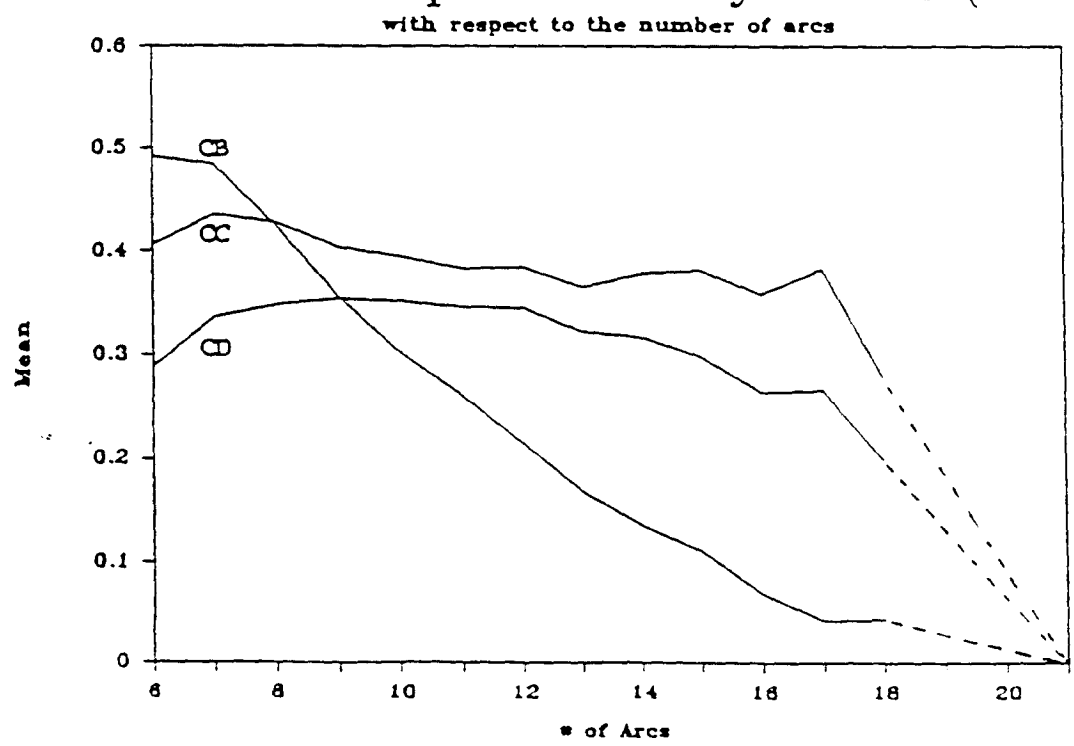
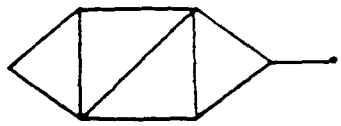


Figure 8

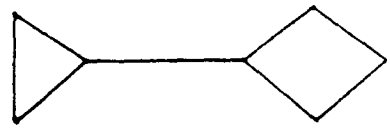




$C_D = 0.267$
$C_B = 0.211$
$C_C = 0.405$

$C_C > C_D > C_B$

Figure 9



$C_D = 0.167$
$C_B = 0.494$
$C_C = 0.419$

$C_B > C_C > C_D$

Figure 10

ABSTRACTS:

Books

Allen, Katherine R. (1989). Single Women/Family Ties: Life Histories of Older Women. Newbury Park, CA: Sage. (149 pp., $14.95).

This book focuses on the lifelong family ties of thirty working- class women, fifteen ever-single and child-free, and fifteen widowed mothers who had "a traditional family life course." All were born between 1906 and 1915. The author is interested primarily in the family ties of the ever-single women who, because they do not fit into the family life cycle model based on marriage and reproduction, have been ignored in research on the family. The single women are described as "family keepers," although it is not clear that they were better keepers than their siblings. In many cases the relationships between the women and their parents appear to be reciprocal.

Archer, Margaret S. (1988). Culture and Agency: The Place of Culture in Social Theory. New York: Cambridge University Press. (368 pp.).

Margaret Archer provides an analysis of the nature and stringency of cultural constraints and the conditions and degrees of cultural freedom. She offers a radical new explanation of the tension between them and suggests that the "problems of culture and agency" directly parallels the "problem of structure and agency," and that both problems can be solved by using the same analytical framework, paving the way toward theoretical unification of the structural and cultural fields.

Barker, Jonathan. (1990). Rural Communities Under Stress: Peasant Farmers and the State in Africa. New York: Cambridge University Press. (232 pp., £8.95).

This work examines the forces and pressures affecting peasant farming communities in sub-Saharan Africa by drawing on case studies by anthropologists, political scientists, sociologists, and economists working in Senegal, Tanzania, Mozambique, Ghana, Kenya, and Uganda. This book critically assesses the major arguments of international organizations and influential academics about the nature of Africa's rural crisis. It builds upon a critique of Marxist ideas of 'articulation of modes of production' and 'primary production squeeze' to discuss the kinds of political alliances that peasant farmers make under the pressure of international debt, urban bias, and political factionalism.

Bechtel, William, & Abrahamsen, Adele. (1991). Connectionism and the Mind. New York: Basil Blackwell. (272 pp., $9.95).

This book provides an introduction to a newly emerging approach to understanding the mind, and includes detailed exposition of several of the actual simulations connectionists have developed. In addition, this book addresses the implications of connectionism for theories of the mind, and examines the relation of connectionist models to philosophical accounts of propositional attitudes, and to a variety of other inquiries in cognitive psychology, linguistics, developmental psychology, artificial intelligence and neuroscience.

Berthelot, Jean-Michel.(1990). L'Intelligence Du Social.Presses Universitaires de France. (240 pp.)

La these de ce livre est que, contrairement a l'illusion positiviste, toute connaissance implique une intelligence de son objet, une aptitude a lui donner gence du social est plurielle : disciplines, approches, methodes, paradigmes... rien ne s'y conjuge au singulier.

Blumin, Stuart M., (1989) The Emergence of the Middle Class: Social Experience in the American City, 1760-1990. Cambridge University Press: Cambridge, MA. (434 pp., $49.50, cloth; $14.95, paper).

Blumin holds that the true middle class, a class with a common ideology and common style of life, developed in the Jacksonian era when the gap in income between manual and nonmanual labor steadily widened. Blumin shows that the working class was becoming increasingly isolated from the middle class due to new forms of residential segregation, the segregation of the workplace into manual and nonmanual spheres, and the tendency of volun-

tary associations to form along class lines. Blumin asserts that the middle class had a more distinct beliefs and life-style than it has currently and backs up his argument with an array of archival evidence such as census data, credit reports, diaries, almanacs, and "how-to" books for aspiring artisans.

Bottomore, Tom and Robert J. Brym. (eds.) (1989). The Capitalist Class: An International Study. New York: New York University Press. (269 pp.).

This is a collection of essays concerning the persistence of an economically dominant class, a capitalist class transformed with broad changes in the capitalist system, and the formation of the interventionalist state. The contributors describe the political economy of the capitalist class through a historical analyses of accumulation, class formation and class politics.

Boyer, Pascal. (1990). Tradition as Truth and Communication: A Cognitive Description of Traditional Discourse. New York: Cambridge University Press. (168 pp., $39.50).

Tradition is a central concept in the social sciences, but it is not commonly treated as problematic. The author insists that social anthropology requires a theory of tradition, its constitution and transmssion. He treats tradition "as a type of interaction which results in the repetition of certain communicative events," and therefore as a form of social action. This book deals particularly with oral communication and focuses on the privileged role of licensed speakers and ritual contexts in which certain aspects of tradition are characteristically transmitted. Drawing on cognitive psychology, the author proposes a set of general hypotheses to be tested by ethnographic field research. He has opened up an important new field for investigation within social anthropology.

Bradley, Raymond Trevor. (1987). Charisma and Social Structure: A Study of Love and Power, Wholeness and Transformation. Paragon House: New York.

This book illustrates the structure and dynamics of charismatic systems though a longitudinal study (1974-77) of fifty-seven urban communes sampled from six US cities. The author discusses the effects of love relationships and power relationships on the commune's social network and stability. The structure of power within the commune is evaluated though network analyses of power relationships between each pair of members in each commune.

Breiger, Ronald L. (ed.) (1989). Social Mobility and Social Structure. New York: Cambridge University Press. (364 pp., $44.50).

Social mobility and social structure are paired concepts neither of which can be adequately defined or analyzed without reference to the other. This volume, however, is the first to compile original work by leading scholars who have all adopted structural approaches to mobility studies. It analyzes concrete social entities such as individuals, jobs, organizations and labor markets with reference to the structures of exchange among them. It examines the prospects for unifying the study of structure and mobility and explores the range of topics which may be effectively studied using such a unified approach.

Bryant , Christopher, & Jary, David. (1990). Giddens' Theory of Structuration: A Critical Appreciation. New York: Routledge. (272 pp., $14.95).

This study provides a full-length critical introduction to the work of Giddens, his career and the development of his theory of structuration. This theory is held to be a crucial development because of its attempts to supersede the dualisms of structure and agency, structure and process, and determinism and voluntarism which have bedeviled the social sciences for so long.

Caudill, Maureen, & Butler, Charles. (1990). Naturally Intelligent Systems. MA: The MIT Press. ($19.95).

The authors provide careful explanations of key concepts, offer a look at the history behind neural networks and describe recent applications of the technology. Neural networks have transformed our attitude toward intelligent machines. A neural network can be teamed with a rule based system to provide a set of relevant rules.

Cleary, M.C. (1989). Peasants, Politicians and Producers:The Organisation of Agriculture in France since 1918. New York: Cambridge University Press. (240 pp., £25.00).

This book examines the social history and historical geography of the most important agricultural pressure groups in France since about 1918. some were practical and pragmatic groups (cooperatives, banks and mutual-aid associations), others were inspired by right or left-wing political movements, yet others were sponsored by the Catholic Church. Whatever their origins, all were important in shaping the evolution of French farming in this

century. By combining an historical approach with consideration of their contemporary role, the book serves to elucidate their role in shaping the countryside of the future.

Cochran, Moncrieff, Larner, Mary, Riley, David, Gunnarsson, Lars, & Henderson, Jr., Charles R. (1990). Extending Families: The Social Networks of Parents and Their Children. New York: cambridge University Press. (320 pp., $49.50).

Extending Families is a ground-breaking study about how personal networks evolve and what roles they play for parents and for the development of children. The volume is an outgrowth of a ten-year cooperative research effort carried out by the authors as part of the Comparative Ecology of Human Development Project at Cornell University. The authors document and compare the roles of network member players, the ways that networks change over time, and the impact of different network resources on developing individuals.

Cohen, Carl I., & Sokolovsky, Jay. (1989). Old Men of the Bowery: Strategies for Survival among the Homeless. New York: Guilford Press. (248 pp., $17.50).

The objective of this book is to refocus attention on older homeless men who, the authors say, are somewhat ignored in recent literature on homelessness. The authors reject previous definitions of Bowery men as disaffiliated or undersocialized, and conclude that old Bowery men have social networks "appropriate to their ecological niche." In line with many previous studies, they find Bowery men only relatively disaffiliated. They have "viable social networks," but compared to age peers in the general community, they manifest "relative isolation and a paucity of intimate contexts."

Cook, Scott and Leigh Binford. (1990). Obliging Need: Rural Petty Industry In Mexican Capitalism. University of Texas Press: Austin, TX. (328 pp., $37.50).

The Oaxaca Valley of Mexico is used as an example of how small- scale capitalism develops from within Mexico's rural economy. The authors show how peasant and artisans organize and operate in different craft industries combining commodity production with household chores, agriculture, wage labor and petty commerce.

Deak, Istvan. (1990). Beyond Nationalism: A Social and Political History of the Habsburg Officer Corps, 1848-1918. Oxford University Press (302 pp., $39.95).

This is a social history of the military elite told though documents of the Vienna's War Archives and memoir samples. Deak traces the careers of two lieutenants though their education and life in the regiment. He describes features of the nineteenth- century Austrian officer corps including, the corps peace-time influence, the transition from family network to regular commission, the corps internationalism, and lack of official religious discrimination.

DeForest, Orrin and .... (1990) Slow Burn. Simon & Schuster: New York. (294 pp., $18.95).

Personal narrative of U. S. CIA actions in Vietnam 1961-1975.

Delamont, Sara. (1989). Knowledgeable Women: Structuralism and the Reproduction of Elites. New York: Routledge. (352 pp., $35.00).

Tracing the history of women's education and the elites it produces, Sara Delamont examines class and gender divisions in the structure and content of education in Britain and the U. S. from 1850 to the present day. Her empirical focus is elite women, a group rarely studied.

Drezon-Tepler, Marcia. (1990). Interest Groups and Political Change in Israel. Albany: SUNY Press. (Paper $16.95).

Challenges the conventional view of Israeli politics as an ideological, strong, party system.

Dykstra, Pearl A.(1990).Next of (Non)Kin: The Importance of Primary Relationships for Older Adults' Well-Being. Amsterdam/Lisse: Swets & Zeitlinger B.V. .

Studies the numbers and types of relationships constituting the primary network, and the properties and supportiveness of the core network and loneliness.

Elster, Jon. (1989). The Cement of Society: A Study of Social Order. Cambridge: Cambridge University Press. (311pp., $44.50, cloth; $15.95, paper).

Elster uses a modified rational choice theory as an explanation for the collective bargaining in Sweden. He argues that rational choice theory in combination with an analysis of social norms, a source of motivation "irreducible to rationality," can explain a such a set of real-world problems. The author breaks down social order into

two elements, predictability and cooperation. Elster identifies and describes five types of cooperation and the obstacles to each type. He asserts that norms have no other content than to be used to predict the likelihood of social reaction as a result of a behavior.

Fink, Carole. (1989). Marc Bloch: A Life in History. New York: Cambridge University Press. ($29.95).

This book is much more than a biography. It is a study of a brilliant historian's intellectual, professional, and political development within the context of the history of France in his lifetime. His career reflects the impact of rising anti-Semitism on a completely assimilated Jew.

Flury, Bernhard.(1988).Common Principal Components and Related Multivariate Methods.New York: Wiley. (pp.xiii + 258).

This monograph describes extensions to more than one covariance matrix of the classical multivariate technique most commonly known as principal component analysis. In classical principal component analysis one represents a single covariance matrix as the product of an orthogonal matrix of eigenvectors, a diagonal matrix of eigenvalues and the transpose of the orthogonal matrix.

Freeman, L.C., D.R. White and A.K. Romney.(1989).Research Methods in Social Network Analysis.Fairfax, Virginia: George Mason University Press.(pp. vii + 530).

This volume of essays is based on a conference sponsored by the Research Program in Social Network Analysis at the University of California, Irvine, and held at Laguna Beach, California, in 1980. Its aims was to represent the "state of the art" in social network analysis and it contains papers addressing five major research topics in the area of models and methods for social networks.

Gurevich, Arron. (1990). Historical Anthropology of the Middle Ages. (200 pp., £25.00).

This book synthesizes historical, anthropological and semiotic approaches to culture. The author discusses a range of substantive topics including practices of gift exchange in Scandinavia, the deities and heroes of Germanic poetry and the image of the Beyond in the Middle Ages.

Haimson, Leopold, & Tilly, Charles. (1989). Strikers, Wars and Revolutions in an International Perspective. New York: Cambridge University Press. (358 pp., £27.50).

The contributions to this volume are concerned with patterns of continuity and change in industrial labour conflicts in major industrialised countries before, during, and in the immediate aftermath of the First World War. The articles have been conceived as part of a series of efforts to assist the further development of comparative labour history, and in particular the application of quantitative techniques to the analysis of industrial labour conflicts in comparative perspective.

Halperin, Rhoda H. (1990). The Livelihood of Kin: Making Ends Meet "The Kentucky Way." University of Texas Press: Austin, TX. (192 pp., $22.50, cloth; $10.95, paperback).

Halperin explores the way in which rural Appalachians in Kentucky make a living "in between" the urban cash economy and agriculture subsistence economy by doing different kinds of paid and unpaid work and sharing resources by way of extended family networks. "The Kentucky Way," as the Appalachians call it, elicits both economic and social benefits for the regionally based, three generation kinship networks. Multiple occupation livelihood strategies emphasizes the individual's role in the family network as the source of identity. Halperin uses psychiatric case histories to illustrate the damage resulting when individuals leave their networks for wage employment in the cities.

Handleman, Don. (1990). Models and Mirrors. New York: Cambridge University Press. (335 pp.).

In this comparative study of public events, the author investigates rituals as epistemological phenomena in their own right. He argues that any public event - including both ritual and related occasions - must first be comprehended through the logic of its design. This establishes in large measure what that occasion is able to achieve in relation to the world within which it is created and celebrated.

Hayles, N. Katherine. (1990). Chaos Bound: Orderly Disorder in Contemporary Literature and Science. Cornell University Press: Ithaca, NY. ($35.95, cloth; $12.95, paper).

The author analyzes scientific and literary texts with regard to critical theory current to both.

Hechter, Michael. (1987). Principles of Group Solidarity. Berkeley: University of California Press. (219 pp., $28.50, paper $10.95).

Hechter explores the problem of social order or solidarity by linking rational egoism at the individual level of analysis with the sociological level of analysis. Solidarity is measured by the degree to which members comply to corporate obligation with out benefit of individual compensation. Solidary is produced by the extent of corporate obligations and the capacity of control a group has over its members. Solidarity , in terms of roll-call votes, is examined in American and cross-national tests of the relationship between legislators' dependence on their political parties and party solidarity. Later chapters deal with control processes. Hechter believes the effectiveness and efficiency of detecting deviance and sanctioning deviants is the central process in the integration of intentional communities. Hechter concludes with observations on how the theory of solidarity might be applied to markets, families, social classes and national societies.

Howell, Nancy. (1990). Surviving Fieldwork. Washington: A Special Publication of the American Anthropological Asociation. (217 pp.).

This book is a report, primarily, on the hazards that a random sample of anthropologists have encountered in the field and the consequences of those events. It includes important concerns for the following issues, such as health and safety in fieldwork;the hazards of exposure and animals;the human hazards of fieldwork; injury accidents; parasitic, degenerative and infectious diseases; mental health and illness in the field, and other issues as well.

Jelin, Elizabeth. (1990). Family, Household and Gender Relations in Latin America. Boston: Kegan Paul International. (280 pp., $49.95).

This collection examines research on household and gender relations in Latin America over the last decade and reflects advances made in studies that concern the work and place of women in society. The methods and research findings presented by the authors make an important contribution to the understanding of Latin American society and provide new and valuable insights into the relationship between the family and the wider institutional context, the links between the social processes of production and reproduction, and the mutual determinants of private and public domains.

Jennings, Francis. (1990). The Ambiguous Iroquois Empire. New York: W.W. Norton. ($16.95).

The author believes that the standard view of the Iroquois confederation, which sees it as a powerful imperial entity that dominated what is now the northeastern United States, is an inaccurate oversimplification. He argues that the crucial fact concerning the Iroquois is the "covenant chain" a series of formal agreements with the European colonists that linked the signatories in a mutually beneficial alliance.

Johnson, M.E.,Ed.(1988). Stimulated Annealing (SA) & Optimization: Modern Algorithms with VLSI, Optimal Design and Missile Defense Applications.Columbus, Ohio: American Sciences Press.(pp. 245).

Stimulated annealing has been an explosive interest in the 1980's. One of the papers in this volume is an annotated bibliography containing 292 papers to which can be added more papers on applications.

Jones, Warren H, & Perlman, Daniel (eds.).(1990). Advances in Personal Relationships. London: Jessica Kingsley Publishers. (3 volumes).

Recent research has made it increasingly clear that close personal relationships are the cornerstone of interpersonal behavior and social contact and that such relationships are more than merely common in human experience, they are necessary for survival. Research indicating that the quality of one's intimate relationships predict the frequency, severity, and prognosis of both psychological and medical complaints and also possibly mediate the influence of environmental stressors on adjustment and well-being is a case in point.

Kaye, Lenard W., & Applegate, Jefferey S. (1990). Men as Caregivers to the Elderly: Understanding and Aiding Unrecognized Family Support. MA: Lexington Books. (160 pp., $27.95).

This innovative book examines men as caregivers, and promotes gender-sensitive program planning and policy development for families engaged in elder care.

Kent, Randolph C. (1987). Anatomy of Disaster Relief: The International Network in Action. London: Pinter. (201 pp., £25.00).

The book opens with an attempt to formulate a theory of disasters. The main point is that although "disaster agents" may be either natural or man-made, the disaster itself is a consequence of the vulnerability of a society. The author describes how the international relief network operates. He goes beyond the mere description of the in-

dividual human failings with which we are so familiar; instead, he explains the functioning of the network in terms of its organizational and political determinants.

Kiers, H.A. L.(1989).Three-Way Methods for the Analysis of Qualitative and Quantitative Two-Way Data. Leiden: DSWO Press.(pp. x + 172).

The monograph written by Kiers concerns mainly a specific set of statistical techniques devoted to the processing of series of quantification matrices.

Knoke, David. (1990). Political Networks: The Structural Perspective. Cambridge: Cambridge University Press. (290 pp., $42.50).

The aim of this book is to enhance the appreciation of structural analysis for improving our knowledge of political phenomena at all levels from primary groups to the world system. The author tries to convince readers at the conceptual level of comprehension but to leave to their own discretion how much quantitative depth they wish to acquire from numerous network methodology primers. The network approach to power has much to offer to political researchers.

Leeds-Hurwitz, Wendy. (1989). Communication in Everyday Life. New Jersey: Ablex Publishing Corporation. 224 pp., $27.50).

This book focuses on the behavior that constitutes human communication as it occurs in everyday life situations. It develops a model of communication as a process in which people participate, rather than as a message sent between them. The author brings together the most important conceptions of communication viewed as a social process in such a way as to be useful to non-specialists as well as communications students or professionals.

Levinson, Risha W. 1988). Information and Referral Networks: doorways to Human Services. New York: Springer. (227 pp., $25.95).

This book examines the rapidly expanding field of information and referral (I&R) services, which emerged between 1960 and 1985. It is a comprehensive, state-of-the-art report. The author acknowledges historical antecedents of the social service and describes the nature and organizational context of I&R, the impact of information technology on it, and the staffing and training needed to assure quality, professional services.

Magnusson, Lena. (1990). Markovkedjemodell som metod vid studier av hushallens flyttningar. Publication SB:28 from the National Swedish Institute for Building Research: Gavle. (61 pp.).

Magnusson's report concerns the relationship between residential mobility and the structure of the housing market. This report analyses residential mobility based on vacancies. With each change of residence, a vacancy is transferred. With successive moves, a vacancy chain is created. The Markov chain model is presented as one procedure for tracing the vacancy chain. The model's theoretical base and an example of residential mobility analyses is presented. Also included is a summary of studies from around the world in which the Markov chain model has been applied to analyses of residential mobility. Conditions for the practical applications of the results obtained though the Markov chain model are discussed in relation to housing construction and programs.

Marceau, Jane. (1989). A Family Business?: The Making of an International Business Elite. New York: Cambridge University Press. (259 pp., £27.50 net).

This major new study uses evidence from twelve countries to trace the development of an international business elite in contemporary Europe. Against a background of the general 'internationalization' of business activities and the development of new enterprise structures, the author analyzes the 'micro' strategies (involving marriage, education, beliefs and family networks) developed by both individuals and families to achieve or maintain high positions in the newly emerging business world. The focus is much broader than in most 'elite' studies and the author examines not only the social and educational origins of the managerial high-fliers studied, but also patterns of career development.

Mizruchi, Mark S.,and Michael Schwartz, Ed.(1987). Intercorporate Relations. The Structural Analysis of Business.New York: Academic Press.($39.50).

This volume constitutes the first compilation of work by leading international scholars who have adopted a structural approach to the study of business, taking relations among companies as the fundamental unit of analysis, and examining the behavior of individual firms within this framework.

Mogey, John. (ed.) (1990). Aiding and Aging: The Coming Crisis in Support for the Elderly by Kin and State. New York:Greenwood Press. (290 pp.).

The principal structural insight in this book is the desirability of the independence of household choice from political and economic controls. This is in view of the importance of the household as the place where personalities can create a private lifestyle. These lifestyles depend on social boundaries that protect individual selves from direct scrutiny by politicians. Social support, aiding, caring, or helping varies by the density of network contacts. Network density is followed by acts of support between persons in an open community. The quality of a social relationship has primacy in determining the action that follows.

Mole, R.H. (1989). Basic Graph and Network Algorithms. London: Butterworths. (169 pp., $19.95).

This book is a computer-integrated introductory text on graph and network algorithms at the advanced undergraduate level. No previous knowledge of graph or network theory is required although some previous exposure to structured programming is essential. The key feature of this text is the integrated description of a select number of fundamental graph and network algorithms and the computer coding of these algorithms in the BASIC language. The reader can purchase disks from the publisher with all the programs contained in the text.

Paulson, William R. (1990). The Noise of Culture: Literary Texts in a World of Information. Cornell University Press: Ithaca, NY. ($24.95).

The author explores the close relationship between literature and information theory.

Patterson, Graeme. (1990). History and Communications: Harold Innis, Marshall McLuhan, the Interpretation of History. Toronto: University of Toronto Press. (251 pp., $16.95).

This provocative essay uses as a starting place the work of two towering figures in Canadian intellectual history Harold Innis and Marshall McLuhan. The author questions conventional understanding of the thought of Innis and McLuhan and the relationship between their works. He offers new ways of understanding the work of two key thinkers, and new ways to think about communications theory, Canadian history, historiography, and history as discipline.

Richards, Lyn. (1990). Nobody's Home: Dreams and Realities in a New Suburb. Australia: Oxford University Press. ($24.95).

This community study analyses current family life in a suburban housing estate, so looks at the family in its social context rather than at family dynamics. Nobody's Home sheds light on issues such as the nuclear family, home ownership, social networks,and community. Above all, it is a study of women, showing how their lives are tied to the life cycle which shapes their opportunities and resources.

Rosenau, James N. (1990). Turbulence in World Politics. New Jersey: Princeton University Press. (504 pp., $14.50).

Turbulence in World Politics probes the impact of the microelectronic revolution, the post-industrial order, and the many other fundamental political, economic, and social changes under way since World War II. The book depicts a bifurcation of global politics in which an autonomous multi-centric world has emerged as a competitor of the long established state-centric world. A central theme is that the analytic skills of people everywhere are expanding and thereby altering the context in which international processes unfold. At the micro level, long- standing structures of authority has been weakened, collectivities fragment, subgoups become more powerful at the expense of states and governments, national localities are redirected.

Rossi, Alice, & Rossi, Peter H. (1990). Of Human Bonding: Parent-child Relations Across the Life Course. New York: Aldine. (542 pp.)

This life-course analysis of family development focuses on the social dynamics among family members. It features parent-child relationships in a larger context, by examining the help exchange between kin and nonkin and the intergenerational transmission of family characteristics. Kinship has been approached from biological, psychological, and social/cultural perspectives.

Rudel, Thomas K. (1989). Situations and Strategies in American Land-Use Planning. New York: Cambridge University Press. (166 pp. $37.50).

The author analyzes the importance of social groups and networks in influencing the development of land use plans. Rudel uses Molotch's growth-machine model to demonstrate how business coalitions within Connecticut

communities relate differently to different parts of the developing metropolitan region. Rudel focuses on four areas of different growth rates using a variety of data gathering techniques.

Salaff, Janet. (1989). State and Family in Singapore: Restructuring a Developing Society. Ithaca: Cornell University Press. (301 pp.).

The secure families held solid jobs in both the core and peripheral sectors of the economy during Singapore's early stages of industrialism. The men in the "secure" families had been prepared by their blue-collar parents for their present careers, and most had at least some secondary education. Although they still received help from well-placed kin, often in getting their first job, the men's lives were influenced but not controlled by their kinsmen. A network of schoolmates and friends provided valuable sources of job, marriage, and other information. Once married, these couples enjoyed some freedom from kinship pressure. Women in these families worked out of choice rather than necessity. The financial security of the couples strengthened their marital bonds and allowed most couples to make joint, not segregated, decisions. They also had income sufficient to take advantage of investment opportunities offered by the Singapore government, and some bought three- for four-room flats. They not only taught their children to value education and made the highest demands on them to study but also stressed that they 'think for themselves' and adapt to a shifting world.

Sassen, Saskia. (1988). The Mobility of Labor and Capital: A Study in International Investment and Labor Flow. New York: Cambridge University Press. (240 pp., $14.95).

The author's innovative central hypothesis is that migration is a product of major processes in the reorganization of the world- economy. A new understanding of the processes of international migration has been offered by examining an unexplored dimension, the specific conditions under which the internationalization of production contributes to the formation and directionality of labour migration.

Selby, Henry A., Arthur D Murphy, and Stephen A. Lorenzen. (1990). The Mexican Urban Household: Organizing for Self- Defense. University of Texas Press: Austin, TX. (256pp., $27.50).

The authors use qualitative and quantitative data to describe how Mexican families band together to minimize expenses, pool resources and survive their worst economic crisis since the Revolution of 1910. This recounts the privations of "ordinary" people, the limited range of available jobs, the informal economy, and the high cost to families, particularly to women, of the constant struggle to make ends meet.

Shanin, Teodor. (1990). Defining Peasants: Essays Concerning Rural Societies, Expolary economies, and Learning from Them in the Contemporary World. Oxford: Basil Blackwell. (348 pp., £35.00)

The author sets peasant studies within the broad context of development theory and the debates focused on the nature and dynamics of so-called 'developing societies'. The book focuses on the conceptualization of peasantry, aspects of peasant particularity (peasant economy, migration, culture, and political action), methodology, and all the most influential theorists of peasant studies, and includes a suggested agenda of peasant studies in the decade to come.

Singhal, Arvind, and Rogers, Everett M. (1989). India's Information Revolution. CA: Sage Publications, Inc.. ($14.00).

The television revolution in India began bravely in 1975. The authors review the path of the development of a television network up to now. This book offers an informed look at the role of communication in development. It was once thought that a mass- information source like TV could influence development at all levels of society right down to the rice paddy. In the 1980's a new view emerged: uniform mass communication would be superseded by more interactive schemes focused on the individualization of messages in time and space.

Storper, Michael and Richard Walker. (1989). The Capitalist Imperative: Territory, Technology, and Industrial Growth. New York: Basil Blackwell. (279 pp., $49.95, cloth; $19.95, paper).

Storper and Walker how organized groups within the community, capitalist entrepreneurs motivated by profit, stimulated or retarded growth by their selection of business/investment locations. The authors assert that these highly mobile entrepreneurs have little vested interest in the communities they effect. Diverse business strategies create territorial diverse communities based on nature of employment and job relationship. The authors argue against traditional micro level laissez-faire orientation of the central place theories of community formation and growth.

Tarr, Joel A. (1988). Technology and the Rise of the Networked City in Europe and America. Philadelphia: Temple University Press. (339 pp., $34.95).

This is a book about waterworks, sewage systems, street railways, highways, incinerators, gas, electric, and steam power, and telephones. The most important contribution of the book lies in its offering its readers, through international comparisons, clear evidence of choices being made through the urban hierarchies of the United States, England, France, and Germany. It was not technique, but the institutional setting of each nation, that determined the choice among possible methods.

Tilly, Charles. (1990). Coercion, Capital and European States. Cambridge, MA: Basil Blackwell. ($34.95).

Puts to rest the conception of European development as a single unilinear process. Places relations among states at the center of the analysis of state formation.

Wellman, Barry, & Berkowitz, S.D.. (eds.) (1987). Social Structures: A Network Approach. New York: Cambridge University Press. (528 pp., Paper $22.95).

Paperback edition of the book which a reviewer in the Journal of Interdisciplinary History called "a high water mark in the broader field of network analysis and a work that social historians of all persuasions would benefit from reading."

Zukin, Sharon, & DiMaggio, Paul. (eds.) (1990). Structures of Capital: The Social Organization of the Economy. New York: Cambridge University Press. (448 pp., Paper $16.95).

Increasing recognition of the inability of neoclassical economics to explain some aspects of economic life has engendered renewed interest in long neglected insights of classical sociology. Scholars are turning their attention to the study of the roles of culture, political power, and institutions in economic phenomena. This book provides a critically selected overview of the new economic sociology. Sections of the book are devoted to advances in theory, the study of business organization, finance capital, entrepreneurship, and capitalist states. It charts an intellectual agenda for the future development of economic sociology.

ABSTRACTS:

Chapters

Barthelemy, Jean-Pierre. (1989). Social welfare and aggregation procedures: Combinatorial and algorithmic aspects. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 39ff.

Some examples are given: Borda count, Condorcet rule, decisive procedures Kemeny's medians, Dogson procedure. Then a general definition of an aggregation procedure is proposed and a hierarchy of results is illustrated. Finally, a formal theory of medians is proposed and a new possibility result is obtained for social welfare functions.

Boissevain, Jeremy. (1989). Networks. IN Kuper, Adam and Jessica, eds. The Social Science Encyclopedia. London: Routledge. 557ff.

One approach to the problem of relating such abstract concepts as society, institution, and group to the activities and relations of actual people is to view the circles of relatives and friends, groups and institutional complexes as networks. Four significant structural criteria are size, density, centrality, and clustering. Network analysis complements other research techniques, embracing micro and macro levels in one analytical framework. Some problems associated with network analysis: methodological involution; regarding network as an object of study in its own right; attributing contents to relations without empirical verificatin; overstating the explanatory power of the analysis.

Cernigoj-Sadar, Nevenka. (1990). Utilization of informal resources: The functioning of informal social networks in the satisfaction of family needs. IN Boh, Kistja, and Nevenka Cernigoj-Sadar, eds. Testing New Methods for Extending Family Use of Social and Rehabilitation Services. Research Report. Institute for Sociology, Cankarjeva 1, Ljublajana, Slovenia, Yugoslavia..

The purpose of this chapter is to describe the patterns and relationships between giving and receiving help. Questions include whether relationships are unidirectional or whether they are characterized by reciprocity. To who do people turn when they need help, and do they always turn to the same person, or do the persons differ depending upon the situation? Includes an analysis of the kinds of help given and their results.

Dykstra, Pearl A. (1990).Disentangling direct and indirect gender effects on the supportive network. IN Knipscheer, Kees C.P.M., and Toni C. Antonucci, eds. Social Network Research: Substantive Issues and Methodological Questions. Pp. 55-66. Amsterdam: Swets & Zeitlinger.

The effects of gender on nonkin support were examined in combination with the effects of factors that were assumed to be connected with gender, namely childcare responsibilities and relationship standards. Semi-structured interviews were conducted with 320 men and women in two age cohorts: 30 to 40 year olds and 65 to 75 year olds. The numbers of men and women living with a partner and the numbers of men and women without a partner were approximately equal. Using a causal model, it was demonstrated that what appeared overall to be the absence of a gender effect was actually the result of opposite effects: an indirect negative effect of childcare responsibilities, and indirect positive effects of the relationship standards. The results support the suggestion that the operation of opposing gender-related mechanisms accounts for the lack of consistency in the literature in the findings on gender differences in supportive networks.

Cozzens, Margaret B., and N.V.R. Mahadev. (1989). Consecutive one's properties for matrices and graphs including variable diagonal entries. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 75ff.

The general consecutive one's property is applied to matrices with prescribed rows corresponding to sets of elements from a specified set.

Falmagne, Jean-Claude. (1989). Probablistic knowledge spaces: A review. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 95ff.

Outlines the essential ideas of a theory for the efficient assessment of knowledge. The key concept is that of a knowledge space, that is, a basic set Q of questions or problems in a given domain of information, equipped with a distinguised family K of subsets.

Fishburn, Peter C., and Fred S. Roberts. (1989). Uniqueness in finite measurement. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 103ff.

A survey of recent investigations of real sequences (d1,...,dn) which arise in the theory ofmeasurement from considerations of uniqueness for numerical representations of qualitativ relations on finite sets.

Ganter, Bernard, and Rudolf Wille (1989). Conceptual scaling. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 139ff.

Conceptual scaling, in contrast to the usual, uses first of all set-theoretic methods to explore conceptual patterns in empirical data. Ideas are discussed and applied, and then used to introduce and to study the general notion of dependency between attributes.

Hage, Per, and Frank Harary. (1989). Graph Theory. IN Kuper, Adam and Jessica, editors. The Social Science Encyclopedia. London: Routledge. 342-343.

Graphy theory is a branch of topology and the cornerstone of combinatorics. It studies patterns of relationships among pairs of abstract elements. The expanding range of real world applications of graph theory is shown by recent results in anthropology which draw on all adjacent disciplines. The attractions of graphy theory for the practicing social scientist are fourfold: (1) models are iconic and intuitively meaningful; (2) the language is rich and exact; (3) there are techniques for calculation through matrix alebra; (4) it contains theorems which enable one to draw conclusions about certain properties of a structure from knowledge of other properties.

Johnsen, Eugene C. (1989). The micro-macro connection: Exact structure and process. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 169ff.

An analytic method is presented for determining the model of exact micro- and macrostructures and their set of characterizing microprocesses for a given two-valued social relation in a human group.

Klee, Victor. (1989). Sign-patterns and stability. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 203ff.

This is a survey of recent results and problems concerning the relationship between the stability properties of a linear system and the sign-pattern of its coefficients.

Lieberg, Mats. (1987). Care and Social Network in the Neighbourhood Unit. IN Henning, et al. Boende, Omsorg Och Sociala Natverk.

The purpose of this chapter is to describe the Linkoping model, a new model for decentralized social services in an attempt to stimulate the social life in a newly-built housing area in a Swedish municipality through an organization geared to the immediate environment. The project, financed through Swedish funds, deals with the extent to which social services strengthen the social networks in a housing area, contacts between the people living there, and whether the physical design of the area facilitates the existence of a social network. 1ff.

Lundgren, J. Richard. (1989). Food webs, competition graphs, competition-common enemy graphs and niche graphs. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 221ff.

This paper surveys the recent work on competition graphs of food webs and some new graphs related to competition graphs, namely, competition-common-enemy graphs and niche graphs.

Maybee, John S. (1989). Qualitatively stable matrices and convergent matrices. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 245ff.

From the known facts and other related results, it is shown that some of the relationships exist between qualitatively (sign) stable matrices and Hicksian stable matrices.

Monge, Peter R. and Gerald R. Miller. 1989. Communication Networks. IN Kuper, Adam and Jessica, editors. The Social Science Encyclopedia. London: Routledge.

The communication relation is defined as the channels through whcih messages are transmitted by people who comprise a social system. Techniques for observing communication networks are meany and varied. Computer programs for analyzing network data differ considerably in terms of the assumptions they make about the data, objectives of the analysis, computational algorithms, efficiency and cost.

Percus, J.K. (1989). Tree structures in immunology. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 259ff.

Several examples of branching processes are presented, arising from studies in mathematical immunology.

Roberts, Fred S. (1989). Applications of combinatorics and graph theory to the biological and social sciences: Seven fundamental ideas. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag.

The seven ideas of the subtitle are: RNA chains as "words" in a 4-letter alphabet; interval graphs; competition graphs or niche overlap graphs; qualitative stability; balanced signed graphs; social welfare functions; and semiorders. For each idea, some basic results are presented, some recent results are given and some open problems are mentioned.

Roberts, Fred S. (1989). Meaningless statements, matching experiments, and colored digraphs. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 277ff.

After presenting a brief introduction to measurement theory, this paper discusses three questions in measurement theiory and the resulting mathematical problems, dealing with classifying automorphisms of colored digraphs, specifying certain invariant semiorders and indifference graphs, and identifying certain homogeneous order relations.

Sellers, Peter H. (1989). Combinatorial aspects of enzyme kinetics. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 295ff.

Two concepts from chemistry are the starting point of this paper: a reaction network and a mechanism for a reaction. Then a statement made by P.C. Milner in 1964 is put into precise terms and proved: a mechanism for a reaction r in a given network reduces to the superposition of two or more consistently oriented direct mechanisms for r from the same network where direct mechanisms are incapable of such reduction.

Straffin, Philip D., Jr. (1989). Spatial models of power and voting outcomes. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 315ff.

A brief guided tour into the area of spacial models of voting.

Waterman, Michael S. (1989). Some mathematics for DNA restriction mapping. IN Fred S. Roberts, editor. Applications of Combinatorics and Graphy Theory to the Biological and Social Sciences. New York: Springer-Verlag. 337ff.

DNA sequences are finite sequences over a four-letter alphabet. It is shown that the simplest problem relating to constructing a map of the location of enzyme cut sites is in the class of NP complete problems, and a simulated annealing algorithm for restriction mapping is studied. The mapping problem is shown to have an exponentially increasing number of solutions.

ABSTRACTS:

Journal Articles

Abbott, Andrew, & Hrycak, Alexandra. (1990). Measuring resemblance in sequence data: An optimal matching analysis of musicians' careers. American Journal of Sociology, 96, 144-185.

This article introduces a method that measures resemblance between sequences using a simple metric based on the insertions, deletions, and substitutions required to transform one sequence into another. The method, called optimal matching, is widely used in natural science. The article reviews the literature on sequence analysis, then discusses the optimal matching algorithm in some detail. Applying this technique to a data set detailing careers of musicians active in Germany in the 18th century demonstrates the practical steps involved in the application of the technique and develops a set of typical careers that successfully categorize most of the actual careers studied by the authors.

Acock, Alan C., & Hurlbert, Jeanne S. (1990). Social network analysis: A structural perspective for family studies. Journal of Social and Personal Relationships, 7, x-x.

We review research on egocentric networks to show how network analysis provides both a distinctive perspective and a methodology for studying the family. In this perspective, individuals are influenced by social networks but are also active agents in their creation. We also consider network stability, affect structure, segmentation, and overlap. We discuss a number of methodological issues along with work in selected substantive areas. Finally, we discuss the data resources of network analysis and suggest an agenda for family applications of network concepts and methodology.

Alam, M. Shahid. (1989). Anatomy of corruption: An approach to the political economy of underdevelopment. American Journal of Economics and Sociology, 48, 441-456.

An examination and critique of the functionalist literature on corruption in the political administration of Less Developed Countries (LDCs) indicate that its claims are without empirical foundation. Its theses with regard to the political, economic and administrative effects in most LDCs contrast with the facts. No benefits for development from corruption are found; market corruption, for example, does not appear to improve allocative efficiency. The erosion in a government's capacity to formulate and implement policies making for economic growth is an obstacle to economic progress.

Albert, Stephen M., & Moss, Miriam. (1990). Consensus and the domain of personal relations among older adults. Journal of Social and Personal Relationships, 7, 353-369.

A sample of older men and women (n = 225) ranked a set of qualitative attributes of personal relations according to their degree of characterization of interaction with friends and relatives. Following the consensus methodology of Romney et al. (1986), each respondent ranking, or profile, was correlated with every other ranking to see how much respondents 'correlate' with one another, yielding a measure of consensus in thinking about personal relationships. Although degree of consensus did not differ significantly across sex-marital groups, the mental health correlates of consensus differed between men and women, providing partial support for gender-linked differences in interpersonal culture.

Alessio, John C. (1990) A synthesis and formalization of Heiderian balance and social exchange theory. Social Forces, 68, 1267-1285.

Principles of social exchange and Heider's balance theory are combined to arrive at a predictor variable called an "exchange ratio." Two actors and an exchange item are treated as a three- point structure consisting of three dyads. Two dyads connect each person to the exchange item. The third dyad represents the degree of the balance between the two actors as derivable from an examination of the inputs and outcomes vis-a-vis the exchange item. The model is expanded to treat relationships consisting of several exchange items as complex structures made

up of overlapping three-point structures. The resulting "exchange ratio" is a value representing the composite balance or imbalance in the exchanges of a relationship.

Amato, Paul R. (1990). Personality and social network involvement as predictors of helping behavior in everyday life. Social Psychology Quarterly, 53, 31-43.

Three studies of everyday helping behavior are described. Study 1 reveals that most everyday helping occurs between friends, family members, and other familiar individuals; providing assistance to strangers is less common. Furthermore, much of the help given to familiar others is planned, whereas help given to strangers is almost spontaneous. Study 2 describes the construction of an instrument to measure self-reports of helping. A multidimensional scaling analysis reveals three regions on helping: planned formal, planned informal, and spontaneous. Study 3 finds that characteristics of individuals, in general, are related more strongly to planned forms of helping than to spontaneous forms of helping. Social network variables also are found to be better predictors of self-reported helping behavior than are traditional personality variables.

Anderson, Stephen A. (1990). Changes in parental adjustment and communication during the leaving home transition. Journal of Social and Personal Relationships, 7,

Self report measures of personal adjustment, parent-adolescent communication and marital communication were administered, before and after college entrance, to a group of parents whose adolescent left home to reside at college and to a group of parents whose adolescent commuted to college from home. The family stress model's hypothesis of increasing distress and changing communication patterns for parents of departing adolescents relative to parents of commuting adolescents was partially supported. Stress model hypothesis concerning the birth position of the adolescent and the pile-up of other stressors during the launching/college entrance transition also were partially supported. Significant findings with regard to adolescents' sex suggested the need for refinements in existing family stress models.

Arabie, Phipps, Hubert, Lawrence J., & Schleutermann, Sylvia. (1990). Blockmodels from the bond energy approach. Social Networks, 12, 99-126.

This paper considers the use of the Bond Energy approach of McCormick, Schweitzer, and White as an alternative to CONCOR and other methods for producing blockmodels, and to Baker's approach to three-way blockmodels. Results of analyses using artificial data and the Roethlisberger-Dickson Bank Wiring Room data are presented, where algorithms alternative to the one of McCormick et al. (including versions of simulated annealing) are considered.

Arabie, Phipps, & Hubert, Lawrence J. (1990). The bond energy algorithm revisited. IEEE Transactions on Systems, Man and Cybernetics, 20, 268-274.

The applicability of Simulated Annealing (SA) (Kirkpatrick et al. (1983) is studied in the context of the data analysis scheme of the "bond energy algorithm" originally proposed by McCormick et al. (1972) for permuting rows and columns of data matrices into visually interpretable forms. To evaluate the performance of three variations of SA, they were compared to two deterministic, heuristic methods known to perform well for the particular type of data analysis task chosen: (1) the streamlined implementation of the Bond Energy Algorithm (BEA) of Arabie et al. (1988) and Schleutermann (1989) that improves upon the original version of McCormick et al. (1972), and (2) the well-known Lin and Kernighan Algorithm (LK) (1973) for the Traveling Salesman Problem (TSP). Contrary to earlier findings (e.g., DeSoete et al. (1988a, 1988b), a version of simulated annealing was developed that performs well in a time complexity comparable to that of our implementation of Lin and Kernighan's algorithm. From the empirical results, it appears that suitable implementation of a simulated annealing algorithm can outperform good deterministic algorithms in some data analysis applications. For speeding up execution of the SA algorithm, the focus here is on the use of a state transition scheme less randomized than others often suggested in the literature on SA.

Argyle, Michael, Maryanne Martin and Jill Crossland. (1989). Happiness as a function of personality and social encounters. Recent advances in Social Psychology 189-203.

Happiness consists of three related components-frequency of joy, average level of satisfaction and absence of negative feelings. A new 29-item measure, the Oxford Happiness Inventory, is described, which correlated .4-.6 with these components, and .43 with ratings by friends. Social relationships are a major source of all three aspects of happiness; new research is reported, and possible explanations discussed. There are consistent individual differences in happiness. Extraversion correlates .40 or above; a number of alternative explanations are considered. Happy people also have a special cognitive style- they make more internal attributions for positive events, fewer for

negative ones, and ruminate more about the positive ones. Experiments on mood induction are reported. Talking to another person, and thinking alone about positive events, both have strong positive efects on mood. However talking has a much less depressing effect than thinking about negative ones. Developments and prospects for happiness therapy are considered.

Auslander, Gail K., & Litwin, Howard. (1990). Social support networks and formal help seeking: Differences between applicants to social services and a nonapplicant sample. Journal of Gerontology: Social SCIENCES, 45, s112-119.

Measures of social network strength have been shown to be positively correlated with the health and well-being of a range of populations, including older adults. This study compares the network structure and the support available to a group of elderly applicants for public social service assistance with those of a group of elderly persons who had not sought help (also taking into account predisposing characteristics and functional impairment). The applicant group was found to have significantly smaller networks and less affective support, even when controlling for age and physical capacity.

Avery, Roger, Speare, Alden, Jr., & Lawton, Leora. (1989). Social support, disability and independent living of elderly persons in the United States. Journal of Aging Studies, 3, 279-293.

This article examines the effects of the availability of kin and disability on the ability of elderly persons to live alone in the United States. The first part of the article uses a sample of women aged 65 and over from the 1980 census to study the factors associated with both living in group housing and living alone. Disability and absence of a spouse or children are strongly associated with living in group housing, whereas lack of disability and lack of children are strongly associated with living alone. In the second part, data from the Supplement on Aging to the 1984 National Health Interview Survey are used to investigate the source and amount of help received among those with difficulties in performing Activities of Daily Living (ADLs) or Instrumental Activities of Daily Living (IADLs). Those living alone or with nonrelatives are most likely to rely on paid help and this is more likely if they have few living children.

Baker, Wayne. (1990). Market networks and corporate behavior. American Journal of Sociology, 96, 589- 625.

Data on market relations between a large population of corporations and investment banks are used to study the organization-market interface – the pattern of direct market ties between a firm and its banks. Forms of interfaces range from a long-term, exclusive tie (the relationship interface), to many short-lived, episodic ties (the transaction interface), with hybrid forms between the two poles. Contrary to widespread belief, the article finds that strong relationships still exist. Transaction interfaces are rare. Most firms use hybrid interfaces. A firm's interface is conceptualized as the intentional result of its efforts to reduce dependence and exploit power advantages. Observed interfaces are shown to be related systematically to various power-dependence concepts, including resource intensity (number of transactions and dollar amounts raised), criticality (the availability of resource alternatives), power asymmetry between a firm and its main bank, organization size, standardization of exchange, and the use of tandem strategies (director interlocks).

Barbee, Anita P., Gulley, Mary R., & Cunningham, Michael R. (1990). Support seeking in personal relationships. Journal of Social and Personal Relationships, 7, 531-540.

This paper introduces a new model of interactive support seeking and describes a study derived from it. Task vs. relationship type of problem and gender of support seeker were examined for their effect on the selection of same-sex vs. opposite-sex friends to provide social support. Male and female undergraduates were asked to vividly imagine each of two task and two relationship problems and to indicate for each problem the friend to whom they would prefer to talk. Participants were also asked to anticipate the specific interactive coping behaviors that their same- and opposite-sex friends would offer in response to each problem. We found that both males and females preferred to talk to their same-sex friends rather than their opposite-sex friends about both relationship and task problems. Yet males indicated that they would rather talk about task than relationship issues with their male friends and expected the male friends to use more dismiss behaviors in response to a relationship problem. Females expected their female friends to use more solve and support behaviors in response to relationship problems than task problems, and for their male friends to use more dismiss and escape behaviors in response to problems. Directions for future research on interactive support seeking are suggested.

Bates, Robert H. (1990). Capital, kinship, and conflict: The structuring of capital in kinship societies. Canadian Journal of African Studies, 24, 151-164.

This article examines the influence that capital has on the structure of kinship systems at the local level, and how this influences political and ideological aspects of conflict at the level of the nation-state. This examination is done from a capital analytical perspective as opposed to a marxist analysis.

Baxter, Leslie A. (1990). Dialectical contradictions in relationship development. Journal of Social and Personal Relationships, 7,

Three fundamental contradictions were examined in the stages of development identified retrospectively by 106 romantic relationship parties: autonomy-connection, openness-closedness, and predictability-novelty. The contradictions were reported to be present in approximately three-fourths of all identified stages. The openness-closedness contradiction was more likely than the other two contradictions to be reported during the initial stage of development; autonomy-connection and predictability-novelty contradictions were reported with increased frequency in subsequent development stages. Relationship parties reported that they managed the contradictions with six basic types of responses. These response forms were not reported with equal frequency across the contradictions and the stages of development. Current relationship satisfaction did not correlate significantly with the reported presence of the contradictions but did correlate with the ways in which the contradictions were managed.

Bear, Mary. (1990). Social network characteristics and the duration of primary relationships after entry into long-tern care. Journal of Gerontology: Social SCIENCES, 45, s156-162.

This research extends the study of social network analysis into the context of long-term care. Network density, reciprocity, and intensity were hypothesized to explain duration of the ties between frail elderly persons and their networks after they enter a residential care home (RCH), which is a type of long-term care facility. Using longitudinal data from interviews with 81 new, elderly RCH residents and 75 of their closest others, multiple regression analyses showed that the density of frail elderly people's networks has the strongest effect on tie duration. Secondary direct effects were also shown for reciprocity, mental status, being state-financed, White, and having returned home. The intensity of elderly people's ties does not explain tie duration.

Berg, John H., & McQuinn, Ronald D. (1989). Loneliness and aspects of social support networks. Journal of Social and Personal Relationships, 6, 359-372.

The relationship between loneliness and both structural and social behavioral aspects of social support was investigated in a sample of 150 college students. Loneliness was found to be significantly correlated with self-disclosure and network density for both men and women. Significant correlations between loneliness and network size and network multiplexity were found only for men. Together the four different aspects of the support network accounted for 32 percent of the variance in men's loneliness scores and size, multiplexity, density, and self- disclosure each made significant individual contributions. For women, these four variables together accounted for 19 percent of the variance in loneliness and self-disclosure was the only factor to make a significant individual contribution when controlling for the others.

Berman, O., Einav, D., & Handler, G. (1990). The constrained bottleneck problem in networks. Operations Research, 38, 178ff.

We consider problems on networks that are captured by two performance measures. One performance measure is any general cost function of a solution. The paper contains algorithms to solve three problems. In one problem, we minimize the bottleneck subject to a constraint of the generalized cost. In the second problem, we minimize the generalized cost subject to a constraint on the bottleneck. In the third problem, we consider the two criteria simultaneously and find all the Pareto optimum solutions. The major result is that the introduction of the bottleneck measure changes the complexity of the original (general cost) problem by a factor which is at most linear in the number of links.

Bonitz, M. (1990). Journal ranking by different parameters. Part I. Collectivity and Selective Collectivity: Two ranking parameters reflecting the structure of a journal network. Scientometrics, 18, 57-73.

In the course of the study of scientific journal's rank distributions two new parameters are defined reflecting collective properties of journals in a network where the journals are linked to each other through co-usage of user profiles for which they contain relevant papers. The first, Collectivity C is a mere structure parameter whereas Selective Collectivity N.C. uses C of a journal as a weight factor for the number of hits N produced in a retrospective search in a data file. The corresponding rank distributions show besides the expected re- ranking effect consid-

erable deviations from a distribution where ranking is done according to the parameter Selective Journal Productivity N.

Boswell, Terry, & Dixon, William J. (1990). Dependency and rebellion: A cross-national analysis. American Sociological Review, 55, 540-559.

Cross-national research has focused on the domestic causes of rebellion. We investigate whether international dependency incites rebellious political violence directly by mobilizing anti-imperialist and xenophobic movements, and indirectly by increasing relative deprivation and repression of nonviolent protest. Using a four-equation model, we examine the effects of dependency on rebellion independent of domestic causes, and then on three primary domestic determinants - income inequality, economic growth, and regime repressiveness. Our model includes economic dependence and military dependence, the latter measured by arms supply concentration, and controls for the legacy of colonialism. The findings indicate that both forms of dependency promote rebellion through their effects on the domestic class and state structure.

Bradley, Raymond Trevor, & Roberts, Nancy C. (1989). Relational Dynamics of Charismatic Organization: The Complementarity of Love and Power. World Futures, 27, 87-123.

This paper outlines a new theory of structural transformation in charismatic systems by postulating a complementary relationship between love and power. Radical reorganization of social organization, the function of charismatic systems, requires mobilizing and realigning enormous amounts of social energy. The source of this social energy is love. When patterned as communion, love fuses the group into an undifferentiated whole and released the social energy previously locked up as institutionalized structure. Released from structure or form, however, social energy is highly volatile and produces immense pressures towards instability. Counterbalancing the pressure from communion, a strong, collective order of power functions to harness and align the energy, thereby promoting group stability and enhancing the prospects for structural transformation. Data from a national study of sixty urban communal organizations are used to ground key aspects of the theory.

Brenner, Gail F., Norvell, Nancy K., & Limacher Marian. (1989). Supportive and problematic social interactions: A social network analysis. American Journal Community Psychology, 17, 831-836.

Assessed the number of sources of supportive and problematic social interactions in the total social network as well as the number who were the sources of consistently supportive or problematic interactions in a sample of 2nd year medical students. Number of problematic interaction sources was hypothesized to be more predictive of psychological and physical well-being than number of supportive interaction sources. Results showed that total supportive and total problematic interaction sources were equally predictive of life satisfaction. The presence of at least one individual who is a consistent source of problematic interactions was most predictive of lower life satisfaction. Results indicate the importance of studying both supportive and problematic social interactions. They also suggest that interactions with individuals that are consistently problematic may negatively impact on well-being.

Bringle, Robert G., & Boebinger, Karen L. G. (1989). Jealousy and the 'third' person in the love triangle. Journal of Social and Personal Relationships, 7,

This questionnaire study compared aspects of jealousy for 282 young adult respondents who had been in one of three different types of relationships: those in a traditional dating relationship, those who had a relationship with someone who was simultaneously dating someone else, and those who had a relationship with someone who was married. In comparison to traditional dating relationships, respondents from both types of collateral relationships reported less upset if their partner were to engage in jealousy-evoking behavior with the other person. Furthermore, these respondents characterized their relationships as less involved (e.g., less love, commitment, need fulfillment), in comparison to those in traditional dating relationships. There was only limited evidence that the collateral relationships were exploitive or one-sided and this evidence was most prevalent in collateral relationships with a dating partner.

Brossier, Gildas. (1990). Piecewise hierarchical clustering. Journal of Classification, 7, 197-216.

We consider two or more ultrametric distance matrices defined over different, possibly overlapping, subsets. These matrices are merged into one ultrametric matrix defined over the whole set. Necessary and sufficient conditions for uniqueness of the merging are established. When these conditions are not satisfied, consistent algorithms are given.

Burt, Ronald S. (1990). Detecting role equivalence. Social Networks, 12, 83-97.

Hummell and Sodeur (1987) propose a practical solution to detecting role equivalence in social network data. The solution is very fast, equally applicable to symmetric and asymmetric relations, involves no iterative computing, and is now readily available as one of the equivalence options in STRUCTURE. Unfortunately, their paper is only available in German in a book published for their colleagues in Germany. The purpose of this brief note is to give their extremely useful ideas wider exposure.

Campbell, Karen E. (1990) Networks past: A 1939 Bloomington neighborhood. Social Forces, 69, 139-155.

One difficulty with couching questions about community in network terms is the dearth of historical data on networks. This research begins to fill the gap by analyzing data collected in 1939 from residents of a square block in Bloomington, Indiana. Relatively weak relationships were more common than close friendships; residents knew about two-thirds of their neighbors by name, and had about 13 friends on the block; the densities of friendship networks in this neighborhood are similar to those reported in recent studies of unbounded networks. These findings cast some doubt on the presumption that past neighborhood networks were significantly more sociable than contemporary networks.

Campbell, Nigel C.G. (1989). Network analysis of a global capital equipment industry. Advances in International Marketing, 3, 75-91.

There is increasing interest in the globalization of markets and in studies of global industries. In such industries, competitors must assess and monitor their global positions. Their strategies must take account of global market share. While the car and the consumer electronics industries are frequently cited as global markets, less attention is given to capital equipment markets. This paper reports on the analysis of data in one capital equipment industry for 1965-83. The data has enabled the evolution of the market and the suppliers' strategies to be monitored year by year and country by country.

Cheal, David. (1990). Social construction of consumption. International Sociology, 5, 229-317.

It is argued here that a post-Marxist sociology of consumption is desirable for three reasons. Firstly, the liberal theory of 'economy and society' designates consumption as falling on the 'society' side, with material processed belonging to 'the economy'. Problematic consequences of this separation are illustrated with reference to difficulties in the social scientific measurement of poverty. Secondly, the Marxist subsumption of consumption under production neglects the independent influence of distribution and circulation. Finally, Baudrillard's claim for a pure sphere of consumption driven by symbolic media overlooks the contribution that human work, such as shopping, makes to consumption. It is claimed that what is needed now is a constructionist sociology of consumption, that can show how the possibility to consume is an outcome of the everyday practices of social life. A model of the social construction of consumption is proposed, and it is described with special reference to issues of gender division.

Chepko-Sade, B. Diane, Reitz, Karl P., & Sade, Donald Stone. (1989). Sociometrics of macaca mulatta IV: Network analysis of social structure of a pre-fission group. Social Networks, 11, 293-314.

Cluster analysis is applied to the grooming network of a group of free-ranging rhesus monkeys undergoing group fission to examine the social structure of the pre-fission group. A matrix of grooming interactions was compiled from detailed field notes collected over a 6-month period, during the mating season of 1972. The group underwent fission at the beginning of the 1973 mating season. The network analyses, based on an algorithm developed by Mizoguchi and Shimura (1980), and adapted by Karl Reitz for application to social structures (Reitz 1982, 1988) are designed to detect natural hierarchically arranged clusters of individuals within the group. The resulting sociograms provide measures of the cohesiveness of a group as a whole, and show how smaller clusters of close grooming partners are grouped into larger clusters within the group based on less frequent grooming interactions. The results of the network analyses are discussed in light of behavioral and demographic observations of the group's structure over the study period, and are found to compare well with the observer's intuitive understanding of the social structure of the group as described in Chepko-Sade and Sade (1979).

Chino, Naohito. (1990). A generalized inner product model for the analysis of asymmetry. Behaviormetrika, 27, 25- 46.

A least squares procedure called GIPSCAL (a Generalized Inner Product multidimensional SCAling) is proposed which extends Chino's ASYMSCAL into higher dimensions than three. GIPSCAL fits the inner product of two vectors and the area of the parallelogram spanned by these vectors, respectively, for the symmetric and skew-symmetric parts of observed similarity judgments. It is shown that GIPSCAL has a very desirable property

that the geometrical interpretation of asymmetric parts in similarity judgments is reducible to that of the area of the parallelogram spanned by vectors in two dimensions. It is also shown that GIPSCAL permits a social psychological justification for the cause of asymmetry. Relation to distance model is discussed. Examples of application are given to demonstrate the feasibility of the model.

Chino, Naohito, & Nakagawa, Masanori. (1990). A bifurcation model of change in group structure. The Japanese Journal of Experimental Social Psychology, 29, 25-38.

A new typological approach is proposed for the analysis of change in group structure over time. Special force fields are defined operationally to explain changes in the structure, which are estimated by a method called DYNASCAL, given a set of longitudinal dissimilarity judgments such as longitudinal sociograms. These fields are presumably generated by interactions among individuals. For theoretical simplicity, these fields are supposed to be two-dimensional vector fields, which are described by a system of general nonlinear differential equations. Qualitative theories of the dynamical system such as those of singularities, bifurcations, and structural stability of the vector field are shown to be useful for describing qualitative aspects of the force fields. Some difficulties in application of our method to empirical data are indicated and ways of overcoming them are discussed.

Christopher, F. Scott, & Frandsen, Michela. (1989). Strategies of influence in sex and dating. Journal of Social and Personal Relationships, 7,

This study examined the use of premarital sexual influence strategies and how these Strategies were related to the gender and the sexual motivations of single, dating individuals. Participants (n=366) responded to a 48 item survey that asked about how much they had used specific sexual influence techniques on their most recent date. Principal components analysis revealed that four general influence strategies, Antisocial Acts, Emotional and Physical Closeness, Logic and Reason, and Pressure and Manipulation were used in this interaction. Difference tests revealed multivariate and univariate effects for both gender and motivational state. Further, regression analysis indicated that only the strategies of Emotional and Physical Closeness and Logic and Reason were related to actual sexual behavior. The findings suggest that future investigations may want to examine the impact of using different strategies on subsequent relationship development.

Cobas, Jose A. (1990). Family ties, co-ethnic bonds, and ethnic entrepreneurship. Sociological Perspectives, 32, 403-411.

Past studies have corroborated the hypothesis asserting that family ties and co-ethnic bonds are instrumental in the growth of ethnic enterprise. Many of these studies, however, can be challenged on methodological grounds. This article uses data from two samples of Cuban exiles to test the hypothesis in a manner which addresses the challenges. Results offer minor support for the hypothesis. Because our test has dealt with methodological uncertainties that previous research overlooked, the negative nature of our results raises questions about the explanatory power of the family ties/co-ethnic bond hypothesis.

Cobas, Jose A. (1989). Six problems in the sociology of the ethnic economy. Sociological Perspectives, 32, 201- 214.

This article discusses six problems in the area of the sociology of the ethnic economy. The problems are: (1) a skewed view of the import and robustness of ethnic business, (2) an inaccurate view of harmony and exclusive dependence on co-ethnics among ethnic business owners, (3) a contradiction between the stranger hypothesis and the protected market hypothesis, (4) difficulties with the special endowments hypothesis, (5) uncertainties in propositions that attempt to explain business concentration among ethnics, and (6) use of the term middleman minority in a generic sense. The works of five leading U.S. scholars are examined in terms of what they contribute to the solution of these problems.

Cohen, Carl I., & Kochanowicz, Nancy. (1989). Schizophrenia and social network patterns: A survey of black inner-city outpatients. Community Mental Health Journal, 25, 197ff.

An analysis of the social networks of black schizophrenic outpatients living in the inner-city (n = 47) revealed network patterns similar to those found in schizophrenics in other populations, thereby suggesting such patterns may be found cross- culturally. Because of the diminution in network size found among old black schizophrenics, there was a potential for older schizophrenics to overload their remaining linkages, particularly kin. However, with increased age, there was less material dependence on and greater satisfaction with network members. These findings are discussed with respect to the lower readmission rates found among the aging schizophrenics.

Conn, Michael K, & Peterson, Christopher. (1989). Social support: Seek and ye shall find. Journal of Social and Personal Relationships, 6, 345-358.

Studies of social support typically have relegated the recipient of support to a passive role. Little empirical work has looked at an individual's active attempts to garner support from others. Two studies are reported that investigate individual differences in active support seeking. In study one (n=66), the criterion validity of a new scale – dubbed SEEK – was demonstrated. Subjects who reported that they seek support from others in times of need (as measured by SEEK) requested more social support following failure at a laboratory task than did subjects who reported that they do not seek social support. Study two (n=60) examined the relationship between the reported seeking of social support and its perceived availability. As predicted, a positive relationship obtained, suggesting that those who received social support may in part have created this condition. Seeking social support was also positively associated with self-esteem, self-efficacy, and optimistic beliefs about the consequences of seeking support. People who seek social support may be psychologically predisposed to do so. Taken together, these studies imply that investigations of social support should take into account: (a)people's active roles in obtaining support, and (b) the psychological concomitants of support seeking.

Corman, Steven R. (1990). A model of perceived communication in collective networks. Human Communication Research, 16, 582-602.

Often, past research on communication networks has assumed that perceptions of communication are isomorphic with observable communicative behaviors. If this assumption is invalid, as recent evidence suggests, then a description of the structure of participants' perceptions is vital to attempts to link perceptions to observable communication. This study tests a descriptive model of perceptions of communication relationships between members of collectives. These perceptions are hypothesized to be the result of formal structure, collective interests, and individual interests. Linear models based on these ideas were tested in high and low uncertainty collectives, in which they accounted for 38% and 45% of the variance in perceived frequency of communication, respectively. Lack of predicted differences between the two organizations suggests that the structure of perceived communication relationships may be similar across organizations, whereas structure in observable communication may be the result of the way those relationships are activated.

Cornwall, Marie, & Thomas, Darwin L. (1990). Family, religion, and personal communities: Examples from Mormonism. Marriage and Family Review, 15, 229ff.

Personal communities are social worlds created by and centered around individuals or families. This paper considers recent network research to suggest useful points of departure. It then examines the role of personal communities in the family and religion interface using empirical data from Mormon populations. Possible implications for family and religion in the post-modern world are discussed.

Cotton, Jeremiah. (1989). The declining relative economic status of black families. The Review of Black Political Economy, 18, 75-86.

Data are presented on black family income and wealth that run counter to the claims that blacks have made substantial economic progress in recent years. The evidence reveals that not only has there been little in the way of real, sustained advances but that what few gains have been made are starting to erode.

Cottrill, Charlotte A., Rogers, Everett M., & Mills, Tamsy. (1989). Co-citation analysis of the scientific literature of innovation research traditions. Knowledge: Creation, Diffusion, Utilization, 11, 181-208.

This article explores the interrelationships between the interdisciplinary specialties of the diffusion of innovations and technology transfer. Bibliometric data were utilized to examine the formal communication structures of these two specialties and to identify how and to what extent their literatures were related. A modified author co-citation analysis was performed to identify the interrelationships among the works of scholars in these two specialties. Co-citation analysis has been used to study other research fields and to identify with considerable accuracy the membership of research specialties. The article identifies the ideational links or cognitive relations between the works of the diffusion of innovations and the technology transfer scholars. Rip and Courtial (1984) stated that co- citation, like other scientometric techniques, is useful for analyzing developments in science "provided one is prepared to take the content of scientific articles into account" (p.381). Accordingly, highly cited documents are identified as exemplars and used to interpret the data.

Coward, E. Walter, Jr. (1990). Property rights and network order: The case of irrigation works in the Western Himalayas. Human Organization, 49, 78ff.

In the middle of the 19th century, as part of their governance of the Punjab region, the British surveyed existing property rights in Kangra District (now an administrative unit in Himachal Pradesh). The British included in this survey the recording of irrigation rights. This research explores the relationships between these British-recorded irrigation rights and the contemporary organization and operations of a local irrigation network (kuhl). Also explored are two examples of involvement by the state irrigation agency in attempts to improve these local irrigation systems. The research concludes that the irrigation rights documented in the British era provide much of the social glue required for operating and sustaining these small hydraulic works. The irrigation agency's attention to these important irrigation rights influences its success in providing assistance to the traditional kuhls.

Coward, Raymond T., & Dwyer, Jeffery W. (1990) The association of gender, sibling network composition, and patterns of parent care by adult children. Research on Aging, 12, 158- 181.

Based on matched data from the 1982 National Long-Term Care Survey and the National Survey of Informational Caregivers, this article explores the degree to which separating adult children (N = 3,742) by the composition of their sibling network (i.e., only children, single-gender networks, and mixed-gender networks) provides insight into the association between gender and patterns of parent-care. Caregiving participation was calculated as a proportion of the availability of all children of a specific gender. The data reveal that, within all sibling network categories, daughters were more likely than sons to be providing care to an impaired parent; however, the repercussions of being a caregiver were not similarly uniform. Specifically, sons and daughters from only-child and single-gender networks reported a similar number of hours per day spent in parent-care and experienced comparable levels of stress and burden. In contrast, daughters from mixed-gender networks reported significantly higher levels of stress and burden and more hours per day spent caregiving than sons. These findings demonstrate that differentiating children by sibling network type does offer some clarity to our understanding of the complex association between gender and patterns of parent-care.

Cutrona, Carolyn E., Cohen, B. Beth, Igram, Surria. (1990). Contextual determinants of the perceived supportiveness of helping behaviors. Journal of Social and Personal Relationships, 7, 553-562.

We tested the effect of contextual variables on the perceived supportiveness of help-intended behaviors. These variables included relationship closeness, spontaneity of support behavior, degree of correspondence between type of support desired and type obtained and gender of the help-provider. Subjects read descriptions of help-intended interactions, in which the contextual variables were systematically varied, then rated their helpfulness and supportiveness. Results showed significant effects for all contextual variables except gender of the support provider. Results suggest that not only the content of the support-intended behaviors, but the context in which they occur are important determinants of perceived supportiveness.

Delaney, Kevin J. (1989). Power, intercorporate networks, and "strategic bankruptcy." Law and Society Review, 23, 643-666.

Strands of scholarly writing on corporate bankruptcy are scattered across the fields of economics, jurisprudence, political science, and policy analysis. These varied perspectives tend to share common weaknesses that point directly to adding a sociological voice to the debate. An analytical framework that emphasizes power, interorganizational ties, and the embeddedness of organizational action in a larger social structure yields new insights into "strategic bankruptcies," such as the Chapter 11 filing of the Manville Corporation. In turn, this perspective leads to a questioning of some of the basic assumptions concerning the role and operation of bankruptcy law.

Diani, Mario. (1990). The network structure of the Italian ecology movement. Social Science Information, 29, 5-31.

This article approaches the network structure of the ecology movement in Italy using the methodological tools of network analysis. Two basic goals are pursued: (a) providing a systematic description of the complex set of ties linking the different organizations devoted primarily to environmental issues; (b) assessing the relative impact of personal networks, ideological proximity and instrumental opportunities on the shape of the overall interorganizational network.

Divoky, James J., & Hung, Ming S. (1990). Performance of shortest path algorithms in network flow problems. Management Science, 36, 661-673.

It is known that minimum cost flow problems can be solved by successive augmentations along shortest paths. In this paper the issues of implementing shortest path algorithms in this context are examined. Of particular inter-

est is the the dynamic topology that the flow networks exhibit. We develop a network generator capable of emulating such topology. Strategies for exploiting the special structures in such networks are discussed. A set of 9000 test problems is offered, from which a particular strategy/algorithm combination is shown to consistently produce superior results when compared to the other combinations.

Dow, Malcom M., & de Waal, Frans B.M. (1989). Assignment methods for the analysis of network subgroup interactions. Social Networks, 11, 237-255.

In studies of social structure, it is often of interest to focus on the interactions of identified subgroups (e.g. females, lineage members) both with respect to the patterns of behavior within the subgroups and in relation to the complement set of group members. For example, it may be of interest to assess the degree of "compactness" of one or more subgroups based on specific behavioral interactions, or to assess the degree of "isolation" of a given subgroup from the rest of the group. In the case of asymmetric behavioral interaction data (e.g. aggression, grooming), the concept of "isolation" can be decomposed further into the flow of actions directed towards a given subgroup and the flow directed outwards from that subgroup. A variety of quadratic assignment methods are outlined that operationalize these compactness/isolation concepts. More general cubic assignment methods are described that focus on the flow of behavior out of or into a given subgroup in comparison to the flow within it, or in comparison to the flow of behavior within the complement set of members. Sampling distributions for each of the indices described are easily generated using Monte Carlo procedures. All of these assignment methods are illustrated using network interaction data on a group of 14 adult macaque monkeys.

Duck, Steve. (1990). Relationships as unfinished business: Out of the frying pan and into the 1990's. Journal of Social and Personal Relationships, 7, 5-28.

This paper outlines three problems that are foreseen to face us as we enter the 1990's. These are: (1) defining the nature of relationships in the face of discrepancies between the reports of partners and outsiders about the events that occur in the relationship; (2) clarifying the nature of claims that relationships are 'processed'; (3) providing a better understanding of the everyday conduct and routines of relationships, particularly the role of everyday talk. It is argued that longitudinal work and work capturing the experiences and reports of both members of a dyad must solve the first problem at a theoretical level before they can be helpful. It is suggested that, after Billig's (1987) argument that thinking and arguing characterize social behavior, relationships are best conceived phenomenally as unfinished business, just as research usually is. Several suggestions are made about the nature of relationships and, in the course of the paper, some suggestions are made for future work on social and personal relationships, loneliness, social support, children's friendship and process models of relating.

Earley, P. Christopher. (1989). Social loafing and collectivism: A comparison of the United States and the People's Republic of China. Administrative Science Quarterly, 34, 565-581.

The present paper examines the effect of a central cultural value, individualism-collectivism, on social loafing in an organizational setting. A study was conducted to test the hypothesis that collective beliefs influence the incidence of social loafing. Forty-eight managerial trainees each from the United States and the People's Republic of China worked on an in- basket task under conditions of low or high accountability and low or high shared responsibility. The results of regression analyses demonstrate the moderating role of collectivistic beliefs on social loafing, and they are discussed in terms of social responsibility and its relation to performance in work groups.

Easton, Geoffrey, & Araujo, Luis. (1989). The network approach: An articulation. Advances in International Marketing, 3, 97-119

This paper is the end product of attempts to use a Network Approach to structure both research design and the analysis of results in two continuing research projects. The first is the study of the impact of the Morecambe Gasfield on local organizations, which was reported at the Stockholm Conference last year. The second is a new, interdisciplinary project of the topic of how firms compete, sponsored by the U.K. Economic and Social Research Council under their Competitiveness Initiative. In both cases, the interplay between theory and results had indicated areas where the Network Approach might be articulated. This articulation may be thought of as several different processes. In some instances it simply represents an attempt to add more detail to the existing framework. In others, it comprises suggestions for changes. Finally there are arguments for reemphasizing different elements of the approach and perhaps allocating different priorities. However, above all it must be emphasized that the Network Approach has proved enormously fruitful in both theoretical and empirical terms. It may even lay claim to being the emergent dominant paradigm in the area of Organizational Buying Behavior and Organizational Marketing.

Elsas, Donald A. (1990). The Scheiblechner model: A loglinear analysis of social interaction data. Social Networks, 12, 57-82.

In this paper we will study the attempt of Scheiblechner to measure social relations with model parameters that are estimated from directed social interaction frequencies. We will show that his estimation procedure is an application of loglinear analysis. The model is used to analyze data from the field of classical music. Finally it is shown how the package GLIM can be used to realize the Scheiblechner model.

Erickson, Bonnie H., & Nosanchuk, T.A. (1990). How an apolitical association politicizes. Canadian Review of Sociology and Anthropology, 27, 206ff.

Participation in politics rises with participation in voluntary associations, even when these associations are quite apolitical. Theory suggests that members of such groups get politicized through acquaintance diversity, network size, association activity, holding office, helping with administrative work, or discussing politics with fellow members. This paper pioneers a suitable strategy for testing these mechanisms and applies this strategy to an organization irrelevant to politics. Only political discussion mobilizes political participation. If people have friends who talk politics in the association, they do so more themselves. The effect is strongest for peripheral members. Intense involvement in a very apolitical organization is at best irrelevant to political participation and may even divert people from political activity.

Everett, Martin G., Boyd, John P., & Borgatti, Stephen P. (1990). Ego-centered and local roles: A graph theoretic approach. Journal of Mathematical Sociology, 15, 163- 172.

Structural equivalence (Lorrain and White, 1971) and automorphic equivalence (Everett, 1985) are generalized to define neighborhood- and ego-centered equivalences. It is shown that local versions of these equivalences can then be formulated quite naturally. In addition to these natural localizations, a generalized procedure capable of localizing any model of role equivalence is presented. From a theoretical point of view, local roles are recommended by the notion that network influences on ego diminish with distance. From a practical point of view, local roles help find structure in graphs where global equivalences find no two actors equivalent.

Fararo, Thomas J. (1989). The spirit of unification in sociological theory. Sociological Theory, 7, x-x.

This paper discusses examples of integrative metatheoretical and theoretical work undertaken in the spirit of unification. Unification is defined as a recursive process in which the outcome of any one integrative episode provides ideas that may enter into further such episodes. The conceptual materials entering into integration exists at different levels and in distinct contexts. At the metatheoretical level, the examples relate to a number of contexts and issues, including methodological individualism versus holism. At the theoretical level, two examples of the idea of a unification episode are described. In each instance, the ideas entering into the integrative episode are drawn from distinct research programs. It is argued that the spirit of unification, as embodied in theoretical practice along the lives suggested by the examples, can create bridges between disparate theory enterprises so as to help break down particularistic barriers within sociological theory.

Farber, Bernard. (1989). Limiting reciprocity among relatives: Theoretical implications of a serendipitous finding. Sociological Perspectives, 32, 307-330.

This article draws some theoretical implications of the findings of a factor analysis of a scale for indicating the extent to which people embrace an axiom of amity (or prescriptive altruism) in kinship ties. Separate analyses were undertaken of two samples of persons aged sixty or over - one in Budapest, Hungary and the other American. The analysis yielded an unexpected pattern of results, namely, that the axiom of amity and the presupposition of distrust of kin refer to two separate factors. The results suggest that a duality exists in the minds of the interviewees in their conception of kinship reciprocity. The presupposition of distrust of relatives lends itself to two alternative interpretations. In the Hungarian sample, the items with the highest loadings on the Distrust factor dealt with exploitation by kin, and generally the Hungarians reported more agreement than did the United States with statements that kin are exploitive. In the U.S. sample, the items with the highest loadings on the distrust factor refer to unfairness and incommensurability in exchange, and the U.S. sample reported more agreement with statements that exchanges among kin are unfair. One interpretation of these tendencies derives from the conceptualization of kinship as an element in a social system. The second interpretation is derived from the proposition that kinship systems express basic paradigms of exchange prevalent in a society.

Faxen, Karl-Olof, & Thore, Sten. (1990). Retraining in an interdependent system of labor markets: A network analysis. European Journal of Operational Research, 44, 349- 356.

The study of a system of markets for labor of different categories (heterogeneous labor) must be based on the recognition that individual workers may move from one category to another through schooling and retraining. Here such transitions are viewed as a flow through a retraining network. The nodes of the network represent various stages of education and acquired abilities. The directed links represent avenues of possible schooling and retraining. If wages are rigid downwards, failing to fall in the face of a weakening demand for labor, there may be unemployment at one or several nodes of the retraining network. An optimizing principle, inspired by developments in the analysis of spatial networks, is presented which solves for the supply of labor of each category, the number of workers enrolled in the various retraining activities, and the possible unemployment at each node of the network. The Lagrange multiplier of each market balance is the market wage rate, whether the labor market is in equilibrium or not.

Finch, John F., Okun, Morris A., Barrera, Manuel, Jr., Zautra, Alex J., & Reich, John W. (1989). Positive and negative social ties among older adults: Measurement models and the prediction of psychological distress and well-being. American Journal of Community Psychology, 17, 585ff.

The factor structure of positive and negative social ties was studied among 246 older adults who were either recently physically disabled, recently conjugally bereaved, or matched controls. Covariance structure analyses were carried out on a network measure to determine whether positive and negative social ties represent independent domains of social experience, and to assess the degree to which their structure is invariant across groups undergoing major loss transitions. Positive and negative social ties were found to be independent and there was substantial similarity in their factor structure across the three groups. Hierarchical regression analyses revealed that, whereas positive social ties were related to psychological well-being, negative social ties were predictive of both psychological well- being and distress. These results demonstrate the importance of assessing both positive and negative ties in explaining the psychological adjustment of older adults.

Fine, Gary Alan. (1990). Organizational time: Temporal demands and the experience of work in restaurant kitchens. Social Forces, 69, 95-114.

All work is temporally structured. The challenge for sociologists interested in organizational dynamics is to understand these timely sequences. I describe how organizations, because of the interplay of external and structural demands, set the temporal dimensions of work, to which workers must adjust and negotiate. Work patterns lead to behavioral and emotional responses, and, in turn, the lived experiences of workers affect their use of time and their orientation to the organization. Organizational demands affect temporal order, which, in turn, affects how workers experience their work, and to some degree, this experience recursively influences temporal order and organizational efficiency. Temporal constraints contribute to social control, but workers also use time to undercut elements of organizational control, achieving some measure of autonomy by creating temporal niches. To illustrate these connections, I draw upon participant observation and in-depth interviews with cooks in four restaurants. Restaurants are temporal worlds in which external demands influence the use of time by cooks and their lived experience of that time.

Finkel, Steven E., Muller, Edward N., & Opp, Karl-Dieter. (1989). Personal influence, collective rationality, and mass political action. American Political Science Review, 83, x-x.

We propose two models to explain why individuals participate in collective political action - a personal influence model and a collective rationality model. Each model overcomes the free-rider problem posed by conventional rational choice theory and left unresolved in previous research. The models are tested for legal and illegal protest behaviors, using data from a national sample and two samples of protest-prone communities in the Federal Republic of Germany. The personal influence model is supported for both forms of participation, while the collective rationality model is supported for legal protest. We discuss implications of the results for grievance and rational choice theories of collective political action.

Forsgren, Mats. (1989). Foreign acquisitions: Internalization or network interdependencey? Advances in International Marketing, 3, 141-159.

Although the literature about the factors behind a firm's foreign acquisition strategy is rather limited, there seem to be at least three characteristics that are considered most important. These are the firm's degree of internationalization or foreign experience, how R&D-intensive its operations are, and its strategy of diversification/integration. Hypotheses about how these factors influence foreign acquisition strategy are dependent on the underlying theory from which the hypotheses are deduced. In this paper it will be argued that using the internalization

theory, which today seems to be the mainstream within the direct investment theory, gives quite different results compared to using an interorganizational, network-oriented approach to the acquisition phenomenon.

Friedkin, Noah E. (1990). SNAPS (Social Network Analysis Procedures) for GAUSS. Social Networks, 12, 173-178.

It is annoying to have to employ a variety of software programs in order to conduct research on networks. It is even more annoying to have to employ a different combination of programs for each new research project that is pursued. SNAPS for GAUSS is a response to these annoyances. GAUSS is host for SNAPS. The goal of SNAPS for GAUSS is to provide an integrated environment in which to conduct general mathematical/statistical investigations and social network analyses. Version 1.0 of SNAPS represents a first step toward this goal.

Friedkin, Noah E., & Cook, Karen S. (1990). Peer Group Influence. Sociological Methods and Research, 19, 122-143.

This article evaluates three models of peer group influence on opinions. Two of these models are eliminated on theoretical and empirical grounds. The surviving model is consistent with the seminal work of French (1956) of social influence processes and provides theoretical foundations for the convention of measuring interpersonal effects with the mean opinion of an individual's set of peers. The model clearly points out the danger of reifying the mean of peer's opinions. Whether or not there is a group norm, the mean of peers' opinions must be viewed strictly as an analytical construction that may be employed to estimate the magnitude of pressures toward uniformity in a peer group.

Fuller, Bruce, Garnier, Maurice, & Hage, Jerald. (1990). State action and labor structure change in Mexico. Social Forces, 68, 1165-1189.

Third World "development" often is characterized by rapid growth in trade and service jobs, not in manufacturing employment. Prior explanations emphasize materialist conceptions: a widening division of (white-collar) labor is required to match technological complexity. Or the central state pushes investment of capital-intensive industry, and resulting urban immigration outpaces growth in labor demand. This article focuses on how the central state's penetration into rural hinterlands sparks growth in trade and service jobs. The Mexican state not only employed rising numbers of service workers; it also legitimated socially constructed forms of work, urbanlike knowledge and forms of status. We find that variation in state penetration across 299 rural and urban counties, especially the sanctioning of written literacy and mass schooling, is related to growth in white-collar and informal-sector jobs (1900-1940), net the influence of counties' wealth and demographic features.

Furlong, Mary S. (1989). An electronic community for older adults: the SeniorNet network. Journal of Communication, 39, x-x.

From grief counseling to organizing an on-line "seniors march" on health coverage, computers have given older adults a way to participate in contemporary culture while acquiring a new network of emotional peer support.

Gidengil, Elisabeth. (1990). Centres and peripheries: The political culture of dependency. Candian Review of Sociology and Anthropology, 27, x-x.

This study relates variations in Canadians' feelings of external political efficacy to their region's location in the centre- periphery system. In Canada's peripheral regions, the lack of autonomy that is the hallmark of dependency is reflected in residents' perceptions that little can be done to influence the political process. Francophone Quebec is shown to be distinctive in the lack of impact of even an advantaged regional location on perceptions of government responsiveness. A variety of ordinal loglinear models are developed to examine the impact of social class and province. The study points to important variations in feelings of external efficacy within the provinces.

Gill, Alison M. (1990). Friendship formation in a new coal- mining town: Planning implications. Social Science Research, 74, 103ff.

Friendship formation is examined in the context of a new mining town in British Columbia, Canada. A survey of residents reveals that the work environment provides an important basis for friendship formation in both direct and indirect ways (i.e, common work locations). The nature of work in a resource town is distinctive, with many workers operating on shift systems and a high labor turnover rate. In the planning of the study community of Tumbler Ridge, much effort went into considering the social elements necessary for successful community development but, in the absence of an adequate understanding of social interaction in a resource town setting, the social linkages between the corporate environment and the community were not well-conceived.

Gillis, A.R., & Hagan, John. (1990). Delinquent samaritans: Network structure, social conflict, and the willingness to intervene. Journal of Research in Crime and Delinquency, 27, 30-51.

This article challenges a common view of delinquents as asocial and amoral regarding their support of other people. Support is measured through indications of the willingness to extend assistance to persons at various social and physical distances who are victims of crime. Delinquents seem indeed to be less supportive than other juveniles of people in general. However, when the nature of intervention (direct as opposed to indirect) is taken into account in situations of conflict, delinquents show more loyalty than other juveniles to family and friends. In this respect, delinquents' loyalty is undivided, suggesting that the social cohesion of delinquents may be more particularistic and intense than the more extensive and universalistic support given by other juveniles. Contact with other delinquents is directly related to in-group loyalty and may account for part, but not all, of the relationship between it and delinquency. Further analysis reveals an important departure from an additive model: Delinquents who are involved in dyadic relationships with other delinquents are "too" loyal. The findings are interpreted in terms of Simmel's view of conflict, groups structure, and group cohesion.

Goudy, Willis J. (1990). The ideal and the actual community: Evaluations from small-town residents. Journal of Community Psychology, 18, 227ff.

It is necessary to have some idea of what is wanted by local residents in order to plan community programs. But what residents consider to be ideal levels of factors operating in their localities are seldom explored, especially in relation to actual states. Data on both ideal and actual social dimensions are reported from mail questionnaire study of more than 4,600 residents of 27 small Iowa communities. The ideal and actual states differ significantly on most individual items and on total scores. Selected sociodemographic measures (community size, age of respondent, likelihood of residing in the community in 5 years) account for relatively little of the variance in the ideal and actual scores or for differences between them. Community evaluations (local opportunities and services, attachment, quality of life) are more effective predictors. A call for the inclusion of public values and evaluations in determining, planning, and carrying out development projects concludes the article.

Grant, Don Sherman, II, & Parcel, Toby L. (1990). Revisiting metropolitan racial inequality: The case for a resource approach. Social Forces, 68, 1121-1142.

Traditional models of local labor market racial inequality have emphasized regional location, differences in economic and social organization, and human capital differentials as explanatory factors. Such models, however, were developed before the rise of the Sunbelt, before the transformation from a goods-producing to a service-based economy was seriously under way, and before women were a substantial portion of the United States labor force. In this article we investigate whether traditional predictors successfully explain male and female racial inequality across the 100 largest MSAs in 1980. We argue that previously developed perspectives, emphasizing singular causes, lead to misspecified models that fail to capture the diversity of factors that currently impact inequality. We show how the resource approach to economic segregation (Hodson & Kaufman 1982; Hodson 1983) provides a conceptual framework suggesting variables that more adequately explain racial inequality in major metropolitan areas, particularly for males.

Griffin, Em, & Sparks, Glen G. (1990). Friends forever: A longitudinal exploration of intimacy in same-sex friends and platonic pairs. Journal of Social and Personal Relationships, 7, 29-46.

In this paper, we report on the results of a 4-year longitudinal study that explored predictors of future closeness in nonromantic friendship pairs. Subjects were forty-five pairs representing male-male, female-female, and male-female (platonic) friendships. The first phase of data collection took place in 1983; the follow-up study took place in 1987 and included 93 percent of the original subjects. The results revealed no significant predictors for closeness among female-female or platonic pairs. Several significant predictors emerged for male-male friendships, including status similarity, proficiency at Password, prior roommate status, the number of areas that partners avoided in normal conversation and geographical distance. The results support the notion of overall partner similarity as an important predictor of continued friendship.

Hansen, P., Jaumard, B., & Musitu, K. (1990). Weight constrained maximum split clustering. Journal of Classification, 7, 217-240.

Consider N entities to be classified, with given weights, and a matrix of dissimilarities between pairs of them. The split of a cluster is the smallest dissimilarity between an entity in that cluster and an entity outside it. The single-linkage algorithm provides partitions into M clusters for which the smallest split is maximum. We consider the problems of finding maximum split partitions with exactly M clusters and with at most M clusters subject to the additional constraint that the sum of the weights of the entities in each cluster never exceeds a given bound. These

two problems are shown to be NP-hard and reducible to a sequence of bin-packing problems. A (?) (N(2)) algorithm for the particular case M = N of the second problem is also presented. Computational experience is reported.

Hansen, Phillip, & Muszynski, Alicja. (1990). Crisis in rural life and crisis in thinking: Directions for critical research. Canadian Review of Sociology and Anthropology, 27, x-x

The contemporary crisis in agriculture and rural life has been paralleled by a crisis in critical thinking and research: analysis informed by the commitment to a more rational, democratic and egalitarian society. Political economy, the currently dominant critical paradigm, has made important contributions to the identification and analysis of the economic mechanisms through which social crisis develops. But it has by and large failed to probe both the ways in which crisis is actually experienced by people enduring it and the real possibilities for change that a crisis situation might offer. This failure stems both from the nature of the theoretical assumptions which inform political economy and the manner in which political ecomomists deploy methods of survey research in their empirical work. Using both the resources of social theory and the results of empirical, primary research, this paper attempts to suggest new directions for critical research into rural life. It argues that this research should adopt a more explicitly hermeneutical and phenomenological focus which should put the perceptions, self-understandings and activities of rural people themselves, particularly as they strive to preserve their communities against outside forces, more fully at the centre of analysis. No longer should it be assumed that researchers and those studied must remain separate if research is to be truly scholarly and scientific. The paper addresses some possible theoretical, empirical and historical implications of this argument.

Hanson, Stephen Jose, & Burr, David J. (1990). What connectionist models learn: Learning and representation in connectionist networks. Behavioral and Brain Sciences, 13, 471-518.

Connectionist models provide a promising alternative to the traditional computational approach that has for several decades dominated cognitive science and artificial intelligence, although the nature of connectionist models and their relation to symbol processing remains controversial. Connectionist models can be characterized by three general computational features: distinct layers of interconnected units, recursive rules for updating the strengths of the connections during learning, and "simple" homogeneous computing elements. Using just these three features one can construct surprisingly elegant and powerful models of memory, perception, motor control, categorization, and reasoning. What makes the connectionist approach unique is not its variety of representational possibilities (including "distributed representations") or its departure from explicit rule-based models, or even its preoccupation with the brain metaphor. Rather, it is that connectionist models can be used to explore systematically the complex interaction between learning and representation, as we try to demonstrate through the the analysis of several large networks.

Hansson, Robert O., Jones, Warren H., & Fletcher, Welsa L. (1990). Troubled relationships in later life: Implications for support. Journal of Social and Personal Relationships, 7, 451-463.

The personal relationships on which social support depends can become strained, problematic and antagonistic in later life. This paper explores how older support recipients themselves influence that social process, for better or worse. New data are presented regarding the nature and extent of interpersonal betrayal in the social networks of older adults that could destabilize family relationships and their social support functions. Respondents reported having betrayed 14 percent, and having been betrayed by 19 percent of the persons in their immediate support networks. In many cases, the event had occurred much earlier in their life, but had retained its symbolic impact across a lifetime.

Hardy, B., Wistow G., & Rhodes R.A.W. ( ). Policy networks and the implementation of community care policy for people with mental handicaps. Journal of Social Policy, 19, 141-168.

Although community care has been the professed policy of successive governments over three decades, according to the Prime Minister's own advisor, Sir Roy Griffiths, 'in a few areas can the gap between political rhetoric and policy on the one hand or between policy and reality in the field on the other hand have been so great'. This paper examines the extent and causes of this 'implementation gap' in respect of services for people with mental handicaps - a consistent priority group for national policymakers. We examine centre-periphery relations in the health and personal social services in the light of Rhodes' power- dependence framework and his concepts of policy networks and policy communities. The NHS has been described as the archetypal professionalised policy network but we conclude that it is possible to account for implementation failures in community care only partly in terms of the dominance of the medical professions' values and interests and the deficiencies of accountability and control due to clinical autonomy. Such failures are due also to the inherently limited power of the centre. Sub-centre units are not merely its meek agents. Moreover, the centre must explicitly structure local environments by itself providing

a coherent framework of service and resource policies compatible with the national objectives it is seeking to achieve.

Hartman, Rosanne L., & Johnson, J. David. (1990). Formal and informal group communication structures: An examination of their relationship to role ambiguity. Social Networks, 12, 127-151.

This study systematically explores the relative impacts of formal and emergent group communication structures on social contagion processes related to role ambiguity. This study was conducted in an Eastern, state-wide, non-profit lobbying organization. The results suggest that communication network groupings have a clearer association with role ambiguity than an entire network of relationships. However, contrary to our hypothesis, no clear distinction could be made concerning the relative impact of formal and informal groups on these processes.

Hobfoll, Stevan E. (1990). Introduction: The importance of predicting, activating and facilitating social support. Journal of Social and Personal Relationships, 7, 435-436.

This an introduction to a special issue of Journal and Personal Relationships, an issue that addresses social support as a variable in its own right; as a process variable representing interpersonal interactions and beliefs, and the subsequent cognitions of those actions. As early as 1982 some researchers raised concerns about ignoring the interrelationships between stress, social support, and health outcomes, but the attempts were often ignored as part of the research design.

Hoffman, Alan N., Stearns, Timothy M., & Shrader, Charles B. (1990). Structure, context, and centrality in interorganizational networks. Journal of Business Research, 20, 333- 347.

This study explored the relationship among organization structure, context, and network centrality in four interorganizational networks: 1) clients sent, 2) clients received, 3) director contacts, and 4) joint programs. Analyses covered 52 youth service delivery agencies in a large metropolitan area. Results indicated that formalization and organization size were positively related to centrality in the clients sent network,and organization age was positively associated with centrality in the joint programs and director contacts networks. Organization domain was also an important variable, as agencies with a higher percentage of female clients were central in both the clients sent and the clients received networks, while agencies with a high percentage of minority clients were central in the clients sent network. Overall, the results suggest that organization structure and context are important considerations in the study of network centrality.

Hogan, Dennis P., Hao, Ling-Xin, & Parish, William L. (1990). Race, kin networks, and assistance to mother-headed families. Social Forces, 68, 797-812.

This research, using data from a nationally representative sample of black and white American mothers who are single or currently married in 1984, investigates issues relating to kin networks, childcare, and financial support to families. The analysis confirms that black mothers have better access to and are more likely than white mothers to reside with kin; their childcare more often is provided by kinfolk and is free; and more often they receive at least one-half of their income from individuals other than their husbands. The persistent advantage blacks have in support networks, taking into account their marriage and fertility histories, is due to the greater likelihood that young mothers reside with adult kin and use free childcare rather than to advantages in financial support. Almost one-third of single black mothers were not involved in support networks, however, and the network support provided insufficient access to childcare for many mothers who were involved.

Hulten, Staffan. (1989). Theories of industrial change and markets as networks. Advances in International Marketing, 3, 181-191.

The title of the article indicates that I wish to present an outsider's view of international markets as networks. From my point of view, networks are more interesting than international markets. Therefore I shall, in principle, dedicate my attention to the first-mentioned phenomena - networks. This demarcation is also motivated by the theoretical vagueness that has so far been inherent in most writing about networks within the field of Business Administration. This provides the direction for this article, namely to investigate what theories of industrial change can contribute to the theory of networks.

Hummon, Norman P. (1990). Organizational structures and network processes. Journal of Mathematical Sociology, 15, 149-161.

This paper explores how organizational structures might evolve out of network processes. A computer simulation model is used to examine how attributes of organization members might influence the flow of work

tasks through an organization. This flow of work tasks is modeled as a network, and the properties of this network are analyzed to describe organizational structure.

Johnson-Lenz, Peter & Trudy. (1990) Islands of safety for unlocking human potential. Awakening Technology,

We have convened a Virtual Learning Community(TM) for self- development education using computer-mediated communications. It's an island of safety for personal growth and creative action in a sea of turbulent cultural change. Computer-mediated meetings are potential islands of safety, but safety is created by people, not technology. It occurs when people take the risk to express themselves, trust, and respect each other. However, while technology cannot create safety, it can support it. Groupware can join human potential and supportive technology into a creative whole. The unifying concept of this paper is the joining of polar opposites into creative wholes. We focus on three wholes (the individual, culture, and groupware) and several polarities they share which are central to unlocking human potential. To create modern culture we had to forget or discount our essential connections with each other, nature, and the Mystery. To survive as a species now we need to remember these connections – to become creatively whole, individually and collectively. For this we need safe places where we can remember and explore our potential and learn to use our differences creatively. Based on these principles, we have designed and developed our own tailorable groupware and are using it to support our on-line personal and spiritual growth workshops – islands of safety for unlocking human potential.

Jun, Kyung P., & Perros, Harry G. (1990) An approximate analysis of open tandem queueing networks with blocking and general service times. European Journal of Operational Research, 46, 123-135.

An approximation algorithm is presented for open tandem queueing networks with finite buffers and with general service times. The algorithm decomposes the system into individual queues with revised arrival and service processes and revised queue capacity. Then, each queue is analyzed in isolation. The service process is revised to reflect the additional delay a unit might undergo due to blocking. Unlike previous algorithms, the arrival process to each decomposed queue is described by a C2 distribution. The parameters of the service and the arrival processes are computed approximately using a iterative scheme. The approximation procedure yields the steady-state queue-length distribution of each queue. From this, other more commonly sought performance measures, such as mean queue-length, probability that a queue is empty, throughput, etc., can be easily computed. Comparisons of the approximate results with simulation results showed that the proposed algorithm has a good error-level.

Kemper, Theodore D., & Collins, Randall. (1990). Dimensions of Microinteraction. American Journal of Sociology, 96, 32-68.

This article argues that there are two central relational dimensions of microinteraction that are aggregated into social structures. One dimension, power, entails conduct by which actors compel other actors to do what they do not wish to do. The other dimension, status, entails conduct that conveys voluntary compliance, deference, and acceptance. The article considers a number of findings that seem to argue against the power-status model but contends that the exceptions either are not sociologically pertinent or do not reflect relational conduct. On the basis of an analysis of social and cultural relational macromodels that appear in the work of Parsons, Weber, Douglas, and Hirschman, it is argued that the power and status dimensions may be generalized "upward" to macro-conditions. Two applications of power-status analysis, one from the domain of stratification, the other from the domain of emotions, conclude the article.

Kennedy, Craig H., Horner, Robert H., & Newton, J. Stephen. (1990). The social networks and activity patterns of adults with severe disabilities: A correlational analysis. Jounal of the Association for the Severely Handicapped, 15, 86-90.

This article reports information of the interrelations among measures of lifestyle quality for 20 adults with severe disabilities living in the community. Using two interview-based measures, data were collected on the social networks and activity patterns of the participants. The results indicate that the overall size of the social networks and the number of family members were highly associated with a greater frequency and variety of activities across home and community settings. The results also indicate that neither the number of social network members paid to provide support, nor the number of friends were significantly related to activity patterns. Finally, implications for measuring lifestyle quality and the use of outcome-based measures for assisting people to build and maintain social relationships are presented.

Kilduff, Martin. (1990). The interpersonal structure of decision making: A social comparison approach to organizational choice. Organizational Behavior and Human Decision Processes, 47,

Under what circumstances does social information affect choices? A recent test of social information processing theory showed little effect of anonymous social cues on choices of brief tasks (Kilduff & Regan, 1988). But from the perspective of social comparison theory (Festinger, 1954) people faced with important and ambiguous decisions, such as the choice of an organization to work for, are likely to make their choices in the context of what others perceived to be similar to themselves are doing. For a cohort of MBA students, the relationships between patterns of social ties and patterns of interviews with recruiting organizations were analyzed. The results showed that students who perceived each other as similar, or who considered each other to be personal friends, tended to interview with the same organizations. These correlations remained significant even controlling for similarities in job preferences and similarities in academic concentrations. The research places the individual decision maker in a social context often ignored by normative approaches such as expectancy theory.

Knoke, David. (1990). Networks of political action: Toward theory construction. Social Forces, 68, 1041-1063.

The dominant paradigm in political participation studies largely ignores the microcontexts within which citizens are embedded. Drawing on generic processes of persuasion and selection, this study specifies six testable research hypotheses about individuals' attitudes and behaviors as consequences of the form and content of their ego-centric networks. Using the network measures from the 1987 General Social Survey, respondents' perceptions of their ego-centric networks are found to predict involvement in national elections. The more frequently people discuss political matters with their intimates, the greater their interest and participation in national campaigns and voting. The partisan composition of the network strongly influences their participation, even after controlling for party identifications and selection effects of social attributes. However, respondents' closeness to network others has few substantial effects, and most of the interaction terms are not significant. For members of voluntary associations, having at least one other with whom they frequently discuss politics strongly boosts mobilization in internal organizational affairs and in the local community, again controlling for social attributes.

Krackhardt, David, & Kilduff, Martin. (1990). Friendship patterns and culture: The control of organizational diversity. American Anthropologist, 92, 142-154.

Organizational culture is often described as a management control device, but this view obscures the importance of informal social interactions for the emergence and modification of culture. We elicited seven cultural dimensions used by employees to predict and make sense of the behavior patterns of others in an entrepreneurial firm. Forty-seven key employees rated each other on these dimensions. Consistent with predictions, friends relative to nonfriends, made similar attributions about fellow employees across the seven dimensions. The pattern of results remained significant even controlling for demographic and positional similarities. Further, the more people disagreed with their friends, the more they tended to be dissatisfied with their jobs. The control of organizational diversity may be as much an interpersonal initiative as it is a prerogative of management manipulation.

Krause, Neal, & Keith, Verna. (1989). Gender differences in social support among older adults. Sex Roles, 21, 609ff.

The purpose of this study was to determine whether exposure to life stress can help explain gender differences in the use of social support. Findings from a longitudinal study suggest that as the number of stressful life events increase, elderly men and women are equally likely to become more involved in their social network, while gender differences emerge only in response to chronic financial strain. Further analysis indicates that elderly women are more likely than elderly men to report that the support they received increased their feelings of personal control.

Kurtz, Donn M.,II, (1989). The political family: A contemporary view. Sociological Perspectives, 32, 331-352.

As a part of a larger study of Louisiana's political families from statehood to the present, this article seeks to demonstrate that the family influence on political recruitment is not just an historical phenomenon but a current reality. Over one-fourth of 785 state and parish officials in office in 1983 were found to have at least one officeholding relative. One-half of these 209 leaders had two or more kinsmen in office at some time, and almost one-third "inherited" their position from a relative. The article analyzes the structure of these families (size, generations, kinship connections), successions, and kinship networks. The last topic, networks, delineates the connections between and among families with 1983 officials and other families whose political experience occurred before 1983. The largest of the networks includes twenty-two families with 107 officials from several states. A principal conclusion is that the family continues to exert considerable influence on its members' decision to enter the political arena. Evidence is presented indicating that Louisiana is not unique in this regard.

Langlois, Simon. (1990). L'avenement de la societe de consommation: Un tournant dans l'histoire de la famille. Familles d'Aujourdui 1990:89-113.

L'avenement de la societe de consommation et l'extension des rapports marchand a toutes les sphere de la vie quotidienne ont probablement autant contribue a influencer les formes de vie familiale dans la deuxieme moitie de notre siecle que l'industrialisation dans le precedent. Puisque la consommation marchande implique un echange de biens et de services contre remuneration, deus aspects au moins sont suseptible d'affecter la famille: la monetarisaion de l'echange et la presence d'un marche, exterieur au faoyer et a la famille, dans lequel biens et services ont en quelque sorte une existence quasi autonome qui n'est pas determinee par une logique propre a la famille.

Lattin, James M. (1990). A minimum-cost network-flow solution to the case V Thurstone scaling problem. Psychometrika, 55, 353-370.

This paper presents an approach for determining unidimensional scale estimates that are relatively insensitive to limited inconsistencies in paired comparisons data. The solution procedure, shown to be a minimum-cost network-flow problem, is presented in conjunction with a sensitivity diagnostic that assesses the influence of a single pairwise comparison on traditional Thurstone (ordinary least squares) scale estimates. When the diagnostic indicates some source of distortion in the data, the network technique appears to be more successful than Thurstone scaling in preserving the interval scale properties of the estimates.

Lavely, William. (1990). Industrialization and household complexity in rural Taiwan. Social Forces, 69, 235- 251.

Industrialization is generally believed to undermine the rural extended family household, but this study of Taiwanese farm households finds the contrary to be true. An analysis of 274 townships in 1960 and 1970 reveals that farm household complexity is positively associated with industrialization as measured by the proportion of the labor force in nonagricultural occupations, both cross-sectionally and over time. The propensity of farm families to combine into extended units is influenced by the availability of productive resources, whether agricultural or industrial. In the classical case, industry undermines the extended family by drawing kinsmen into cities; in Taiwan, where industry has grown up in proximity to family farms, the extended household has thrived. Ethnographic evidence suggests that the semi-agricultural extended households are less patriarchal and more egalitarian; still, industrial employment itself does not seem inimical to extended living arrangements.

Leifer, Eric M. (1990) Enacting networks: The feasiblilty of fairness. Social Networks, 12, 1-25.

Network analysis has ignored the process of network enactment. Yet there are many fairness norms, such as reciprocity, that are oriented toward the timing of encounters as much as toward their structure. The difficulties involved in enacting a network within the bounds of such fairness norms can constrain what kinds of network structures are sustainable. In this paper, these difficulties are assessed across networks varying in size, density and differentiation using a computer program that searches for fair network enactments. In one application, the results help explain actual fairness properties of National Football League season schedules (1960-1987), such as the decrease in home-away game alteration after the 1969 merger between AFL and NFL and the threshold that was reached in 1977 and not substantially exceeded since. In another application, null expectations for short-run exchange imbalances (between giving and taking) are generated for networks where a long-run generalized norm of reciprocity strictly holds. A strong faith in the long run is needed in large, moderately dense, undifferentiated networks because eliminating the short-run imbalances can be infeasible. The pursuit of fairness is limited as much by the means of network designers as by their intentions.

Leifer, Eric M. (1990). Inequality among equals: Embedding market and authority in league sports. American Journal of Sociology, 96, 655-683.

In league sports, the regulatory authority of leagues is thought to counter market pressures that would otherwise concentrate player talent in SMSAs with the largest market potential. The presumed opposition between authority and markets is not supported by league histories in the four major team sports. These histories show that, contrary to expectations, market potential has the greatest influence on winning when league authority is formally strongest. Market potential has no influence on performance when league authority is opposed by antitrust law, player unions, rival leagues, or league members. To explain this anomaly, authority and market relations must both be seen as embedded within the multiplex relations among team owners. These relations changed dramatically with the rise of national audiences in the past three decades. Inequality among equals replaced inequality among unequals as the support of a rootless national audience replaced rooted and unequal local audiences, altering the opportunity context of owners.

Litwak, Eugene, Messeri, Peter, & Silverstein, Merril. (1990). The role of formal and informal groups in providing help to older people. Marriage and Family Review, 15, 171-191.

A task specific theory is presented that synthesizes past theories, defines the unique contributions of families and formal organizations and argues they are interdependent (i.e., that they can best achieve their respective goals by closely coordinating with the other despite conflicting structures). These ideas are applied to the family and human service organizations in aging to show which activities families can best manage, which activities organizations must undertake, and how the two are optimally coordinated.

Mahmassani, Hani S., Jayakrishnan, R., & Herman Robert. (1990) Network traffic flow theory: Microscopic simulation experiments on supercomputers. Transportation Research, 24A, 149-162.

Microscopic simulation experiments are conducted to investigate traffic behavior in urban networks and support the development of network-level traffic flow relations. Previous use of microscopic traffic simulation has been limited by computational resources to small networks. Supercomputers largely alleviate such limitations and allow more elaborate and realistic simulations of traffic in large networks. This paper provides computational experience in simulating large-scale urban traffic networks on a CRAY supercomputer. In addition to the computational results, the experiments address the effect of intersection traffic control on the two-fluid characterization of vehicular flow in congested networks. Evidence is provided from larger networks that supports conclusions reached in earlier work using smaller test networks.

Marsden, Peter V. (1990). Network data and measurement. Annual Review of Sociology, 16, 435-463

Data on social networks may be gathered for all ties linking all elements of a closed population ("complete" network data) or for the sets of ties surrounding sampled individual units ("egocentric" network data). Network data have been obtained via surveys and questionnaires, archives, observations, diaries, electronic traces, and experiments. Most methodological research on data quality concerns surveys and questionnaires. The question of the accuracy with which informants can provide data on their network ties is nontrivial, but survey methods can make some claim to reliability. Unresolved issues include whether to measure perceived social ties or actual exchanges, how to treat temporal elements in the definition of relationships, and whether to seek accurate descriptions or reliable indicators. Continued research on data quality is needed; beyond improved samples and further investigation of the informant accuracy/reliability issue, this should cover common indices of network structure, address the consequences of sampling portions of a network, and examine the robustness of indicators of network structure and position to both random and nonrandom errors of measurement.

Mattsson, Lars-Gunnar. (1989). Development of firms in networks: Positions and investments. Advances in International Marketing, 3, 121-139.

In our efforts to develop a network approach to industrial marketing, we have repeatedly, and in different contexts, emphasized that firms are very dependent on external resources controlled by other firms, and that internal resources and their organization are of great importance for a firm's ability to relate to other firms and to develop these relationships. Looking at a network, we find that the firms have both direct and indirect relations, that there are important intertemporal aspects of the activities, and that networks can be very different in terms of the characteristics of the relationships between the firms.

McCornack, Stephen A., & Parks, Malcolm R. (1990). What women know that men don't: Sex differences in determining the truth behind deceptive messages. Journal of Social and Personal Relationships, 7,

While a good deal of research has been devoted to studying individual accuracy in detecting deceptiveness, a neglected issue involves the ability of individuals to accurately discern the truth that is obscured by deceptive messages. Methodological considerations have limited the generalizablity of previous research findings in this area. Drawing upon a conceptualization of deception as a relational phenomenon, three hypotheses were developed and tested in a sample of 55 premarital romantic dyads. Subjects viewed a series of 12 videotaped segments of their partner who told the truth in half the segments and lied in half the segments. Results indicated that individual accuracy in ascertaining the underlying truth obscured by deception declines as individuals become more intimate. In addition, women were found to be consistently more accurate than men independent of level of relationship development.

Mikulincer, Mario, & Segal, Jacob. (1990). A multidimensional analysis of the experience of loneliness. Journal of Social and Personal Relationships, 7,

The current series of studies applies a phenomenological - structural method for the description of verbal reports of loneliness states. In Study 1, lay persons freely described the causes, feelings, and responses related to a

particular loneliness episode they had experienced. The different subjects' statements were then listed by two judges and were subjected to cluster analysis and multidimensional scaling. Subjects in Study 2 received a self-report questionnaire including the feelings listed in Study 1 and their answers were also subjected to multidimensional analysis. Subjects in Study 3 received the clusters of loneliness feelings disclosed in Study 1 and were required to estimate their conjoint probability of occurrence. Findings revealed four subtypes of loneliness and delineated their cognitive, emotional, motivational, and behavioral components. In addition, the disclosed structure of loneliness was replicated in three reported studies. The contribution of the findings to the understanding of the experience of loneliness and to the refinement of earlier theoretical conceptions and disputes was discussed.

Mirkin, Boris G. (1990). A sequential fitting procedure for linear data analysis models. Journal of Classification, 7, 167-195.

A particular factor analysis model with parameter constraints is generalized to include classification problems definable within a framework of fitting linear models. The sequential fitting (SEFIT) approach of principal component analysis is extended to include several nonstandard data analysis and classification tasks. SEFIT methods attempt to explain the variability in the initial data (commonly defined by a sum of squares) through an additive decomposition attributable to the various terms in the model. New methods are developed for both traditional and fuzzy clustering that have useful theoretical and computational properties (principal cluster analysis, additive clustering, and so on). Connections to several known classification strategies are also stated.

Mizruchi, Mark S. (1990). Similarity of ideology and party preference among large American corporations: A study of political action committee contributions. Sociological Forum, 5, 213-ff

This study examines the extent to which large corporations contribute to political candidates of similar ideology and party affiliation. Using a sample of 1596 dyads created by relations among 57 large U. S. manufacturing firms, four variables were found to be associated with similarity of ideological contributions, party contributions, or both: corporate headquarters location in the same state, market constraint relations between the industries in which the firms operate, the presence of director interlocks with the same financial institutions, and the extent to which the firms' primary operations were in highly concentrated industries. Members of the same industries, however, were no more likely to support candidates with similar ideologies or party affiliations than were firms in different industries. Moreover, the positive effect of geographical proximity appeared to be a result of firms' tendencies to contribute to candidates from their own state rather than a result of geographically based ideological split within the business community.

Mizruchi, Mark S. (1990). Cohesion, structural equivalence, and similarity of behavior: An approach to the study of corporate political power. Sociological Theory, 8, 16-32.

Political sociologists interested in corporate power have focused increasingly on the extent to which the business community is cohesive. Studies of cohesion, however, frequently contain either no definition or operational definitions with little theoretical rationale. This paper examines the uses of the term cohesion in the power structure literature as well as in classical and contemporary sociological theory. I argue that : (1) cohesion is most appropriately defined as an objective characteristic of a social structure; (2) to understand a group's power, we should focus on the extent to which its members behave similarly; and (3), the concept of structural equivalence may be as likely to capture the process of interest to power structure researchers as the concept of cohesion. Findings from a study of corporate political behavior are presented to illustrate this argument.

Mizruchi, Mark S. (1991). Market relations, interlocks, and corporate political behavior. Research in Political Sociology, 5, 167-208.

Political sociologists have debated for decades, without resolution, whether elites in advances capitalist societies are integrated. Rather than asking whether elites are integrated, this study examines the conditions under which convergence of political behavior occurs, focusing on campaign contributions of political action committees within the American business community. A model of similarity in corporate political behavior is proposed that draws on principles developed by resource dependence and social class theorists of inter-corporate relations. Variables hypothesized to affect convergence include involvement in the same industry or industries, the level of market constraint between industries in which firms produce, common stock ownership by financial institutions, interlocking directorates, and geographic proximity of headquarters and plant locations. The findings suggest the simultaneous importance of organizational and social network factors in understanding common political behavior between firms.

Mizruchi, Mark S. (1990). Determinants of political opposition among large American corporations. Social Forces, 68, 1065-1088.

Political sociologists have focused considerable attention on the extent to which corporate elites are politically unified. Few studies, however, have examined the extent to which corporations oppose one another. This study examines the determinants of corporate political conflict by focusing on the extent to which pairs of firms contributed to opposing Congressional candidates in the 1980 elections. Using a sample of 1,596 dyads created by relations among 57 firms, several hypotheses about the effects of interfirm social and economic relations on political opposition are tested. Variables found to decrease the likelihood of political opposition included common stockholdings, director interlocks with the same financial institutions, membership in the same primary industry, and market constraint relations between the industries in which firms produce. The findings are consistent with arguments that suggest the importance of social and economic networks in deterring conflict among firms.

Moore, Gwen. (1990). Structural determinants of men's and women's personal networks. American Sociological Review, 55, 726-735.

Men's and women's personal networks often differ in composition, with women's more focused on family and men's on nonkin, especially coworkers. Using data from the 1985 General Social Survey, I find that these gender differences arise in part from dissimilar social structural locations of men and women, which lead to distinct opportunities for and constraints on the formation of close personal ties. Most gender differences in network composition disappear or are considerably reduced when variables related to employment, family, and age are controlled. However, some gender differences remain. Women have a larger number, higher proportion, and greater diversity of kin ties in their personal networks than men in similar social structural positions.

Nelson, Geoffrey. (1990). Women's life strains, social support, coping, and positive and negative affect: Cross-sectional and longitudinal tests of the two-factor theory of emotional well-being. Journal of Community Psychology, 18, 239ff.

This research examined the relationships between life strains, social support, coping, and positive and negative affect among 90 women at three different interviews over an 18-month period. Predictions were derived from previous research and the two-factor theory of emotional well-being. Two-factor theory asserts that positive affect and negative affect are relatively independent dimensions and that they have distinctly different correlates. It was predicted that life strains would be related to negative affect, but not to positive affect. However, life strains were related to both of these variables. As predicted, enacted support and coping were correlated with positive affect, but not with negative affect. Cross-sectional and longitudinal regression analysis showed that life strains, social support, and coping combined in additive models to predict positive affect, suggesting that support and coping have a "health-enhancing" effect on positive affect. However, life strains interacted with support and coping to predict a negative affect. In these analyses, both support and coping buffered the effects of life strains, suggesting that social support has a "health-protecting" effect of negative affect. Overall, the results demonstrated the utility of two-factor theory for research on women's life strains, support, coping, and affect.

Newcomb, Michael D. (1990). Social support by many other names: towards a unified conceptualization. Journal of Social and Personal Relationships, 7, 479-474.

Social support is a provision of the social environment and one important aspect of exchange between a person and the social world. This perspective may enhance appreciation for the common features shared by diverse types of interpersonal interconnectedness, such as bonding, attachment, friendship, intimacy and companionship. At least three hypotheses follow: (1) social support should be moderately stable across time and developmental periods; (2) social support changes as a result of transactions between a person and the social environment; (3) amount of perceived social support should be reasonably consistent across various areas of life. Empirical support for the first two propositions is reviewed and new data on the final point are presented. The findings support the conceptual commonality of social support and personal contact, but also emphasize their unique differences.

Nezlek, John B., Wheeler, Ladd, & Reis Harry. (1990). Academic performance and social behavior. Journal of Social and Personal Relationships, 7, 291-309.

This study investigated the relationship between the academic performance and social behavior of a sample of college students, In support of the primary hypothesis, for males, academic performance was negatively correlated with both the quality and quantity of their social interactions. For females, academic performance and social interaction were not correlated. This was true when both same sex and opposite sex social interactions were examined.

O'Connor, Brian P., & Tindall, David B. (1990). Attributions and behavior in a commons dilemma. Journal of Psychology, 124, 485-494.

Attempts to increase socially responsible behavior are more likely to succeed if they address how individuals perceive their current behavior. This study examined how individuals perceived their own behavior in a "commons dilemma" – a particular kind of social dilemma in which individuals must decide how much of a shared resource to take for themselves. Ninety-three Canadian students simulated a commons dilemma by playing a fishing game for money in groups of three. After each fishing trial, the students were asked for their perceptions of their own and of the other players' behavior. In general, it was determined that they considered both themselves and others to be quite cooperative, when in fact they were not cooperative. This finding could account for the sometimes low correspondence between environmental attitudes and behavior and suggests that appeals to conscience and altruism are not likely to be successful in promoting effective resource management.

O'Connor, Pat. (1990). The adult mother/daughter relationship: a uniquely and universally close relationship? Sociological Review, 38, 293-323.

Despite developments in the sociology of welfare and in feminism, the examination of young adult mother/daughter relationships has been relatively neglected. Such relationships are still popularly seen as 'very close', although studies such as Brannen and Collard's (1982) have shown that they are not intimate. In this paper the content and quality of such mother/daughter relationships is examined using a small scale intensive study of sixty married or cohabiting women randomly selected from medical record in north London. Their relationships with their mothers were typically characterized by high levels of visual contact, felt attachment and identity enhancement. The majority of the women did not see their relationships with their mother as very close. Furthermore, even those who did see them in this way, did not have relationships characterized by high levels of practical help, dependency or intimacy. In arguing that mother/daughter relationships are neither universally nor uniquely close, such relationships are juxtaposed with relationships with sisters who were identified as very close. Finally it is argued that the continued popular perception of mother/daughter relationships as very close reflects current definitions of femininity; the idealization of the mother role and an equation between closeness and tending.

Paisley, William. (1990). An oasis where many trials cross: The improbable cocitation networks of a multidiscipline. Journal of the American Society for Information Science, 41, 459-468.

An examination of the growth and spread of communication studies that have manifested as a multidisciplinary concern in the social sciences. The convergence of scholarly communication research from its formative period to the present is highlighted through examination of the citation of prominent communication research efforts.

Palmer, Donald, Friedland, Roger, Roussel, Amy Elizabeth, & Jennings, P. Devereaux. (1990). Corporations and the urban advanced business service sector. Social Forces, 69, 115-137.

This article analyzes interurban variation in one advanced service, management consulting, across large U.S. cities in 1963. Human ecologists assume advanced services fulfill a coordinative function in the metropolitan system. Consistent with this view, we found that: (1) metropolitan population size and distance to neighboring metropolitan areas were positively associated with a city's consulting activity, (2) the number of other large cities with which a city shared its metropolitan area was inversely related to consulting levels, and (3) the number of corporations headquartered in a city was positively associated with consulting activity. Organizational theorists assume advanced services fulfill coordinative needs in the corporate system. Thus, we also found that: (4) the characteristics of firms headquartered in a city (i.e., their age, market complexity, structure, mode of control, and elite contacts) shaped the impact that their numbers had on urban consulting. In the conclusion, we consider the relationship between human ecology and the organizational approach.

Perkins, Douglas D., Florin, Paul, Rich, Richard C., Wandersman, Abraham, & Chavis, David M. (1990). Participation and the social and physical environment of residential blocks: Crime and community context. American Journal of Community Psychology, 18, 83-115.

We propose a framework for understanding the relationship of participation in block associations to a wide range of block- level variables (demographics, the built environment, crime, and the transient social and physical environment). Data were obtained from 48 New York city blocks using (a) a telephone survey of residents (n = 1,081), (b) the Block Environmental Inventory (BEI), (c) police records of reported crime, and (d) a survey of block association members (n = 469). The BEI, which measures the built environment, physical disorder, and territoriality was reliable and correlated significantly with the social climate, crime, demographics, and participation. The transient portion of the framework received particular support as four variables independently explained a total of almost 40% of the variance in participation. The results suggest that a combination of catalysts in the

physical environment (e.g., poorly maintained properties) and enablers in the social environment (e.g., block satisfaction and neighboring) may increase participation. The relationship between participation and crime and reactions to crime remains unclear.

Pirlot, Marc. (1990). A case study in transportation network optimization using a microcomputer. European Journal of Operational Research, 45, 251-259.

This is a report on the modernization and optimization of the transportation and storage network of a company in France. As this work was part of a strategy for introducing more rigorous tools in the management of the company, the models are conceived in order to be as accessible as possible to managers with little background in Operations Research and Informatics. That is why the models are written on a common spreadsheet and optimized by a linear programming package with spreadsheet interface. The implementation of the models is described and the network in its present state as well as some hypothesis for its improvement are evaluated. Throughout, the stress is on methodological and pedagogic considerations.

Powell, Brian, & Steelman, Lala Carr. (1990). Beyond Sibship size: Sibling density, sex compositions, and educational outcomes. Social forces, 69, 181-206.

We explore the effects of sibship density, i.e., the number of siblings closely spaced versus widely spaced, and sex composition, i.e., the number of sisters versus the number of brothers. Guided by two explanations previously put forth to account for the consistently found inverse relationship between sibship size and academic outcomes, the confluence model and the resource dilution hypothesis, we test whether these two structural parameters influence academic consequences. Analysis of the High School and Beyond data confirms a stronger negative effect of the number of siblings closely spaced than of the number of siblings widely spaced, an effect that endures into later adolescence even upon controlling for earlier test performance. Findings on sex composition, based on the National Longitudinal survey of High School Seniors of the Class of 1972, are mixed. We find no effect of sex composition on test performance, but find a negative one on grade-point average. We conclude by highlighting the utility of decomposing sibship size into further components and of obtaining data that will facilitate such research efforts.

Prattis, Ian J., & Chartrand, Jean-Philippe. (1990). The cultural division of labour in the Canadian north: A statistical study of the Inuit. Canadian Review of Sociology and Anthropology, 27, x-x.

Discussions of Inuit ethnic identity and of the historical origins of dependency in the Canadian North often fall short of an adequate theory capable of explaining the varying patterns of Inuit integration in Labrador, Artic Quebec, and the eastern and western Northwest Territories. Our analysis does this by evaluating the validity of an internal colonialism model for the Canadian North, which posits the existence of a cultural division of labour. Data to support this contention are drawn largely from census material. The data focus is on patterns of Inuit labour force participation, identity maintenance and language retention.

Reichmann, Sebastien. (1989). Le role des reseaux sociaux dans le processus de recherche d'aide en psychiatrie. Annales de Psychiatrie, 4, 230-235.

Several studies that used network analysis to study the process of seeking for help are discussed.

Revenson, Tracy A., & Majerovitz, Deborah S. (1990). Spouses' support provisions to chronically ill patients. Journal of Social and Personal Relationships, 7, 575-586.

This study examined: (1) factors that are related to spouses' provisions of positive and problematic support to rheumatoid arthritis (RA) patients, and (2) the stress-buffering role of support from social ties outside the marriage for spouses of RA patients. Data were drawn from a prospective study of psychological adaptation to RA. The conjugal sample consisted of forty-two RA patients (81 percent female) and their spouses. The results suggested that spouses provided more social support in response to patients' distress, expressed as greater pain and depressed mood. In contrast, spouses provided more problematic support to patients' when spouses were experiencing greater stress or when patients disease was more advanced. Network support received by the spouse served as a stress-buffer against depression for spouses whose partner's illness had become worse over the past two years. These findings support the need for studying social support processes using a dyadic, transactional approach, and for studying the patient and spouse within the larger context of their social support network.

Rice, Ronald E. (1990). Computer-mediated communication system network data: Theoretical concerns and empirical examples. International Journal of Man-Machine Studies, 32, 627- 647.

The review combines two separate foci in recent research: (1) the diffusion and use of computer-mediated communication (CMC) systems in organizations, and (2) the conceptualization of communications as a process of interaction and convergence, as represented by the network paradigm. The article discusses (1) rationales for this combined focus based upon the characteristics of CMC systems, (2) application of the network paradigm to study CMC systems, (3) the collection samples, usage data, network flows, and content by CMC systems, (4) some theoretical issues that may be illuminated through analyses of data collected by CMC systems. The article concludes by discussing issues of reliability, validity and ethics.

Rice, Ronald E., Grant, August E., Schmitz, Joseph, & Torobin, Jack. (1990). Individual and network influences on the adoption and perceived outcomes of electronic messaging. Social Networks, 12, 27-55.

Theories of organizational information processing and social influence are applied, using network analytical methods, to longitudinal data from a small government office surveyed immediately before, and nine months after, the implementation of an electronic messaging system. The results provide strong support for the role of a critical mass in influencing adoption and for the role of pre-usage expectations in forming enduring evaluations of some outcomes of an EMS. They also show slight support for the roles of social information processing and certain organizational information processing variables. Implications for theories and research designs concerning the use and impacts of computer-mediated organizational media are discussed.

Rosenbaum, James E., Kariya, Takehiko, Settersten, Rick, & Maier, Tony. (1990). Market and network theories of the transition from high school to work: Their application to industrialized societies. Annual Review Sociology, 16, 263-299.

The transition from high school to work creates serious problems for American youth and employers. Since single theories have difficulty conceptualizing the reasons for these problems, this paper reviews four theories that elucidate aspects: segmented labor market theory, human capital theory, signaling theory, and network theory. In addition, this review contrasts the american transition system with the transition systems in Japan, West Germany, and the United Kingdom to reveal practices and theoretical issues which are neither salient nor well studied in the American literature. We extend signaling theory to examining youths' use of signals, employers' use of dubious signals (e.g. age) while ignoring promising ones (e.g. grades), and signals which are efficient in the short-term but not in the long-term. We extend network theory to include both personal contacts and institutional linkages. We note the ways poor signals may affect youths' plans and motivation and make them unresponsive to market demands, and the ways institutional networks may affect schooling and work-entry in the United States. Implications for theory, policy, and future research are also considered .

Rubin, Nissan. (1990). Social networks and mourning: A comparative approach. Omega, 21, 113-127.

This article suggests using social network theory to explain the varieties of mourning behavior in different societies. This context is used to compare the participation in funeral ceremonies of members of different social circles in modern-American society and in the Israeli kibbutz. The two cases demonstrate the validity of concepts deriving from social network analysis in the study of bereavement, mourning behavior, and funerary practice. The approach suggested might serve as a basis for a cross-cultural analysis of the range of participation in mourning rituals.

Sandomirsky, Sharon, & Wilson, John. (1990). Processes of Disaffiliation: Religious mobility among men and women. Social Forces, 68, 1211-1229.

An investigation of the processes of disaffiliation from voluntary associations is conducted, focusing on membership in religious denominations, using a panel study to trace different paths from a point of origin in high school denomination. A theory of religious affiliation based on family formation is used to construct two models, one for apostasy and one for switching. Within each model the effects of gender on processes of disaffiliation are examined. Changes in family status are found to affect apostasy but not switching, the latter being more influenced by denomination of origin. Men are most affected by family variables while women are most affected by religion variables. Religion variables are important discriminators in the case of switching, but have little impact on apostasy. The results underlie the importance of taking family variables into account when studying disaffiliation and of treating apostasy and switching as qualitatively different variables.

Shelley, Gene Ann, Bernard, H. Russell, & Killworth, Peter D. (1990). Information flow in social networks. Journal of Quantitative Anthropology, , .

We attempted to operationalize the strength of social tie by measuring the amount of time it took for informants to send and receive personal information from their social network members. We reasoned that "stronger" ties (i.e. those people rated "close" by an informant) would be told about certain life events sooner than "weaker" ties would be told. We hoped to develop a measure which could be used to predict strength of social tie. We were unsuccessful in producing such a measure, but the experiment yielded useful information about how news flows among social network members. People rated "close" by informants transmitted news four times faster than did those rated "not close". Relatives transmitted news significantly faster than did friends or mere acquaintances. Women transmitted news at least twice as fast as men did. We investigated how the type of news transmitted, the importance of a news item and whether news was good, bad or neutral affected news transmission time.

Shrum, Wesley. (1990). Status incongruence among boundary spanners: Structure, exchange, and conflict. American Sociological Review, 55, 496-511.

The exchange of resources and perceptions of conflict among professional planners is examined as a function of the relation between their structural positions. Analysis of dyadic relations at federal, regional, state, country, and municipal levels of government revealed that structural features interact to produce characteristic exchange flows, and the exchange of resources among these professionals affects perceptions of conflict. Professionals at higher levels of government were more likely than those at lower levels to do favors and provide information, particularly when they were more central in the professional network. However, these exchange patterns (favors and information) were associated with conflict in relationships. I interpret this as a result of status incongruence in dyads that match actors at higher levels of government but lower organizational positions with actors at higher organizational positions but lower levels of government.

Silver, Allan. (1990). Friendship in commercial society: Eighteenth-century social theory and modern sociology. American Journal of Sociology, 95, 1474-1504.

Sociological theory prevailingly holds that the normative exclusion of instrumental and contractual orientations from personal relationships is historically prior, and theoretically antipodal, to market society. In contrast, Adam Smith, David Hume, and others of the 18-century Scottish Enlightenment propose that commercial society sharply distinguishes self-interested from sympathetic relations and is therefore necessary for the spread of personal relations based on sympathy and sentiment. If this is correct, commercial society promotes rather than discourages personal relations that are normatively free of instrumental and calculative orientations. Taking friendship as prototypical of such relations, this essay considers the contributions of the Scottish Enlightenment to the study of personal relations in historical and modern times.

Smollett, Eleanor Wenkart. (1989). The economy of jars. Kindred relationships in Bulgaria - An exploration. Ethnologia Europaea, 17, x-x.

People transform inherited cultural patterns to serve their needs under new circumstances. Networks of kindred relationships exemplify this process. Under socialist conditions in Bulgaria, kindred relationships assist in peoples' transitions from cooperative farming to the working class, and from rural to urban life. Kin connections also contribute to solving life problems for which social solutions are not yet adequately institutionalized. Research should examine kin networks in their contemporary roles, rather than viewing the importance of kinship connections as merely an anachronism.

Stanfield, J.R. (1989). Karl Polanyi and contemporary economic thought. Review of Social Economy, 47, 266-279.

This essay examines the significance of Karl Polanyi for contemporary economic thought. The key to this significance is indicated by the expression "lives and livelihood," which refers to the place of economy, or livelihood, in human society. Contemporary economic thought is dominated by an habitual outlook, formalism, which almost completely precludes consideration of the problem of lives and livelihood. This essay discusses the limitations of formalism in light of another key theme of Polanyi the disembedded economy. An alternative perspective, which Polanyi referred to as substantivism, is presented, and it is argued that this perspective provides the foundation for a much needed reconstruction of economic thought.

Starrett, Richard A., Bresler, Charles, Decker, James T., Walters, Gary T., Rogers, Dan. (1990). The role of environmental awareness and support networks in Hispanic elderly persons' use of formal social services. Journal of Community Psychology, 18, 218ff.

A significant issue in Hispanic kinship research is determining the importance of source and frequency of informal support, frequency of quasi-formal support, and the amount of environmental awareness in relationship to the utilization of formal social services by the Hispanic elderly. This study examines the relationships among awareness of environmental information; background characteristics; and quasi-formal, informal, and formal social support systems of the Hispanic elderly. The results indicate that environmental awareness was the strongest direct predictor of formal services use, followed by need, family income, and ethnicity. Structural variables such as source and frequency of support were important in explaining how the Hispanic elderly acquire their knowledge about the environment. Moreover, the old/old and young/old elderly appear to have different avenues of instrumental support.

Stevens, Gillian, Owens, Dawn, & Schaefer, Eric C. (1990). Education and attractiveness in marriage choices. Social Psychology Quarterly, 53, 62-70.

It is commonly thought that beautiful women are more able than their plainer counterparts to marry husbands of higher economic status. Previous research provides some support for this contention. This study reexamines attractiveness (measured by facial attractiveness) and economic status (as indicated by educational attainment) in marriage choices. The analysis, based of data from 129 newly married couples, first shows significant correlations between the brides' and the grooms' educational attainments and between their levels of attractiveness. After controlling for peoples' tendency to marry others with attributes similar to their own, however, the analysis shows that less attractive people are just as likely as more attractive people to have highly educated spouses. In particular, more attractive women are no more likely than less attractive women to have highly educated husbands. We suggest that the differences between out results and those of earlier research can be traced in part to the lack of attention paid to men's attractiveness in marriage choices.

Stevenson, William B. (1990). Formal structure and networks of interaction within organizations. Social Science Research, 19, 113-131.

The division of labor through the formal structure within organizations is conceived of as providing formal authority, influence based on hierarchical co-ordination requirements, and differential status within the organization. Three models are proposed to explain networks of work-related interaction within the organization in terms of each of these facets of formal position, respectively. The effects of this structural differentiation on a network of interaction in terms of the three models are tested in a public bureaucracy, and the implications of the results for the formation of networks of interaction and resulting collective actions such as coalition formation are discussed.

Stokes, Randall G., & Anderson, Andy B. (1990). Disarticulation and human welfare in less developed countries. American Sociological Review, 55, 63-74.

Disarticulation refers to the juxtaposition of economic sectors with different levels of development and productivity. Disarticulation is hypothesized to have a negative effect on social well-being, net of economic development, because it inhibits the spread effects generally thought to be associated with economic growth. Findings are in accord with this hypothesis, although the relationship is complex. The strongest effects of disarticulation are found among the poorest nations. The concept of disarticulation opens a new and promising avenue of research that may help to resolve contradictory findings of recent research on the political economy of growth.

Stopes-Roe, Mary, & Cochrane, Raymond. (1990). Support networks of Asian and British families: Comparisons between ethnicities and between generations. Social Behaviour, 5, 71-85.

In the context of a survey on the opinions and experiences of first- and second-generation Asian-British, respondents were asked to list those to whom they would turn for support with specified problems. Respondents were located in the West Midlands, and included a parent and late adolescent from each family with a British comparison group. Respondents named confidantes and described up to nine in terms of relationship, location, sex and ethnicity, and rated satisfaction with the contact experienced. Confidante networks are described for parents and for young people in both ethnic groups. Five categories of confidante appear, three relating to location of family confidantes as household, nearby and further off, the others being friends or professionals. Family confidantes are broken down into relationship categories, and nuclear family members appear as the most important source of support for all groups of respondents. Asian young people are the least ethnocentric in choice of friends. Asian mothers are the only group with a larger mean number of opposite-sex than same sex confidantes. Asian parents

have significantly larger networks, and are more fully satisfied with them. These findings are discussed in the context of ethnic and generational differences in experiences and attitude.

Strang, David, & Baron, James N. (1990). Categorical imperatives: The structure of job titles in California state agencies. American Sociological Review, 55, 479- 495.

The division of labor in formal organizations has important consequences for the distribution of opportunities and rewards. This paper examines variations in job title structures across work roles. Analyzing 3,173 job titles in the California civil service system in 1985, we investigate how and why lines of work vary in the proliferation of job categories that differentiate ranks, functions, or particular organizational locations. The statistical analysis underscores the importance of three social forces shaping the division of labor: ascription by race and sex; the power and social standing of occupational groups, especially the professions; and organizational processes of rationalization. Some implications of these results for studies of organizations and social inequality are discussed.

Sutton, John R. (1990). Bureaucrats and entrepreneurs: Institutional responses to deviant children in the United States, 1890-1920s. American Journal of Sociology, 95, 1367-1400.

Child welfare was a central item on the Progressive reform agenda. But contrary to the professed goals of leading reformers, institutions for delinquent and dependent children expanded rapidly around the turn of the century. Nationwide, private agencies grew faster than those in the public sector. This article attempts to account both for the general rise in juvenile incarceration and for the trend toward privatization. It begins by exploring potential accounts of institutional expansion based on socioeconomic resource flows and social movement influence. The main concern, however, is to develop a political model that focuses, first, on the internecine politics of the national charity organization movement and, second, on variation in patterns of state building among the American states. Dynamic quantitative methods are used to test these approaches. Results suggest strongly that the relative growth of public and private institutions was determined largely by political issues, including previous social policy commitments and patronage.

Tracy, Elizabeth M., Catalano, Richard F., Whittaker, James K., Fine, David. (1990). Reliability of social network data. Social Work Research and Abstracts, 26, 33-35.

To begin to answer recent questions regarding the reliablility and validity of self-reported social network data, the authors examined the stability of social network data in terms of three components: absolute network size, network membership changes, and stability of ratings of network members identified at two points in time. On average, respondents identified 70 percent of network members at both administrations, indicating considerably more stability than was anticipated from absolute network size alone. The pattern of agreement scores on support ratings indicated that some items were more stable than others. Type of support, direction of help, and critical relationships appeared to be network characteristics that are less stable and more situationally determined. The results were examined in terms of their clinical implications as well as in relation to selection of appropriate outcome measures of change.

Trebitsch, M. (1990). From group to network. Annales- Economies Societies Civilization 45(3): 662-663.

Commentary on the shift from group-structured toward network- structured social systems.

Turner, Jonathan H. (1990). Emile Durkheim's theory of social organization. Social Forces, 68, 1089-1103.

Emile Durkheim's early analysis of structural differentiation and modes of integration is reconciled with his later examination of interaction and ritual. These ideas are reconciled by initially constructing an abstract causal model and then converting various causal paths into general laws of human social organization. It is argued that, despite a number of problems in interpreting Durkheim's analysis of cause and function, it is still possible to construct a general model that summarizes the basic classes of variables in his theory. And, despite Durkheim's failure to analyze power and inequality extensively, the contours on an important ecological theory are nonetheless evident. By converting the causal model into abstract laws, this theory is seen to denote some of the most basic dynamics of the social universe.

Uehara, Edwina. (1990). Dual exchange theory, social networks, and informal social support. American Journal Sociology, 96, 521-557.

Recent developments in the field of social exchange may prove very useful to social support researchers as they begin to analyze the relationships between social structure, interaction, and perceptions of "support" in the event of crisis or need. Particularly promising here is a "dual exchange theory," as represented in Ekeh's elaboration of Levi-Strauss's conception of elementary exchange. Using data from a small-scale ethnographic study of

social network mobilization among low-income Black women in the event of job loss, this paper investigates two tenets of dual exchange theory: (1) informal support exchanges in natural settings take the form of "generalized" and "restricted" exchange, and (2) generalized exchange systems are associated with greater degrees of solidarity and social support. The data support the dual exchange thesis, with some modification of Ekeh's dichotomized conceptualization of exchange. The study reinforces the utility of network analysis and exchange concepts in the analysis of social support.

Vaux, Alan. (1990). An ecological approach to understanding and facilitating social support. Journal of Social and Personal Relationships, 7, 507-518.

Social support is best viewed as a complex process unfolding in an ecological context. This process involves transactions between people and their social networks, including the active development and maintenance of support network resources, the management of support incidents to elicit appropriate supportive behavior from the network and the synthesis of information to yield support appraisals. The process is shaped by features of both the person and the social ecology. This ecological model of support allows a more complete understanding of support processes, including their relationship to stress and well-being. The model also serves as a framework for intervention, highlighting targets and strategies for programs designed to facilitate social support. Options briefly discussed include improving utilization of resources, developing and maintaining resources, managing support incidents and enhancing support appraisals.

Wahler, Robert, G. (1990). Some perceptual functions of social networks in coercive mother-child interactions. Journal of Social and Clinical Psychology,9, 43-53.

When prolonged and chronic disputes characterize a mother-child relationship, there is reason to be concerned about the child's future emotional adjustment. Such coercion traps seem to promote antisocial child behavior through unfortunate reinforcement contingencies comprising the angry and escalating arguments between mother and child. This paper explores the thesis that the mother's participation in such traps is influenced by social network stimuli reflecting the quality of life in her ecosystem. When that life is fraught with loneliness, harassment, and other crises within the network, the mother is apt to perceive her child-care arena as little different from the remainder of her ecosystem. As a result, she will be insensitive to her child's communications, and, therefore, the course of their interactions is bound to be unpredictable, chaotic, and conflictual. Clinical strategies for the remediation of mother-child coercion traps follow our elaboration of the maternal perception thesis and the importance of grassroots mutual help groups is discussed in terms of therapeutic maintenance possibilities.

Waltz, Susan E. (1990). Another view of feminine networks: Tunsinian women and the development of political efficacy. International Journal of Middle Eastern Studies, 22, 21- 36.

Contemporary feminists have stressed the importance of women's networks in empowering women. In the Western context, professional networks, support groups, and the availability of role models are seen to provide a collective basis for the development of confidence and self-esteem as well as a potential base for political action. Feminist attention to the Middle East has uncovered patterns of interaction suggesting that there, too, women have found in feminine networks both the basis for power and the personal attributes that undergird social competence. Without intending either to contest these findings or to denigrate the importance of the women's circle as a basis for collective esteem, I hope in this article to call attention to another, less beneficial aspect of feminine networks. An in-depth study of the experiences of 12 politically active Tunisian women points up the limitations of the women's circle as a school for broad social competence.

Weakliem, David L. (1990). Relative wages and the radical theory of economic segmentation. American Sociological Review, 55, 574-590.

The radical theory of economic segmentation holds that systems of labor control affect labor's capacity to pursue its interest. The system characteristic of the leading sectors of U.S. industry provides immediate benefits to workers at the cost of undermining their control over work and their ability to mobilize for collective action. The radical theory implies that the system initially increased wages but eventually led to a decline because of these long-term effects on control and organization. I examine wages in U.S. manufacturing industries between 1947 and 1987, first distinguishing groups of industries within which wages move together. Data on collective bargaining provisions are then used to verify that the resulting groups are related to systems of labor control. Regressions are fit for wage changes in each group and significant period differences are found in the core group. The pattern of parameter shifts supports the radical theory's predictions.

Wellman, Barry. (1990). The place of kinfolk in personal community networks. Marriage and Family Review, 15, 195-221.

The purpose of this paper is to assess the place of kinship ties in personal community networks: intimate and active ties with friends, neighbors, and workmates as well as with kin.

Wellman, Barry, & Sim, Susan. (1990). Integrating textual and statistical methods in the social sciences. Cultural Anthropology Methods Newsletter, 2(1-2), 1-3,1-3.

We describe procedures that integrate statistical analysis with textual analysis to do case studies and make generalizations. Our interviews with respondents about their social networks have been both statistically coded and placed in a PC textbase. We first use the SAS statistical analysis package to uncover general trends and relationships. SAS's Print and Univariate procedures then identify particular cases that exemplify these trends and relationships. The textbase features of Wordperfect and Nota Bene aid our discovery of appropriate case material to make our analyses clearer and more attuned. Textual analyses also help to refine generalizations beyond their initial statistical basis and textual analyses.

Wellman, Barry, & Wortly, Scot. (1989). Brother's keepers: Situating kinship relations in broader networks of social support. Sociological Perspectives, 32, 273-306.

The authors evaluate the importance of kin in providing four different dimensions of social support: emotional aid, services, financial aid, and companionship. The authors analysis uses both quantitative and interview data from the east York (Toronto) studies of social networks. Kin compromise slightly less than half of these networks: an average of five ties out of twelve. Parents and adult children are highly supportive network members, providing high levels of emotional aid, services and financial aid (they avoid companionship, however). Siblings complement and substitute for parents and children, especially in the provision of services. Because there are many more ties between siblings (along with friends and neighbors) provide a substantial proportion of the support East Yorkers receive. By contrast, extended kin tend to be the least supportive and least companionable of network members. If kinship systems did not keep extended kin in contact, few would be active network members.

Willis, Cecil L., McNamee, Stephen J. (1990). Social networks of science and patterns of publication on leading sociology journals, 1960 to 1985. Knowledge: Creation, Diffusion, Utilization, 11, 363-381.

This article examines the impact of editor-author networks of institutional ties on publication patterns in three leading sociology journals between 1960 and 1985. The "invisible college," a social network of elite scholars, is discussed as the major contributor to the editor-author connection. Results suggest a pattern of institutional connections between editors and authors over time beyond random chance alone. It appears, however, that fluctuations in academic labor markets have weakened this network, resulting in a reduction in the strength of the institutional connections in journal publication.

Wills, Thomas Ashby. (1990). Multiple networks and substance use. Journal of Social and Clinical Psychology, 9, 78- 90.

This article considers the relation between social networks and substance use, focusing on adolescents. Social networks may include elements inversely related to drug use (e.g., affect regulation, emotional support) and elements that may be conducive to drug use (e.g., normative beliefs, modeling). Adolescents are members of two social networks (family and peer), and these networks have different effects on their behavior. Data from several studies show that peer and family support have opposite relations to substance use, and that structural and functional support make independent contributions to prediction of drug abuse. Implications for the theory of complex networks are discussed.

ABSTRACTS:

Papers, Theses

Adams, Rebecca G. (1990). The Structure of adult friendship: Internal and external aspects. International Conference of Personal Relationships, Oxford, England. 16-20 July 1990.

The author reviews structural research on adult friendship done in the United States during the last decade.

Aldrich, Meredith. (1990). Male and female worlds of closeness in a small South African city. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

This study sets out to test neo-Freudian hypotheses of close relationships (especially the work of Lillian Rubin) on a random sample of males and females in five age stages and from the two majority ethnic groups in Grahamstown, South Africa. On the basis of this data it is argued, following attachment theory, that at least on the emotional level, women are obliged to be more, rather than less, responsible. Hence care-givers rather than their dependents would seem to attain greater emotional maturity.

Allan, Graham. (1990). British studies in the sociology of friendship: A view of the past decade. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

The aim of this paper is to provide a commentary on sociological studies of adult friendship that have been undertaken and published in Britain over the past decade, though some reference will also be made to work in other disciplines, especially anthropology. Its focus will be on the progress that has been made in the analysis of friendship and other broadly similar forms of informal relationship over the period. As importantly, it will identify some neglected areas of British friendship research and suggest some future paths that might profitably explored.

Auhagen, Ann Elizabeth. (1990). Friendship and sibling dyads in everyday life: A study with the double diary method. Conference on Personal relationships, Oxford,England. 16-20 July 1990.

How do friendship and sibling dyads compare in everyday life concerning contact and social support? These were some of the main questions investigated in a longitudinal study which focused on both members of a relationship. During a period of sixty days each person of a dyad had to record all types of contact (e.g. personal contact, telephone contact, thinking of or talking about the other person), s(he) had had with the other individual of the pair. It was concluded, that the detailed investigation of the above mentioned variables in the everyday life of the subjects may lead to a better understanding of these relationships.

Backman, Carl, and Gerry Ginsburg. (1990). Empathy in relationships. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

In the proposed framework, caring is revealed through the communicative function of facial displays. The affective display of a partner is the occasion for a mimetic response by the subject. The mimetic response is a display which matches the affective display by the partner, but has not necessary tie to any interpersonal affective state. Nevertheless, it does serve as a basis for subsequent, potentially emphatic interaction sequences, and it can guide the affective quality of subsequent interchanges, because it carries implications for action. We elaborate upon this theme and demonstrate its operation in the establishment and modulation of mutuality in relationships. We also show that the occurrence of mimetic displays is contingent on the type, stage, and certainty of the relationship.

Bartholomew, Kim. (1990). An empirical examination of the cognitive model of loneliness. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

The relation between dependency and attachment has been an ongoing source of interest in the developmental literature, but has not been systematically studied in adults. Three distinct components of interpersonal dependency in adults have been identified- Emotional Reliance, Social Self-confidence, and Defensive Autonomy (Inventory of Interpersonal Dependency; HP; Hirschfeld et al., 1977). The relationship between these three aspects of

dependency and individual differences in attachment styles as assessed by a recently developed model of adulthood attachment (Bartholomew, 1989a, 1989b) was investigated.

Blieszner, Rosemary. (1990). Friendship processes in adulthood. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Based on a perspective of close relationships derived from lifespan developmental psychology, this paper focuses on two aspects of friendship processes in the adult years: the stages of friendship development, maintenance, and termination as influenced by different periods of the lifespan, and changes in interaction dynamics over time within a given relationship.

Bolger, Niall, Ronald C. Kessler and Elizabeth A. Schilling. (1990). Visible and invisible support processes in married couples. International Conference on Personal Relationship, Oxford, England. 16-20 July 1990.

It is now well established that perceptions of social support availability protect against the negative effects of stress on mental health. It is less clear, however, how these protective effects come about or how one might intervene to enhance support during times of stress. Given this uncertainty, social support researchers have increasingly turned their attention to identifying the specific interpersonal processes thought to underlie social support effects. Recent research on support transactions, however, has failed to document an association between receiving support and adjusting to stress.

Boon, Susan D, and John G. Holmes. (1990). Interpersonal trust, attachment, and emotion: Implications for coping with insecurity in marriage. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Our findings regarding the state of trust in a specific relationship relate to recent developments in theory concerning generalized attachment style. Issues of trust tend to be manifested in different ways according to gender and attachment style: For women feelings of insecurity were associated with a desire for merger or enmeshment with the partner, for men anxieties about trusting were reflected in a desire for less closeness and greater autonomy. These findings seem compatible with Gottman and Levenson's analysis of emotion in marriage, particularly the pattern of male withdrawal and distancing and female involvement and intensity in situations of conflict.

Bonacich, Phillip. (1990). Simultaneous Group and Individual Centralities. XII World Congress OF Sociology, Madrid,Spain

In studying interlocking directorates one may wish to describe the centralities of individual directors as well as the centralities of the boards to which they belong. A completely symmetric pair of measures of individual and group centrality is described in which the centralities of groups are a function of the centralities of their members and the centralities of individuals are a function of the centralities of the groups they belong to. The measure of group centrality is shown to be the standard measure used in interlocking directorate research (Bonacich 1972). An approach to controlling for variations in board size and the number of individual memberships is also described. Comparisons are made with correspondence analysis.

Busschbach, Jooske van. (1990). Changing interests: Towards an explanation of change and stability in ego-centered networks. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

In our attempt to construct a model that can also explain stability in non-supportive ties, we will expand on a preliminary model to explain changes in personal networks that was proposed by Flap and the so-called investment model as developed by Rusbult.

Carrington, Peter J. (1990). Blockmodelling with Sampled Data. XII World Congress Of Sociology, Madrid,Spain

Blockmodel analyses are often based on the ties among a sample of actors in the network, assuming that the model based on the sample fits the population network. We demonstrate the tenability of that assumption by comparing blockmodels derived from six samples of actors drawn from the same network– the members of the duplicate bridge organization in a Canadian city. The sample-based models are substantially the same, and have the same relationships with other characteristics of the actors in the samples.

Contarello, Alberta, and Chiara Volpato. (1990). Literary friendship. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Considered a voluntary bond available only to free men since ancient times, friendship between women has been either neglected or undescribed in literature- consisting mainly of acquaintanceship or master and servant

relationship – and its development in a major form – i.e. strong and freely chosen affection- would appear to be a recent phenomenon, even in women's writing. De Beauvoir's works might therefore be expected to shed some light on this theme.

Corman, June. (1990). Working women: implications for their friends, their families and their husbands. "Social Networks" sessions of the Annual Meetings of the Canadian Sociology and Anthropology Association, University of Victoria

Social networks are a resource which give people access to emotional support, financing, job leads and many other services necessary to reproduce themselves and their families. This pattern is well documented. Less is known about how these networks are composed. This paper explores the characteristics of people's employment and home circumstances that generate variations in the size and composition of social networks. Of particular importance is the finding that women's work status has significant implications for the attributes of both her own and her husband's social network.

Cutrona, Carolyn E. (1990). Interpersonal transactions and the psychological sense of support. International Conference in Personal Relationship, Oxford,England. 16-20 July 1990.

The belief that others are available to provide emotional and practical support in times of need has been associated with an impressive array of positive outcomes. Surprisingly, though, little is known about the determinants of the sense that one's interpersonal needs for support are adequately met. A need exists for methods to observe people's interactions and to analyze the content of interactions that are experienced as "supportive". In this paper, I will outline steps that my research group has taken towards the development of an observational coding scheme for social support-intended behaviors and will present preliminary findings using this technology.

Danowski, James A, and Ronald E Rice. (1989). Messages about voice messaging: Comparing semantic networks to computer- monitored and self-reported use of voice mail.

This research addresses whether respondents' opinions about voice mail (VM) reflect differences in their computer-monitored and self-reported usage of VM. In other words, it investigates the extent to which the meanings of VM for respondents are related to the observed and self-perceived usage of VM by those respondents. The analytical methods are motivated by cognitive theories of semantic networks, and the relational nature of communication.

Duck, Steve. (1990). Memory as a context for relationships. International Conference on Personal relationships, Oxford,England. 16-20 July 1990.

In this study, two pairs of subjects each carried out a conversation while both being observed by the other pair and also being videorecorded. The recall of each party for the conversation was compared with the other member's using the Iowa Communication Record (ICR), a development of the Rochester Interaction Record that includes information about the conversations of interactants. Results showed that memory for interaction is strongly related to personal needs within the relationship. Some questions were also raised about the nature of reality in relationships, the differences in perspective that have previously been given little theoretical attention in research, and the need to advance our theories of relationships by incorporating a strong role for memory processes.

Dykstra, Pearl A. (1990). Contributions of friends and family to adult well-being. International Conference on Personal Relationships, Oxford, England. 16-20 July 1990.

It is proposed that the question of interest is not whether friends are more important than family for the well-being of older adults, but rather when and why friends and family may be differentially associated with well-being.

Friedkin, Noah E. (1990). Theoretical Foundations for Centrality Measures American Journal of Sociology

Three measures of actors' network centrality are derived from an elementary process model of social influence. The measures are closely related to, and cast new light on, widely used measures of actors' centrality; for example, the essential social organization of status that has been assumed by Hubbell, Bonacich, Coleman, and Burt appears as a deducible outcome of this social influence process. Unlike previous measures, which have been viewed as competing alternatives, the present measures are complementary and, in their juxtaposition, provide for a rich description of social structure. The complementarity indicates a degree of theoretical unification in the work on network centrality that was unsuspected.

Gordon, Steve. (1990). Emotions in personal relationships: The social construction of love, jealousy, and grief. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

This paper will review the current state of sociological and historical knowledge about emotions in personal relationships. Special attention will be given to the social construction of love, jealousy, and grief. These emotions are central to relational issues of attachment, competition, and loss, and have been the subjects of extensive new research and theory in sociology and history. This review of sociological and historical research on emotions in personal relationships provides new perspectives on concepts in the study of personal relationships which should increase the range of existing theories, highlighting neglected factors and challenging contemporary analyses of relationships.

Hirdes, John P. (1990) An Examination of Factors Associated with the Maintenance of Physical Well-Being among Middle-Aged Males. Doctoral Dissertation, Sociology, University of Waterloo

The analyses are primarily based on the Ontario Longitudinal Study of Aging, in which of a cohort of 2000 Ontario 45 years males was interviewed annually starting in 1959 until they were 65 in 1978. The LSA results indicated that the strongest predictors of mortality were smoking and low scores on a social relationship index. Socioeconomic status was also a significant predictor of maintaining good health, but the social relationship index was not.

Hoffmeyer-Zlotnik, Juergen HP. (1990). A Comparison of Ego-Centered Networks Generated with Two Different Instruments. XII World Congress Of Sociology, Madrid,Spain.

For ego-centered network research one can use different name- generating instruments. Two of these instruments are (a) that one used in the American General Social Survey (GSS) generating the names of the "alerti" (network persons) by only one stimulus-situation of communication, and (b) that one of Claude Fischer used in the North California Community Study (NCCS) generating the "alerti" by eight different stimulus-situations about communication, and social help, and social life. Depending on the name-generating instrument used for assessing the ego- networks there are different frequency distributions of nominations for the members in a set (kins, friends, ect.). The data are based on a two waves panel study in which the application of name-generating instruments was varied systematically. In the first wave the sample was split with respect to the two instruments. In the second wave the instruments were exchanged within each split version for one half of our respondents so that we can control stability and validity of the instruments. A latent class analysis shows the dependence of alerti nomination (cases) on the different name-generators and on the different waves by giving the probabilities for each subgroup of cases (kins, friends, etc.).

Hoyert, Donna L. (1990). Intergenerational Exchange of Financial and Household Assistance. Center for Demography and Ecology, University of Wisconsin.

The family network of parents and children is a context for the exchange of encouragement, assistance, and affection over the life course. However, the types of support exchanged depend upon the amount of need, characteristics of network members, and characteristics of the network. This study investigates the relationship between elderly parents and their adult children, using data from the National Survey of Families and Households. In particular, this is an analysis of the exchange of household and financial assistance contingent upon each generation's characteristics and the distance separating parents from their children.

Jacobovitz, Deborah, and Nell Fullinwider. (1990). Young adults' reconstruction of their family networks. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Findings suggest that individuals carry forward a network of family relationships from childhood that are linked to adult depression. Also, higher self-esteem in interpersonal relationships was related to changes over time in triangulated family patterns. Research examining whether self-esteem is related to actual or perceived changes in family patterns is underway. Family scale validation measures along with implications for preventive intervention will be discussed.

Johnson, Eugene C. (1990). The micro-macro connection: Exact structure and process. The IMA Volumes in Mathematics and its Applications 169-201.

We present an analytic method for determining the model of exact micro and macrostruments and their set of characterizing microprocesses for a given two-valued social relationship in a human group. It is cast in terms which clearly show its applicability to any empirical network representing a relation in a group, human or otherwise, and, in principle, is extendible to networks in which a relation is multi-valued or there is more than one relation. At least for specific cases, such as those discussed in this paper, the method enables us to establish a

connection between submodels and the constraining microprocesses which characterize and indirectly generate the micro- and macrostruments in them.

Kadushin, Charles, and Delmos J. Jones. (1990). To He Who Hath Shall be Given: The Social Consequence of Network Support in a Tough City. Center for Social Research, Graduate School and University Center of the City University of New York

This is an investigation into the consequences of social network support for persons of different incomes and races in a "tough" city – New York – in terms of their view of their neighborhood as a desirable place to live. The data come from the City University of New York-New York City Survey of 1988. The survey interviewed a random digit telephone sample of 1462 individuals over the age of 18 in New York City's five boroughs. The paper will show that (1) wealthier and white New Yorkers like their neighborhoods better; native blacks regardless of other factors like their neighborhoods less; (3) contrary to what some of the literature on social support might suggest, social networks which are neighborhood oriented and in which everyone knows everyone else benefit rich New Yorkers more than the poor ones. Thus, "To he who hath shall be given."

Kazmina, Olga. (1990). Personal Systems. Social Connections as Characteristics of a Person. USSR Mental Health Research Center AMS USSR, Institute of Clinical Psychiatry

Lately there has been noted increasing interest to social support and social connections as factors overcoming stress among professionals working in the field of mental health. Our lab studies the beneficial effect of different types of social interactions on an individual.

Klovdahl, Alden S. (1990). Social Networks: From Data to Observations. XII World Congress Of Sociology, Madrid,Spain

In attempting to study networks, personal networks or social networks, the unit of direct observation is usually the individual (person/actor). The purpose here is to outline the problems encountered in transforming individual data into observations of social networks, to discuss the solutions available using a relativity widely available statistical package (SAS), and to provide a series of illustrations of the transformations required to study an urban social network with several thousand nodes and bonds.

Lyons, Renee F, and Teresa Fagan. (1990). The Social Behaviors Of Three Age Groups Of Integrated Mentally Handicapped Children. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Particular forms of social behavior such as social entry and conflict resolution as well as gender differences will be discussed as well as implications for social skills development and social integration research.

Macharia, Sospeter Kinuthia. (1989). The Role of Social Networks and The State In The Urban Informational Sector: The Case of Nairobi, Kenya. Doctoral Dissertation, Sociology, University of California at Berkeley.

In this chapter I will present the main findings of this study and compare them to my argument that the informal economy in African cities is based on social connections. It is through the utilization of various social networks that the success of the informal economy can be explained. I have also argued that the state, through some of its officials, has been as indirect actor in the development of this sector. Some of these officials have been connected through friendship or kinship to informal sector operations.

McCall, George J. (1990). Development Of a Measure Of Strength Of a Communal Relationship. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

This paper presents a comparative assessment of Berenson's and Simmel's analyses, with particular attention to their respective implications for the role-identity theory account of persons in relationships.

McCarthy, Barry. (1990). Friendship Network And Well-Being Following The Breakup Of A Dating Relationship. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

A longitudinal study of the aftermath of breakup of a close heterosexual dating relationship failed to find substantial evidence of social support from the friendship network on a measure of depressive symptomatology two to four months after breakup.

McWilliams, Susan, and Philip Blumstein. (1990). Hierarchy In Close Relationships. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

While social scientists generally concede that hierarchy is a ubiquituos feature of social organization, we feel that much conceptual work remains to be done on how hierarchy manifests itself in very day life, particularly in the

context of close relationships. To this end, we will address the following topics in this paper: (1) What are the implications for face-to-face interaction of the participants' membership in social categories which are hierarchically arranged in the broader society?; (2) How can we analyze close relationships so as to capture the manifestations of hierarchy from sources other than social category membership?

Miell, Dorothy. (1990). Understanding Relationships: The Young Child's Perspective. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

The research reported here examines how very young children (3-6 yrs old) understand and think about various relationships. With some welcome exceptions, studies of children's relationships are often limited to observation of their behavior with playmates. We do not know enough about what they think about friendship, let alone how they understand other relationships such as with rarely seen relatives or parents' friends. This is particularly true of younger children such as these, who have not been seen traditionally as capable of having complex understandings of relationships.

Mullen, Brian, Carolyn Copper and Craig Johnson. (1990). Memory Structures In Working Groups. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Discussion focuses upon directions for future that might identify underlying mechanisms, and effective countermeasures, for these effects of attrition on transactive memory networks.

Muzzin, Linda J. (1988). The Process Of Medical Referral Doctoral Dissertation, sociology, McMaster University, Canada

The purpose of this research was to develop a model of the complex process of medical referral, in which a physician consults with of refers a patient to a specialist. Fifty cases of referral were investigated by interviewing the referring physician, patient and specialist(s) involved with the case at various points before and after the referral. Referrals were followed first in a southern Ontario city and, for comparison, in northwestern Ontario.

Palmer, Mark. (1990). The Pragmatics Of The Moment-To-Moment Display Of Nonverbal Behaviors. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

This paper reviews results of three studies which attempted to map behaviors on to relational inferences of interpersonal dominance and affiliation. In these studies naive, untrained observers produced inferences about relationships between other, naive social actors engaged in conversations. The data addressed cross-sectional relationships between behaviors and judgments as well as over-time relationships to show the micro-level exchange of nonverbal behaviors represents a fundamental pragmatic process through which relationships are built, act-by act during conversations.

Su, Tie-ting, and Zhi-gang Liu. (1990). Centralization, Decentralization And Regionalism In China.

This paper proceeds with the following two sections with the focus on the second. The first section will examine the complexity of centralization and decentralization of power in China after a decade of economic and social reconstructing. In particular in this section we will analyze decentralization of power from the central state to different regions in 1980s. The second section will explore the pattern of economic and organizational arrangements and power redistribution at regional level. Using factor analysis method, we aim to detect different economic and organizational structures, which may lead to incongruous social and economic development courses for different regions in China.

Sturm, Gabriele. (1990). MDS- and SYMLOG- Structures of Selfreported Interaction Networks Obtained by Rep-Grid-Tests in a Panel Study of Women Having their First Child. XII World Congress Of Sociology, Madrid,Spain.

Within a large longitudinal study under the topic "Behavior and Attitude" from 1982 to 1984 women were questioned who in this period had their first child. The material hypothesis was that the birth of the child represents a critical behavior-changing event so that an attitude change can be expected.

TenHouten, Warren D. (1990). Methodological Issues of Snowball Sampling. XII World Congress Of Sociology, Madrid,Spain.

Snowball sampling is an alternative to independent probability sampling in social research oriented to the study of social behavior in its actual and real contexts. There are four assumptions in probability sampling that are contradictory to the metatheoretical presuppositions of field researchers. The methodological context of snowball

sampling can be extended by using it in conjunction with other data-acquisition methods such as site sampling, experience sampling, role sampling and thought sampling.

Van der Poel, Mart. (1990). Delineating Personal Support Network. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

There are several approaches to the delineation of personal or egocentered networks. The main advantage of the exchange approach compared to other approaches (role relation, interaction and affective approaches) is the direct link between the problem being studied and the criteria used for delineating the personal network. Furthermore, as a result of the specificity of the questions with which the network members are identified, the exchange approach yields results which are the least subject to differing interpretations between respondents.

van Meter, Karl M., Lise Mounier and Ghislaine Chartron. (1990). Network Analysis by Factorial and Classification Methods of the Official Biographies of Members of the Soviet Central Committee. XII World Congress Of Sociology, Madrid,Spain.

Using the official biographies of all members of the Soviet Central Committee between 1981 and 1987, furnished by the online database SOVT on the server GECAM in Paris, a preliminary network analysis recently presented at an international conference of RC 33 in Moscow ("East meets West") has shown that five distinct geographic poles structure the ties between members.

Wellman, Barry, Scot Wortley and Vicente Espinoza. (1990). Community Ties and Social Support. "Social Networks" sessions of the Annual Meetings of the Canadian Sociology and Anthropology Association, University of Victoria, Canada.

Community ties with friends and relatives are a principal means by which people and households get supportive resources, along with market exchanges and institutional distributions. We use quantitative and qualitative data from the second East York study to evaluate six potential explanations of why different types of ties provide different kinds of social support: tie strength, contact, group processes, kinship, network members' characteristics, and (dis)similarities between network members in such characteristics.

Wellman, Beverly S. (1990). Pathways to back care: Use and referral. Masters thesis, Department of Behavioral Sciences, University of Toronto.

This thesis is a study of how persons with low back pain come to use three different types of practitioners: physicians, chiropractors and Alexander teachers. It is based on interviews with respondents living in or near Toronto, Canada where (a) many alternative types of health care are available, but (b) different types receive different amounts of institutional support. It compares clients who currently are receiving officially-approved care from physicians and other medical sources with clients receiving semi-official care from chiropractors and alternative care from Alexander teachers.

Wiseman, Jacqueline P. (1990). The mechanics of "making up": Friendship as contrasted with marriage. International Conference on Personal Relationships, Oxford,England. 16-20 July 1990.

Analysis of depth interviews with 80 males and females ages 18 to 80 from all walks of life indicate that there are many approaches to handling a friendship once it is lost.

The International Network for Social Network Analysis
Le Reseau International pour l'Analyse des Reseaux Sociaux

Center for Applied Anthropology, University of South Florida, Tampa, FL 33620-8177

PERSONAL MEMBERSHIP RATES 1991

CONNECTIONS and SOCIAL NETWORKS, 1 year $80_____
CONNECTIONS only, 1 year $30_____

CONNECTIONS supplement (each issue on searchable 5" floppy disk) $18_____

INSTITUTIONAL MEMBERSHIP RATES

CONNECTIONS only, 1 year $30_____

BACK ISSUES. All twelve volumes are available by special order at $30 per volume. Notify your library.
Some issues individuals might be interested in at $10 per issue are:
Vol.2(1)1979 Peil, African Nets; J.C. Mitchell on segregation; L.Freeman on integration; Bernard & Killworth, small world roundup; Anderson & Christie, ethnic nets. 2(3) 1979 Early membership directory--a collectors' item! 6(1)1983 Abstract Bonanza issue plus J. A. Barnes on modelling. 8(2-3)1985 Levine's corp. atlas; Mitchell on British nets, Monte Carlo analysis, FORTRAN; Burt, the GSS; Wellman and Baker on SAS. DOUBLE ISSUE. 9(1)1986 Phillip Abrams' last paper; Interactive loglinear; Computer graphics; STRUCTURE 9(2-3)1986 100 pages of ABSTACTS DOUBLE ISSUE. 10(1)1987 Chino on group structure; Wolfe, applications of network models. 10(2)1987 European special issue: Tilly on historical analysis; Network analysis in France; Hungarian & Soviet reports. Other recent issues, including the Directory in 12 (1).

GRAND TOTAL (check or money order please).....US $ _____

NETWORK DIRECTORY INFORMATION (please type or print clearly) New Member_____ Renewal_____

Name_____
(last) (first)

Address_____

_____

City_____ Prov./State_____Zip-code_____

Telephone ( )_____ BITNET/NETNORTH/EARN_____at_____

PRINCIPAL DISCIPLINARY AFFILIATION (What field is your "home?") administration anthropology biology communications community/urban computing criminology demography economics education epidemiology geography gerontology history information law library management/business math medicine networking planning politics psychiatry psychology public_health social_work sociology statistics theology
other _____

KEYWORD DESCRIPTORS (What are your active interests?) administration attitudes authority blocks children communication community computer nets computers consulting corporations crime demography deviance education elites environment epidemiology ethnicity exchange fieldwork friendship gender gerontology government graphs health hierarchy history households information interorganizational linkages kinship law longitudinal microstructure mental_health migration occupations organizations perception philosophy physical_health politics power qualitative_methods quantitative_methods recruitment religion rural science social class social_mobility social_movements social_services spatial_models stratification support surveys teaching technology theory therapy urban
Other_____

CURRENT NETWORK ACTIVITY (What are you up to? Include recent publications)

_____

_____

_____

_____

Please send abstracts of recent papers and books.

INSNA/CONNECTIONS
Center for Applied Anthropology
University of South Florida
Tampa, FL 33620-8100

INSNA / CONNECTIONS
Center for Applied Anthropology
University of South Florida
Tampa, FL 33620-8100