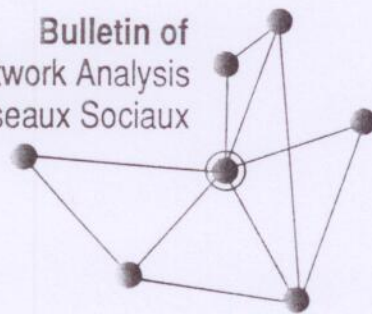


CONNECTIONS

Volume XIV Number 3 Fall, 1991

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 XIV

Number 3

Fall, 1991

CONTENTS

FROM THE EDITOR

Alvin W. Wolfe3

TIES & BONDS

Barry Wellman4

MEETINGS9

ARTICLES

A Reading List in Role Analysis

Alaina Michaelson10

Obtaining reliable network data about family life: A methodological examination concerning reliability of egocentered networks in survey research

F. Neyer, W. Bien, J. Marbach and R. Templeton14

ABSTRACTS

BOOKS27

JOURNAL ARTICLES.....34

CHAPTERS IN BOOKS49

PAPERS50

ADDENDUM TO THE INSNA DIRECTORY 199157

CONNECTIONS

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

EDITOR: Alvin W. Wolfe

INSNA COORDINATOR: Alvin W. Wolfe

INTERNATIONAL COORDINATOR: Barry Wellman

ASSOCIATE EDITOR: Susan D. Greenbaum, University of South Florida

EUROPEAN EDITORS: Hans Hummell; Univ of Duisburg

COMPUTER EDITOR: John Sonquist Univ of California-Santa Barbara

GRADUATE ASSISTANTS: Christine Deal

VOLUNTEERS: P. Elaine Hinchet, Charles Price-Reavis,
Jiqian Xu, Honggang Yang

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 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. Electronic funds transfer to USF Federal Credit Union, Routing: Transit No. 263183159, INSNA Acct. No. 225670. Wire transfers must be sent to Southeast Corporate Federal Credit Union, ABA #2631-89069, P.O. Box 3008, Tallahassee, FL 32313, USA.

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 \$82.00 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

This issue of CONNECTIONS contains two articles and hundreds of abstracts. While we are pleased to serve our readers by searching out and preparing all those abstracts, we really enjoy working with authors on manuscripts that survive the peer review process, that then benefit from reviewers comments and editorial suggestions, and finally emerge as published articles of high quality that prove the value of CONNECTIONS. We would be happy to see more manuscripts submitted. In the last issue, Vol 14(1,2), we published more than a hundred abstracts of unpublished papers from the International Sunbelt Social Network Conference and other conferences, but we did not receive anything like that number of manuscripts for possible publication.

Send us your manuscripts! And continue to send us the abstracts of any of your products, books, chapters, journal articles, technical reports, papers, whatever is relevant to networks.

In searching the literature for network articles to abstract for CONNECTIONS, we ran across the fact that one of our esteemed members, Everett Rogers, has been honored in a way that means most to scholars: The July 15th issue of CURRENT CONTENTS notes that the 1971 edition of *Communication of Innovations: A Cross-Cultural Approach*, by Everett Rogers and F.F. Shoemaker, has been cited in more than 960 publications, while its first and third editions were cited in more than 815 and 370 publications, respectively. Congratulations, Ev!

We got word from Professor Emeritus Bengt Rundblad that he had retired in 1989. Now, after a distinguished record of service which included serving on Barry Wellman's Advisory Committee for CONNECTIONS, is giving up his membership in INSNA. We wish him well in his retirement.

Another item we did not see in Barry Wellman's "Ties and Bonds" column, on which we generally rely to keep up on such things, is the growth of network studies at Louisiana State University. Not that LSU has been a stranger to the study of social relationships and "Gemeinschaft". The Department of Sociology was the academic home for four decades to Rudolph Heberle after his flight from Germany. Heberle passed away in April of this year and is survived by his wife Francezca, the daughter of Ferdinand Toennies. This fall Scott Feld and Jill Suitor joined the Sociology Department which already included Jeanne Hurlbert, Michael Irwin and Wesley Shrum. Although they don't yet claim a "Social Network Group" at LSU, there is some good potential membership for INSNA!

Last year, we had proposed to publish in 1991 three issues, in January, May, and September. We tried, but had to publish a joint issue, Vol 14, Nos. 1 and 2, in May, and now this one in November. Our plan for 1992 is three issues, in February, June, and October. This issue being the last for 1991, we must urge you to pay your subscription (INSNA membership) fee for 1992. There is the usual membership form as the last page of this issue, which you may copy and use for yourself and for others whom you recruit as INSNA members. We are not raising the INSNA dues for 1992, but unfortunately, just as we were finishing this editorial and putting CONNECTIONS to bed, so to speak, we learned from Elsevier Science Publishers in the Netherlands that they have once again raised the price of SOCIAL NETWORKS to us. So for 1992, our fee structure for INSNA is: Membership, CONNECTIONS only, \$30.00; Membership, including CONNECTIONS and SOCIAL NETWORKS, \$82.00.

One last reminder from us re the International Sunbelt Social Network Conference, February 13-17, 1992, in San Diego. Registration is through Phil Bonacich, Dept of Sociology, UCLA, Los Angeles, CA 90024. That address, and his E-MAIL address was in the directory we published in the last issue: BONACICH at SOCISSR.SSC.

Finally, speaking of the directory, we are publishing, toward the back of this issue, an addendum, including persons who were inadvertently missed before or who have joined or rejoined us since.

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

TIES & BONDS

Barry Wellman, University of Toronto

FOR A MORE INTERNATIONAL INTERNATIONAL NETWORK

The wonderful attendance at the recent European network conference – 120+ papers & 300+ participants – suggests that network analysis is exploding beyond its current North American base. What will become of the relationship between European networkers & INSNA. While many Europeans belong to INSNA, most do not. This is due to their cost, as many papers at the European conference betrayed an ignorance of North American research. Yet the Sunbelt is almost totally a North American affair. While we're not in as much trouble as the social psychologists who generalize to the world from American university students, Sunbelt folks also face the danger of provincialism – in particular, of assuming the macro American context as a given rather than as important set of variables.

(In general, we need to reach out more to remain on the leading edge. Where, for example, are the world-systems and personal relationships people at the Sunbelt and in Social Networks?)

The time has come for a truly international conference. The Europeans showed enthusiasm for a spring or summer one in North America – possibly in 1992 or 1994. New York, Toronto, Los Angeles, & lots more places would be attractive locales. (Or, I know a lovely Greek island.) I think the ball is in the INSNA's court, & especially it is up to North Americans to do this. This whole question of international outreach should be on the Sunbelt 1992 agenda.

NETWORKS & MEMBERS

Disappearing Members – Taking Community Lost Seriously: A rumor of disappearing male genitals has gripped Lagos, Nigeria leading to mob attacks on suspected organ robbers. The rumor states that some unscrupulous people use bodily contacts such as handshakes to make genitals disappear. The stolen organs allegedly are resold for thousands of dollars. Dozens of suspects have been beaten or arrested, and many residents now go about the streets checking their genitals immediately after a handshake or bodily contact with a stranger. Another method reportedly used by "evildoers" is to ask victims for the time of day or for directions. Mob violence occurs most where crowded conditions prevail such as bus stops or markets. [Toronto Globe & Mail, Nov 90].

This story was widely reported in North America to widespread snickers. But consider how "Neighbourhood Watch" (as it's called in Toronto) teaches essentially the same demonizing of strangers to North Americans.

Community Liberated Members: "This is how people really live in cities: Not in a self-contained community, but connected by tendrils to a series of different worlds." [Toronto Globe & Mail theatre critic Ray Conlogue's review of Judith Thompson's "Lion in the Streets," 8 Nov 90; contributed by Peter Carrington]

Transitive Members: Wedekind's daughter Kadidja (still alive & as far as I know well in Munich) told me her father changed his mind, somewhat, about his heroine before writing the revised version of "Pandora's Box". Through an affair with Strindberg's ex-wife he had acquired some of the Swedish master's misogyny." [Eric Bentley, NY Review of Books, 30 May 91].

Connecting Members thru Bad Puns: "Czechmate" is a dating service for Western European men looking for "stunning professional cultured ladies – doctors, lawyers," from Czechoslovakia. [International Herald Tribune, 15 June 91].

Swearing Members: Psychologist Richard Gevirtz says swearing is a good way for a pro athlete to forge bonds without risking intimacy. The accompanying physical contact – the hugging & butt slapping – in sport is "1 of the only ways men are allowed to feel genuine feeling for each other in society." Verbal crudity, especially swearing, is a way of assuring that none of it gets taken too personally, that the men don't get too socially close. [Toronto Globe & Mail 11 Sept 91].

Member's Birthday: I had my 49th birthday today. To mark it I receive e-mail from Bill Richards. I'm going to visit him soon to collaborate & lecture to his students. He wrote, "My students are all excited. They've never met anyone they've read before who is still alive!" I have taken comfort in the proverb I heard at the BMW Car Club of America's convention (almost as much fun as the Sunbelt): "You're only young once. But you can be immature forever." To which, the speaker quickly added, "I'm not as good as I once was. But I'm still as good once."

Enhancing Members' Connectivity: Hallmark Cards reports explosive growth in "no-occasion" cards which now account for more than 10% of the 7.3 billion greeting cards sent in the US annually. They fill the gap when you want to communicate with someone, don't have a birthday or Christmas to buy a greeting card, & presumably, you don't know how to write a letter. There are 520 non-occasion cards for adults. "Some seek to deepen friendships ('You're more than a friend, you're just like family' [for details, see Wellman & Wortley, *AJS*, 11/90]. Others simply keep in touch ('Do you realise we've been friends for more than half our lives'). Others express difficult thoughts ('This is hard to say but I think you're a much better person when you're not drinking.')" One is for lovers worried about AIDS: "It isn't easy for me to bring this up, but I think we need to talk about our past relationships. It used to be that the past wasn't very important. But in today's world it really matters...So let's talk before we go any further." [Infectious members?; *The Economist* 10 Aug 91, p. 63].

MOBILITY STUDIES

Elites' Members: One-third of men who attend business conventions seek out paid sex at some point according to Ted McIlvenna who runs the Inst for Advanced Study of Human Sexuality (San Francisco, of course). Prostitutes prefer men higher up the corporate ladder. 1 reported, "I always like presidents better than vice-presidents. They're more fun. The vice-president is always trying to either hang on to the vice-presidency or move up. Presidents are more generous, more laid-back." (sic) [*Toronto Globe & Mail*, 7 Sept 90]

How Presidents Have More Fun: "Michael [Ovitz] has developed a spiderweb of connections. He realizes that his assets are relationships. He is always meshing — his agents, his clients, the studios, the networks, the small production companies. He has a capacity to relate to whole bunches of people in that web — & he always realizes that a twang over here has repercussions over there." [Alfred Checchi, co-chair of Northwest Airlines, about the head of CAA agents (& broker of the Matsushita/MCA merger; Connie Bruck, "Leap of Faith," *New Yorker*, 9 Sept 91]

This Man Needs to Read Cook & Emerson: [US presidential advisor John] "Sununu had made the classic Washington mistake. In assuming he didn't need anyone (except the President), in treating 1 and all arrogantly, he in effect guaranteed that no 1 would be there for him when he got in trouble. He had virtually no line of credit to draw upon. A close friend of Bush's recently said, "If you're arrogant enough to think you don't need friends in this town, you don't survive very long. There are too many dependencies in this town. Bush is dependent on members of Congress & he's dependent on people who head the departments. If Sununu is offending people, that's serious in terms of the issues of governance." [Elizabeth Drew, "Letter from Washington," *New Yorker*, 27 May 91, pp. 87-88].

There's Light at the End of the Pyramid: "As an independent Nu Skin distributor, you retail 1 of the finest lines of skin care, hair care & personal care products. Nu Skin's method of distributing products through independent business people like yourself is called 'network marketing'. Others refer to this as multi-level marketing. You order products from 1 of our distribution centers & sell them to your customers. You will probably also recruit others to help you, thus receiving a commission on the products they sell. There is a world of difference between honest Networking Marketing, like the program used by Nu Skin, & illegal marketing schemes. Nu Skin is growing rapidly, but we are still a small part of this high-growth industry. Because Nu Skin products are used by consumers & then reordered, we'll never reach a 'saturation point.'" [Ad in *USA Today*, 8 Aug 91]. Sounds like a natural for UCINET, STRUCTURE & NEGOPY.

MARCH OF SCIENCE

Annals of the Birth of Network Analysis: "If we think roughly about American society, it seems like a minestrone soup continuously cooked & added to. This makes analysis very hard." [From student lecture notes of Harrison White's "Introduction to Social Relations" course, March 16, 1966; contributed by a former student].

More Tales of Harvard: Fred Mosteller remembers undergraduate ecstasy. "What about 6 dice and the likelihood of getting 18? We went to [the prof's] office & he showed me a generating function. It was the most marvellous thing I had ever seen in mathematics. It was a total retranslation of the meaning of numbers. I really thanked him. [Numbers were more than] just homework problems for innocent students." In Donald Albers, *More*

Mathematical People, Harcourt Brace 1990, as quoted by Hugh Kenner, *Byte*, 3/91].

More Tales of Statisticians: A major debate developed among US statisticians about how to adjust the US census count for persons not counted. At stake are changes in \$59 billion in annual population-dependent funding. Commerce Dept lawyer called William Kruskal (Chicago) to ask "with incredulity how another leading member of the panel, John Tukey (Princeton) could have recommended adjustment." Kruskal & Kenneth Wachter (Cal-Berkeley) opposed adjusting the data for states and smaller units because it would be "less accurate for a number of states & surely less accurate for a substantial fraction, possibly a majority of local areas." Tukey favored it, writing that the adjusted counts "according to a variety of criteria, each of which follow accepted statistical practice, are more accurate, both as to numbers & as to shares, than the raw original enumeration." [NY Times 15 July 91].

Deep Structure: "About 10 years ago, a major paradigm shift occurred in linguistics. [Chomsky] & other workers proposed that the innate language facility be viewed as a collection of switches imbedded in a network. All humans are born with essentially the same network, but the switches flip over into different positions – corresponding to different rules of grammar – depending on whether a child learns Swahili or Chinese or English. The job of linguists, Chomsky says, should be to see beyond these superficial rules, or settings, to the underlying network, in which is embodied the deep structure of language." [From *Scientific American's* 5/90 biographical sketch.]

COMPUTER NETWORKS & SOCIAL NETWORKS

The Am Assoc for the Advancement of Science is trying to launch an electronic medical journal, "The Online Journal of Current Clinical Trials". Ed. Edward Huth; cost \$110. Authors can submit ms. by modem & ms. will be sent to referees by e-mail. Readers can request printed versions by fax or snail mail. Proponents say it's a rapidly moving area where doctors want to know results quickly. Other electronic journals have failed. [NY Times, 25 Sept 91].

"Electronic Networking: Research, Applications and Policies" is a new journal published by Meckler covering the use of telecom networks to provide information services & products. It'll publish research findings related to electronic networks, that assess policy issues related to networking, & that describe current/potential applications of electronic networks. It'll appear initially in paper form & hopes to become electronic in the future. Ed: Charles McClure, Schl of Info Studies, Room 4-206, Center for Science & Technology, Syracuse U, Syracuse NY, USA 13244-4100. Tel: 315-442-2911; fax: 315-443-5806; e-mail: cmmclure@suvvm.acs.syr.edu .

The Ultimate Network? "Now you can use your personal computer & modem to be a part of a faith community that breaks the geography barrier. Join people of faith across Canada in discussions about beliefs, church software, Sunday school, bulk buying." [Toronto Star, 28 Sept 91].

Perfect for Gossip Columnists & Network Researchers: Hyper-Rez sets up hypertext links between text files in IBM-type personal computers. Just the thing for storing write-ups of network members plus info. about their links. Neil Larson, MaxThink, 44 Rincon, Kensington CA 94707. (415-428-0104).

Not All Connectivity is Useful: From the editor of *New Scientist* magazine - - "Will contributors please stop sending articles which use the word "disconnect". Given the technological nature of much of the magazine's material, the d-word crops up a rather lot. Every time it does, the *New Scientist* computer promptly obeys & shuts down. Suggested synonyms: suspend, break off, snap the thread, interrupt." [London Times, 29 June 91. BW: Perhaps they should stop using punched cards?]

Joseph Walther (U Oklahoma) has received a \$50K grant from Omniquest Software as part of his research in interpersonal & group factors in computer-mediated communication & group decision support systems & a smaller grant to develop a measure of participant satisfaction in electronic meeting systems.

THE CONFUCIAN SCHOOL OF NETWORK ANALYSIS

"Although the social network approach was obviously formulated by Western scholars, some Chinese social scientists also noticed the impact of interpersonal relationships on individual behaviour and attitudes in China. Liang Shuming pointed out that social theory by the Confucian school, the most powerful and widespread ideology in both ancient and contemporary China, emphasized the importance of interpersonal relationships in human life, rather than the individual or the collective.

"Chinese ethics merely attend to dyadic relationships. It did not fix on any end of this tie. The ethical standard is the relationship standard in China according to Liang. Confucianist social theory aims at establishing a harmonious social order. Ethics is the fundamental frame of this social order.

"The basic proposition of Confucianism is that a human being lives on various relations. The types of relations correspond to types of ethics. Human relations are knit into a web. Confucianists believe that each tie (relation) represents interaction between people. Positive interactions, such as friendship, fraternity, etc., consist of a harmonious order (Jin).

"Fei Xiaotong [the most famous contemporary Chinese sociologist – BW] explored the nature of the Chinese relationship network. He proposed that a Chinese relationship network looks like a set of concentric circles. Ego was at the center of the circles. The degree of intimacy went down from the center to periphery. Different attitudes corresponded to relations with different degrees of intimacy. He conceptualized it as 'chaxu geju' (order pattern) and pointed out that this pattern is the main form of relationship networks of this kind."

[B.W.'s note: The author of this, Fan Li {or Li Fan in Chinese} is a Sociology Ph.D. student from Beijing at the University of Toronto. He is currently analyzing Inner Mongolian block models. Excerpted from a term paper for a graduate course in social networks.]

ANOTHER VIEW OF CHINA

"The central contradictions of today is that the modern Chinese intellectuals who respond so warmly to the ideals of the democratic West are at the same time caught in the institutional arrangements inherited by the Chinese state. These institutional practices make the scholar of modern times still dependent upon the state of his education and appointment to an official position. Chinese students of today are thus the inheritors of the position of the Confucian scholar-officials of the imperial era. Meanwhile the artists & writers & in some cases the scientists of day are a new element for whom the atavistic Communist leadership has little use. They are not primarily concerned with loyalty to the ruler & service in government. They represent the Western tide of democratic individualism but their status & function in China has not yet been institutionalized & they lack the security of their counterparts in democratic lands. This is to say, in other words, that a civil society has not yet been established on the ruins of the Chinese empire." [John K Fairbank, New York Review of Books, 31 May 1990. Prof. Fairbanks has recently died.]

SHORT SHTICKS

Paul Friesma, Dwight Conquergood, Jane Mansbridge & Albert Hunter (Ctr for Urban & Policy Research, Northwestern U) are analyzing the multicultural life of Chicago's Albany Park area. They find that "among the problems confronting the newcomers is the inability of organizations & institutions – usually structured along geographical lines – to deal effectively with the new dispersed ethnic populations." [Urban Affairs News, Spring 1990, p. 4].

Paul Wright (Psych, U North Dakota) has produced a booklet, "The Acquaintance Description Form: What it is & how to use it."

LETTER FROM PARIS

The thing that struck me most about the 2nd European Social Network Conference was how like the Sunbelt it was. Not the June weather, which was cold & drizzly. However, Paris in June outdoes Tampa in the rain. Not the schedule which was jam-packed & didn't support poolside networking. But the content. At 1 time, most European papers had been qualitatively different: less flashy methods, more big substantive questions. There's been a regression towards the mean. More professional data analysis, but regrettably also more empty number crunching.

The 300+ participants came from about a dozen countries, including about a score of North Americans and at least 1 African. The biggest representations were from France, Netherlands and Germany, but I met folks from Italy, Poland, Bulgaria, Britain, Spain, etc. I was disappointed by how few came from Britain - - our ancestral network home. One explanation given was that the time coincided with British university exams.

Many of the senior participants knew each other, and this helped to bridge national boundaries. Coming from Canada, with its language politics, I was startled to see that English has become the default language – naturally used between 2 persons from different countries in & used for most papers. Regrettably, English speakers often daydreamed when papers were given in French & vice-versa. I was disappointed when my own paper didn't elicit comments on differences between personal communities in North America & France.

With 120+ papers, there were concurrent sessions. We all got the thrill of speaking in the Sorbonne, creaky floors and all, and some of us got the added charge of orating in the Sall Durkheim itself. (I looked heavenward, and started, "Emile,..."). There was lots on social support & community – the one I especially found useful was by

James Cecora (an American in Germany) on how informal support contributed to a household economy. There was lots on corporate & intercorporate ties, including Karl van Meter on links among Soviet Politburo members. Hope Karl's DB program can handle links among 16+ republics.

The size of the gathering, the youth of the participants & the competence of the papers created much enthusiasm for the future. An informal steering committee formed (see below). Over onion soup & wine, it was agreed to hold European conferences every second year in the summer, with an attempt to move around geographically. The 1993 one will be held either in Germany or Poland.

Steering Committee (in no particular order, except of the lunch table): Frans Stokman (Neth), Alexis Ferrand (Fr), Wolfgang (Rolf) Ziegler (Ger), Alain Degenne (Fr), Michel Forse (Fr), Endre Sik (Hung), Ove Frank (Swe), Martin Everitt (UK), Diedre Kirk (Ire), Joseph Skvoretz (USA), Barry Wellman (Canada & INSNA). The subcommittee charged with picking the next site is Stokman, Degenne, Everitt, Sik, Frank, Wellman.

[Many quotations in Ties & Bonds have been edited for conciseness. BW.]

INFO FLOWS

STEPHEN FIENBERG (Stats, Carnegie-Mellon) appointed Vice President- Academic, York U, Toronto....RUMI KATO PRICE (Psychiatry, Washington U) President & SEBASTIEN REICHMANN (CMME, CNRS, Paris) Vice-President of Int'l Soc Assoc's Working Group on Sociology of Mental Health....Former CONNECTIONS Assoc Ed. LIVIANA CALZAVARA (Beh Sci, Toronto) has received a 5-year NHRDP Jr. Scientist postdoc....DETELINA RADOEVA (Bulgaria) now Ph.D. student at Soc, Toronto....BOXU YANG from U Windsor & China Central TV to be a Toronto Soc. Ph.D. student....LEONARD PERLIN (Beh Sci, U Cal-San Francisco) winner of Am Soc Assoc (Med Soc section) Leo Reeder award. He spoke on "Structure and Meaning in Medical Sociology" at the 8/91 Cincinnati annual meeting....BERNICE PESCOSOLIDO (Soc, U Indiana) Chair-Elect of Am Soc Assoc's Med Soc section....JAMES HOUSE (Soc & Inst Soc Res, U Michigan) new director of ISR's Survey Research Center....LINDA ACITELLI moves to ISR from Social Work, Michigan. She's received a FIRST award from NIMH to study "Awareness of Self, Partner & Relationship"....RODNEY CATE has received an NHRDP grant to study "War stress, support & well-being in military families"....David MORGAN (Aging, Portland St) has a 3-year NIA grant to study changes in recent widows' networks of personal relationships.

INTERNATIONAL CONFERENCE ON PERSONAL RELATIONSHIPS

Univ. of Maine, Orono ME, 23-28 July 1992. Keynote speakers: Faye Crosby, Mary Anne Fitzpatrick, Hal Kelley, Dan McAdams, Pat Noller, David Popenoe, Joseph Veroff.

If you're interested in studying dyads, this is for you. Or as the organizers put it, papers "are invited on all aspects of personal & social relationships including social & cultural patterns, structural & historical influences, family, marriage, friendship, love, relationship disengagement, communication patterns & strategies, gender differences, parent-child interactions, & emotional expressions within relationships. Send 3 copies of paper proposals (500 words) or symposia proposals (300 words for each participants) to Keith Davis, Psych, U South Carolina, Columbia SC 29208. e-mail: N570089@UNIVSCVM.

MEETINGS

- 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.
- January 20-22, 1992. Ethics and Simulation in the Service of Society.
Newport Beach, CA. Society for Computer Simulation. Contact Chip Stockton, (619)277-3888.
- February 13-17, 1992. Sunbelt XII: International Sunbelt Social Network Conference.
San Diego, California. Arrangements: Phillip Bonacich, Dept of Sociology, UCLA, Los Angeles, CA 90024. BONACICH@SOCISSR.SSCNET.UCLA.EDU.
- February 26-Mar 1, 1992. Society for Cross-Cultural Research. 21st Annual Meeting.
Santa Fe, N.M. Contact Ralph Bolton, Dept of Anthropology, Pomona College, Claremont, CA 91711. (714)621-8000.
- March 25-29, 1992. Society for Applied Anthropology Annual Meeting.
Memphis, TN. Contact Linda Bennett, Dept of Anthropology, Memphis State University, Memphis, TN 38152. (901)678-2958. Arrangements: SfAA Business Office, Box 24083, Oklahoma City, OK 73124. (405)232-4902.
- March 26-29, 1992. American Ethnological Society, Spring Meeting.
Memphis, TN. Contact Leith Mullings, PhD Program in Anthropology, CUNY Graduate School, 33 West 42nd St., New York, New York, 10036.
- April 23-26, 1992. Southern Anthropological Society Annual Meeting.
Ponce de Leon Resort and Convention Center, St. Augustine, Florida. Contact Thomas Collins, Memphis State University, Memphis TN 38152. (901)678-2080.
- May 4-7, 1992. Conference on Computing for the Social Sciences.
Ann Arbor, MI. Contact CSS92 Program Committee, Population Studies Cntr, U.Michigan, Ann Arbor, MI 48104-2590. (313)764-5304.
- Aug 20-24, 1992. American Sociological Association Annual Meeting.
Pittsburgh, PA. Contact ASA, 1722 N Street NW, Washington, DC 20036.
- Aug 24-28, 1992. 13th International Congress on Cybernetics.
Namur, Belgium. Contact International Association for Cybernetics, Palais des Expositions, Place Andre Rijckmans, b-500 Namur, Belgium, Tel. 00-32-81- 73.52.09.
- Dec 2-6, 1992. American Anthropological Association Annual Meeting.
San Francisco Hilton, San Francisco, CA. Contact American Anthropological Association, 1703 New Hampshire Avenue NW, Washington, DC 20009.

ARTICLES

A Reading List in Role Analysis

Alaina Michaelson, University of Illinois

A social network consists of a set of actors and a set of relations, or links, among those actors. Role analysis is the branch of social networks analysis concerned with structural similarities in one or more social networks. Often, a focus on structural similarity, or equivalence, is considered in contrast to a focus on cohesion, or proximity. Social network methods for identifying cohesive clusters of actors are based on the actors' links with one another. Two actors are considered close, or proximate to the degree that they are linked with each other. On the other hand, social network methods for identifying sets of structurally similar actors are based on the degree to which actors are similar in how they relate to others, not to one another. In addition, role analysis includes methods for examining similarities among relations as well as similarities among actors.

The intuitive ideas underlying role analysis were formalized in 1971 when Francois Lorrain and Harrison White published "Structural equivalence of individuals in social networks," in the *Journal of Mathematical Sociology*. Lorrain and White presented algebraic definitions for modelling similarities among actors and among relations in social networks. The article marked the beginning of the development of role analysis. Since 1971, alternative definitions and methods for role analysis have been proposed. Many of the methods rely on algebraic constructs while a few are statistical.

One goal of role analysis is the aggregation of structurally similar actors occupying the same position. This is accomplished by examining the similarity of actors either in terms of their locations in a network or the patterns of ties in which they are involved. For the most part, identification of positions in a network is based on structural equivalence or more general regular equivalences. According to a structural equivalence based definition of position, two actors occupy the same position if they have the same ties with the same other actors. More general definitions allow two actors to occupy the same position even if they are not tied with the same others. Instead, actors occupy the same position if they are tied with similar others, where "similar" is variously defined. In fact, actors in the same position do not have to be in the same network. Furthermore, measures of positional similarity that relax the various definitions of positions have been proposed.

Another goal of role analysis is to understand the relational structure of a network or the ways in which relations are associated. One way to examine the relational structure in a network is to identify similarities among relations based on the pairs of actors who are tied together by each relation. A more abstract approach to modelling relational structures examines the semigroup of relations in a network. Two relations are considered to be similar if they have the same pattern of associations with other relations. Often, simplified representations of a relational structure are identified with semigroup homomorphisms. Semigroup homomorphisms also can be used to combine or compare the relational structures in different networks.

The following is a reading list in role analysis, in chronological order of publication, beginning with the seminal article by Lorrain and White (1971). This list includes only those articles directly contributing to the development of role analysis. These articles contain either a new definition or method for identifying positions or relational structures, or they contain original and explicit critiques of existing methods.

The wide varieties of articles in which role analytic methods have been applied and proven useful are not included. Similarly, articles containing mathematical results upon which role analytic methods are based are not included unless they were directed toward social network analysis.

In addition, each article is labelled to indicate which of the two types of role analysis it addresses. A "P" indicates that a definition of, or method for identifying, positions is proposed or evaluated. An "R" indicates that a definition of, or method for identifying, relational structure is proposed or evaluated. Any omission or mislabelling is unintentional. For an extended discussion of the material covered in this list, see Part IV of Wasserman and Faust (1992) *Social Network Analysis: Methods and Applications*, Cambridge University Press.

Reading List

- P R Lorrain, Francois and Harrison White (1971) "Structural equivalence of individuals in social networks," *Journal of Mathematical Sociology* 1:49-80.
- P R White, Harrison (1973) "Models for interrelated roles from multiple networks in small populations," in *Proceedings of a Conference on the Application of Undergraduate Mathematics in the Engineering, Life, Managerial, and Social Sciences*, P.J. Knopp and G.H. Meyer (eds.), Atlanta: Georgia Institute of Technology.
- P – Breiger, Ronald L., Scott A. Boorman and Phipps Arabie (1975) "An algorithm for clustering relational data with applications to social network analysis and comparison with multidimensional scaling," *Journal of Mathematical Psychology* 12:328-383.
- P R Boorman, Scott A. and Harrison C. White (1976) "Social structure from multiple networks II: Role structures," *American Journal of Sociology* 81:1384-1446.
- P – Burt, Ronald S. (1976) "Positions in networks," *Social Forces* 55:93-122.
- P – Heil, Gregory H. and Harrison C. White (1976) "An algorithm for finding simultaneous homomorphic correspondences between graphs and their image graphs," *Behavioral Science* 21:26-35.
- P – White, Harrison C., Scott A. Boorman and Ronald L. Breiger (1976) "Social structure from multiple networks I: Blockmodels of roles and positions," *American Journal of Sociology* 81:730-781.
- P – Burt, Ronald S. (1977) "Positions in multiple network systems, part one: A general conception of stratification and prestige in a system of actors cast as a social topology," *Social Forces* 56:106-131.
- P – Schwartz, Joseph E. (1977) "An examination of CONCOR and related methods for blocking sociometric data," in *Sociological Methodology*, David R. Heise (ed.), San Francisco: Jossey-Bass Publishers.
- P – White, Harrison C. (1977) "Probabilities of homomorphic mappings from multiple graphs," *Journal of Mathematical Psychology* 16:121-134.
- P R Arabie, Phipps, Scott A. Boorman and Paul R. Levitt (1978) "Constructing blockmodels: How and why," *Journal of Mathematical Psychology* 17:21-63.
- P R Breiger, Ronald L and Philippa E Pattison (1978) "The joint role structure of two communities' elites," *Sociological Methods and Research* 7:213-226.
- P – Sailer, Lee Douglas (1978) "Structural equivalence: Meaning and definition, computation and application," *Social Networks* 1:73-90.
- R Bonacich, Phillip and Maureen J. McConaghy (1979) "The algebra of blockmodeling," in *Sociological Methodology 1980* Karl Schuessler (ed) San Francisco: Jossey-Bass Publishers.
- P – Carrington, Peter J., Greg H. Heil and Stephen D. Berkowitz (1979) "A goodness-of-fit index for blockmodels," *Social Networks* 2:219-234.
- P R Light, John M. and Nicholas C. Mullins (1979) "A primer on blockmodeling procedure," in *Perspectives on Social Network Research*, Paul Holland and Samuel Leinhardt (eds.), New York: Academic Press.
- R Bonacich, Phillip (1980) "The 'common structure semigroup,' a replacement for the Boorman and White 'joint reduction,'" *American Journal of Sociology* 86:159-166.
- P R Boorman, Scott A. and Phipps Arabie (1980) "Algebraic approaches to the comparison of concrete social structures represented as networks: Reply to Bonacich," *American Journal of Sociology*, 86:166-174.
- R Boyd, John Paul (1980) "The universal semigroup of relations," *Social Networks* 2:91-117.
- P – Fiksel, Joseph (1980) "Dynamic evolution in societal networks," *Journal of Mathematical Sociology* 7:27-46.
- P – Carrington, Peter J. and Greg H. Heil (1981) "COBLOC: A hierarchical method for blocking network data," *Journal of Mathematical Sociology* 8:103-131.
- R McConaghy, Maureen J. (1981) "The common role structure: Improved blockmodeling methods applied to two communities' elites," *Sociological Methods and Research* 9:267-285.
- R Pattison, Philippa E. (1981) "A reply to McConaghy: Equating the 'joint reduction' with blockmodel common role structures," *Sociological Methods and Research* 9:286-302.

- P R Arabie, Phipps and Scott A. Boorman (1982) "Blockmodels: developments and prospects," in *Classifying Social Data*, Herschel C. Hudson (ed), San Francisco: Jossey Bass Publishers.
- P – Batchelder, William H. and Vladimir A. Lefebvre (1982) "A mathematical analysis of a natural class of partitions of a graph," *Journal of Mathematical Psychology* 26:124-148.
- R Bonacich, Phillip (1982) "The common structure graph: Common structural features of a set of graphs," *Mathematical Social Sciences* 2:275-288.
- P – Ennis, James G. (1982) "Blockmodels and spatial representations of group structure: Some comparisons," in *Classifying Social Data*, Herschel C. Hudson (ed.), San Francisco: Jossey Bass Publishers.
- P – Everett, Martin G. (1982) "A graph theoretic blocking procedure for social networks," *Social Networks* 4:147-168.
- P – Panning, William H. (1982) "Fitting blockmodels to data," *Social Networks* 4:81-101.
- P – Panning, William H. (1982) "Blockmodels: From relations to configurations," *American Journal of Political Science* 26:585-608.
- P R Pattison, Philippa E. (1982) "The analysis of semigroups of multirelational systems," *Journal of Mathematical Psychology* 25:87-118.
- R Pattison, Philippa E. and Warren K. Bartlett (1982) "A factorization procedure for finite algebras," *Journal of Mathematical Psychology* 25:51-81.
- R Bonacich, Phillip (1983) "Representations for homomorphisms," *Social Networks* 5:173-192.
- P R Boyd, John Paul (1983) "Structural similarity, semigroups and idempotents," *Social Networks* 5:157-172.
- P – Everett, Martin G. (1983) "EBLOC: A graph theoretic blocking algorithm for social networks," *Social Networks* 5:323-346.
- P – Everett, Martin G. (1983) "An extension of EBLOC to valued graphs," *Social Networks* 5:395-402.
- P – Holland, Paul W., Kathryn Blackmond Laskey and Samuel Leinhardt (1983) "Stochastic blockmodels: First steps," *Social Networks* 5:109-137.
- P R Mandel, Michael J. (1983) "Local roles and social networks," *American Sociological Review* 48:376-386.
- P R White, Douglas R. and Karl P. Reitz (1983) "Graph and semigroup homomorphisms on networks of relations," *Social Networks* 5:193-234.
- P R Schwartz, Joseph E and Merle Sprinzen (1984) "Structures of connectivity," *Social Networks* 6:103-140.
- P R Winship, Christopher and Michael Mandel (1984) "Roles and positions: a critique and extension of the blockmodeling approach," in *Sociological Methodology 1983-1984*, Samuel Leinhardt (ed.) San Francisco: Jossey-Bass Publishers.
- R Wu, Lawrence L. (1984) "Local blockmodel algebras for analyzing social networks," in *Sociological Methodology 1983-1984*, Samuel Leinhardt (ed.) San Francisco: Jossey-Bass Publishers.
- P – Everett, Martin (1985) "Role similarity and complexity in social networks," *Social Networks* 7:353-359.
- P R Feinberg, Stephan, Michael Meyer and Stanley Wasserman (1985) "Statistical analysis of multiple sociometric relations," *Journal of the American Statistical Association* 80:51-67.
- P – Noma, Elliot and D. Randall Smith (1985) "Benchmark for the blocking of sociometric data," *Psychological Bulletin* 97:583-591.
- P – Wasserman, Stanley and Sheila O'Leary Weaver (1985) "Statistical analysis of binary relational data: Parameter estimation," *Journal of Mathematical Psychology* 29:406-427.
- P R Baker, Wayne E. (1986) "Three-dimensional blockmodels," *Journal of Mathematical Sociology* 12:191-223.
- P R Breiger, Ronald L. and Philippa E. Pattison (1986) "Cumulated social roles: The duality of persons and their algebras," *Social Networks* 8:215-256.
- P – Noma, Elliot (1986) "Using blockmodels to map the structural congruence of social relations," *Social Networks* 8:175-189.
- P – Doreian, Patrick (1987) "Measuring regular equivalence in symmetric structures," *Social Networks* 9:89-108.

- P – Wang, Yuchung J. and George Y. Wong (1987) “Stochastic blockmodels for directed graphs,” *Journal of the American Statistical Association* 82:8-19
- P – Wasserman, Stanley and Carolyn Anderson (1987) “Stochastic a posteriori blockmodels: construction and assessment,” *Social Networks* 9:1-36.
- P – Yamagishi, Toshio (1987) “An exchange theoretical approach to network positions,” in *Social Exchange Theory*, Karen S. Cook (ed.) Newbury Park: Sage Publications.
- P – Borgatti, Stephan (1988) “A comment on Doreian’s regular equivalence in symmetric structures,” *Social Networks* 10:265-272.
- P – Boyd, John Paul and Martin Everett (1988) “Block structures of automorphism groups of relation structures,” *Social Networks* 10:137-156.
- P – Burt, Ronald S. (1988) “Some properties of structural equivalence measures derived from sociometric choice data,” *Social Networks* 10:1-28.
- P – Doreian, Patrick (1988) “Equivalence in a social network,” *Journal of Mathematical Sociology* 13:243-282.
- P – Doreian, Patrick (1988) “Borgatti toppings on Doreian splits: Reflections on regular equivalence,” *Social Networks* 10:273-285.
- P – Everett, Martin and Stephan Borgatti (1988) “Calculating role similarities: An algorithm that helps determine the orbits of a graph,” *Social Networks* 10:77-91.
- P – Faust, Katherine (1988) “Comparison of methods for positional analysis: Structural and general equivalences,” *Social Networks* 10:313-342.
- P R Pattison, Phillipa E. (1988) “Network models: Some comments on papers in this special issue,” *Social Networks* 10:383-412.
- P R Winship, Christopher (1988) “Thoughts about roles and relations: An old document revisited,” *Social Networks* 10:209-232.
- P – Borgatti, Stephen, John Paul Boyd and Martin Everett (1989) “Iterated roles: Mathematics and application,” *Social Networks* 11:159-172.
- P – Borgatti, Stephen and Martin Everett (1989) “The class of regular equivalences: Algebraic structure and computation,” *Social Networks* 11:65-88.
- R Bonacich, Phillip (1989) “What is a homomorphism?” in *Research Methods in Social Network Analysis*, Linton C. Freeman, Douglas R. White and A. Kimball Romney (eds.) Fairfax, VA: George Mason University Press.
- R Boyd, John Paul (1989) “Social semigroups and green relations,” in *Research Methods in Social Network Analysis*, Linton C. Freeman, Douglas R. White and A. Kimball Romney (eds.) Fairfax, VA: George Mason University Press.
- P – Marsden, Peter V. (1989) “Methods for the characterization of role structures in network analysis,” in *Research Methods in Social Network Analysis*, Linton C. Freeman, Douglas R. White and A. Kimball Romney (eds.) Fairfax, VA: George Mason University Press.
- P R Reitz, Karl P. and Douglas R. White (1989) “Rethinking the role concept: Homomorphisms on social networks,” in *Research Methods in Social Network Analysis*, Linton C. Freeman, Douglas R. White and A. Kimball Romney (eds.) Fairfax, VA: George Mason University Press.
- P – Burt, Ronald S. (1990) “Detecting role equivalence,” *Social Networks* 12:83-97.
- P – Everett, Martin and Stephan Borgatti (1990) “A testing example for positional analysis techniques,” *Social Networks* 12: 253-260.
- P – Everett, Martin, John Boyd and Stephan Borgatti (1990) “Ego-centered and local roles: A graph theoretic approach,” *Journal of Mathematical Sociology* 15:163-172.
- R Everett, Martin and Stephan Borgatti (1990) “A note on juncture homomorphisms,” *Social Networks* 12:385-389.

Obtaining reliable network data about family life: A methodological examination concerning reliability of egocentered networks in survey research.

*F. Neyer, W. Bien, J. Marbach and R. Templeton
Deutsches Jugendinstitut, München*

Abstract

Can survey methods be used to collect reliable data on networks? This paper deals with the results of test-retest reliability of egocentered network data collected with survey methods. There is an initial pretest group of 99 respondents who are interviewed again three months later in the main survey of 10,000 respondents. More specifically, the relations (kinships, friendships, others), shared situations, spatial distance and contact frequency of each respondent were asked to generate egocentered networks. The differences between these items in the pretest and the main survey are used to measure reliability.

The results show: (1) There is some evidence that reliable network data can be obtained by using a survey technique. (2) Family related network generators seem to be reliable items to obtain macro, or aggregated, level information about how families live and experience themselves. (3) Classical family relation categories are more stable than weaker relationships like friendship. (4) Name interpreters — like spatial distances and contact frequency — also show reasonable stability.

Problem

Despite the theoretical claims of social science that it is more interested in structure than in questions of distribution, standard data analysis in social science tends to examine the distribution of attributes of persons rather than examining relations among persons (Pappi 1987:11). Attributes tend to be seen as intrinsic characteristics of people and objects, whereas the relationships in which persons and objects are involved tend to be seen as context-specific, varying across situations. (Knoke & Kuklinski 1983:10).

Traditional empirical methods used in family research are often problematic, because they are based on the nuclear household definition of the family, which, in turn, limits the types of questions that researchers ask. For example, concerning the pluralization of family life patterns, questions about how people define and experience family life are rarely asked. Instead of asking about the relations that make up a family, researchers concentrate on the attributes of members.

As an alternative to the traditional approach, the Deutsches Jugendinstitut project "Change and Development of Family Life Patterns" collected egocentered networks with a survey. Only for a few years has this information been collected in social research projects. Prominent examples of survey-based sampling of egocentered networks are the "Detroit Area Study" in 1966 (N=985; see Laumann 1973; Fischer, et al. 1977; Verbrugge 1977, 1979; Huckfeldt 1983), the "Northern California Communities Study" in 1977/78 (N=1050); see Fischer 1982a,b), the East York study (Wellman 1979) and the "General Social Survey" in 1985 (N=1531; see Burt 1984; Marsden 1987).

Egocentered or personal networks are the direct relationships of a respondent. The respondent is deemed as the only informant on his network. In accordance with basic sampling assumptions, respondents' relations are handled as individual attributes (Bertram, Marbach & Tölke 1989:138). Therefore, it is possible to collect data over egocentered networks in normal survey research.

Egocentered or personal networks emerge when a respondent (ego) names other persons (alteri) on a given criteria, for example, concrete shared life situations (name-eliciting questions). Once ego's network has been compiled, he is then asked for more specific attributes for each named alteri, like: type of relation, age, or gender (attributes).

Using name-eliciting questions (name generators) and attributes of persons and relations (attributes) enables us to test hypotheses about nontraditional family forms and new life styles (e.g. "binuclear families" with joint custody or "commuter marriages" with arrangements for living apart while still together; see Ahrons 1979, 1981; Gerstel 1977; Gross 1980).

However, the main emphasis of this paper is not on the application of family research, but rather the methodological issues concerning the reliability of the egocentered network data collected in a survey. Of special interest are the name-eliciting questions and attributes. For this the following questions are important: first, does

generating egocentered networks with a survey technique reliably reflect the real network situation experienced by the respondent; and second, are the responses to questions about the spatial distance and contact frequency stable?

A discussion of these issues should give evidence of the stability of network relationships within their contexts experienced by the respondents.

Project, Instruments and Data

The data reported in this paper stem from the project "Change and Development of Family Life Patterns" which is sponsored by the Department of Youth, Family, Women and Health of the Federal Government of Germany and carried out by the Deutsches Jugendinstitut based in Munich. The project included a survey with a representative sample of the adult population of the FRG.

The sample was drawn from two sources. The first was a random sample of individuals drawn from the official residential registration lists; these are lists of persons resident at particular addresses which exist for all regions of the FRG. 3,011 interviews were secured by this method from a corrected gross number of 4,849 addresses (that is after elimination of incorrect addresses, deceased target interviewees and residents who were repeatedly unavailable); this represented a response rate of 62 percent. Second, a random sample of 6,931 interviews was collected using a random route procedure based on households. There was a corrected gross number of 10,924 households, so the response rate to the second, random route, sample amounted to 63 percent.

Additionally, in early 1,988, an initial pretest of 98 persons was performed. Later in June, a second pretest of 534 persons was taken. 99 people from the second pretest were re-interviewed three months later in the main survey. In total, we obtained $3,011 + 6,931 + 99 = (\text{ca.}) 10,000$ interviews, where each interview includes egocentered network data. The data from the group of 99 people – from the second pretest and the main survey – is used in this paper to measure test-retest reliability.

Procedure

To generate egocentered-network data, respondents were asked for a group of persons who play important roles in their life concerning significant functions or situations.

The following name-eliciting questions were asked:

Tasks

- s1 With whom do you discuss personal matters?
- s2 Who gives sometimes or regularly financial aid to you?
- s3 To whom do you give sometimes or regularly financial aid?
- s4 To whom do you have a close emotional relationship?
- s5 With whom do you have dinner regularly?
- s6 With whom do you spend most of your leisure time?

Kinship

- s7 Name your parents!
- s8 Name the parents of your partner!
- s9 Name your children!
- s10 Who of the persons listed above live in your household?
Name the persons living in your household who are not on your list yet.
- s11 Do you have a second household?
Name persons who are not on your list and live in this household.

Defined Family

- s12 Which persons on your list do you recognize as members of your family?
(This question concerning the "perceived family" was modified: In the pretest this question addressed only persons named before, in the survey we asked for persons named before and new named persons.)

Each interviewed person was handed a sheet of paper with numbered lines to ease memorization. While name-eliciting questions are being asked, new names are written on the sheet by the respondent, and only the associated number is told to the interviewer. Therefore, for each situation named above, a set of numbers – some new, some used previously – were generated.

For each person named, we asked for his or her attributes: gender, kind of relation, distance from home of the respondent, frequency of contact, and for each non-kin we asked age.

Each respondent is represented by a matrix with up to 20 rows (generated names) and 17 columns (12 for name-eliciting questions s1 to s12, 5 for attributes of the named persons and attributes of the relation between the named person and the interviewee). An example is shown in Table 1.

Methods and Results

In order to measure reliability we compared the answers from the pretest and the survey for each respondent. We know about the problem of interpreting the stability of results as low reliability and as change over time. We feel that family patterns and changes in this area are lower and more stable than in non-family situations. We also believe our data does not include enough information to distinguish between low reliability and true change. On the other hand, interpreting possible changes as low reliability and finding a high reliability allows us to justify our method – so we took this approach.

The next step, in terms of future research over reliability and true change, will be examining data over 240 families interviewed a year after the original survey. This post-survey interview will ask for even more information about family networks and an additional 2-3 persons in each family will also be interviewed to collect more data over the family network. We believe that data in the post-survey interview will have the necessary information to determine what is low reliability and what is actual change in the family network.

In our former analysis (Bien et al. 1991) we considered the reliability of our data on an aggregate level:

First, regarding the 99 respondents, we looked at the overall number of named persons in each interview and found a difference of 0.8 persons between the means of the pretest (mean=6.9 persons) and survey (mean=7.7 persons). 0.7 of the observed difference could be proofed as the effect of a methodological change in the prompts of s12 concerning the “perceived family”. In the pretest, interviewees were not allowed to name new persons here, whereas in the survey, they could. This leads to a difference of 0.7 persons. So, we only found an instability of 0.1 persons.

Second, we checked on the macro level (aggregating the values over all 534 pretest and all 10043 survey persons) the stability of the average of single situations or basic activities: The overall numbers of named persons of each situation are stable. The variation between the pretest and survey can be ignored, because differences are lower than 1% of the absolute number examined.

Third, we compared the number of identically named persons with the size of individual networks; regarding one respondent, how great is the difference in percentage of persons named both in the second pretest and in the main survey (i.e. identically named persons) with respect to the total number of named persons (i.e. network size)? We found 76% of all named persons being identical in both interviews. We did not observe, however, an effect of direction, so neither the pretest nor the survey had a specific effect on nonidentical persons. We calculated an error percentage of 7% of the stability of the number of named persons. Then, we examined the stability of named situations for those persons who were nominated in the pretest as well as in the survey; it was found to be stable 82% of the time.

Finally, we looked at the identical quotations in spatial distance and contact frequency between the pretest and the main survey (number of identical data related to the number of identically named persons for each data set) and found that 78% of the distance values and 70% reported contact frequencies were identical. Without any differentiation over persons or situations, the reliability of these attributes is also high.

Similar examinations were performed by Barrera (1981). While assessing issues on social support in pregnant adolescents, he found on an aggregated perspective a test-retest reliability of .88 by correlating the total network size after a time interval of two weeks. Moreover, he observed 74% of all named persons being identical in both trials. It is interesting to note that this percentage is somewhat similar to ours (76%).

Now, more specifically, the focus of analysis is shifted from a highly aggregated level to a more differentiated one. We looked for identically named persons in each situation (given by the name generators) and in each relation category (given by the attributes): How stable are the nominations with respect to different situations? Is a person “A” who was named as a partner for discussing important personal matters in the pretest also a partner named for discussions in the survey? Does a person defined as a friend in the pretest continue to be a friend three months later? How does the stability of relation categories interact with the situations?

Table 1. Example of a data matrix $x_{ij}k$

i person interviewed; $i=1, \dots, n$
 j person specified by the respondent_i; $j=1, \dots, m, \dots, 20$
 m_i maximum number of persons named by person_i
 k situations and attributes assigned by the respondent_i to the specified person_j; $k=1, \dots, s, \dots, 17$

matrix of the i^{th} respondent, who named fourteen persons

persons name eliciting questions attributes (name interpreters)
named 1... 7 8..11 sex rel. age dist. cont.

P1	10011	1	01010	2	a	-	a	a
P2	00100	0	00000	1	j	-	c	c
P3	00100	0	00000	1	j	-	c	d
P4	00100	0	00000	1	k	-	c	c
p5	00100	0	00000	1	k	-	c	c
P6	00100	0	00000	1	o	28	e	b
P7	00100	0	00000	1	p	24	b	d
P8	00001	1	01010	2	c	-	a	a
P9	00001	1	01010	2	c	-	b	d
P10	00000	0	10000	1	c	-	c	e
P11	00000	0	10000	1	g	-	c	d
P12	00000	0	10000	2	g	-	c	d
P13	00000	0	10000	1	h	-	c	d
P14	00000	0	10000	2	h	-	c	d

1 = yes 0 = no; age requested for nonkin only

Relation (rel.)

A (1) = Spouse/Partner
 B (2) = Ex-Spouse
 C (3) = Own Child
 D (4) = Partner's child
 E (5) = Foster Child
 F (6) = Child in Law
 G (7) = Own parent
 H (8) = Parent in law
 I (9) = Own sibling
 J (10) = Sibling in Law
 K (11) = Grandparent (own & partner's)
 L (12) = Grandchild (own & partner's)
 M (13) = Other kin
 N (14) = Friend
 O (15) = Workmate
 P (16) = Member of voluntary org.
 Q (17) = Neighbour
 R (18) = Other persons

Distance (dist.)

A (1) = Same Household
 B (2) = Same House
 C (3) = Neighbourhood
 D (4) = Same quarter
 E (5) = Same town, more than 15 min. by foot
 F (6) = Another town less than 1 hr. away
 G (7) = Far away

Frequency of contact (cont.)

A (1) = Daily
 B (2) = Several times/week
 C (3) = Once a week
 D (4) = Once a month
 E (5) = Several times/year
 F (6) = Less often
 G (7) = Never

(for a description of the name generators see Table 2.)

First, we looked for persons who were identically named by the respondent in the pretest as well as in the main survey. The verification of their identity could be performed by a comparison of the responses given for attributes like type of relation category and gender. If one person, however, was named in the pretest but not in the survey or vice versa, the data on the respondent was not accepted as reliable.

The same method of verification is used for situations quoted to be shared with those identically named persons. If for such a person one situation was named in the pretest but not in the survey or vice versa, this information was not deemed to be reliable.

We assumed, hereby, that relation categories and addressed situations remain relatively stable over three months and are not liable to changes. However, this assumption lends itself to lowering the estimation of reliability when there is an actual change in the egocentered network of the respondent, for example: a new person in emotional feeling; after a birth of a child; excluding somebody after a divorce; meeting a new friend; cutting off a friendship; or someone dying. But if we find reliability is still high, even with the above noted possible changes, then we feel justified in assuming changes in the networks are negligible.

The information on persons and situations is assumed to be reliable only if it is given in the pretest as well as in the survey. It is deemed false if it is given only in either the pretest or the survey. Hence, we rely on a conservative measure of reliability.

1. Stability of attributes (relation categories) and name generators (situations)

We checked the stability of each relation category and each name generator (situation). This estimation relates twice the number of persons named for each relation category (or each situation) in the pretest as well as in the survey to the sum of the number of all persons named for each relation category (or each situation) in the pretest and the survey.

$$(1) \quad k_c = \frac{2 \times \sum_{ij} I_{ij}}{\sum_{ij} P_{ij} + \sum_{ij} S_{ij}}$$

or,

$$(2) \quad k_c = \frac{2 \times \sum_{ik} I_{ik}}{\sum_{ik} P_{ik} + \sum_{ik} S_{ik}}$$

k_c Coefficient of stability of a relation category or a situation, respectively.

$\sum_{ij} I_{ij}$ Number of identically reported persons in relation category $_{j1-20}$ in both interviews by the respondent $_{i1-99}$

$\sum_{ij} P_{ij}$ Number of all persons in relation category $_{j1-20}$ reported in the pretest by the respondent $_{i1-99}$

$\sum_{ij} S_{ij}$ Number of all persons in relation category $_{j1-20}$ reported in the survey by the respondent $_{i1-99}$

$\sum_{ik} I_{ik}$ Number of identically reported persons in situation $_{k1-12}$ in both interviews by the respondent $_{i1-99}$

$\sum_{ik} P_{ik}$ Number of all persons in relation situation $_{k1-12}$ reported in the pretest by the respondent $_{i1-99}$

$\sum_{ik} S_{ik}$ Number of all persons in relation situation $_{k1-12}$ reported in the survey by the respondent $_{i1-99}$

The results are shown in Table 2.

Table 2. Stability of relation categories and used situations

Relation Category	N Pretest	N Survey	N ident.	k_c
Partner/Spouse	83	80	76	.93
Own children	98	99	92	.95
Own parents	142	148	136	.94
Parents of the Partner	98	114	90	.85
Own Siblings	56	81	46	.67
Grandparents	17	24	9	.44
Other kin	24	44	13	.38
Friends	124	123	75	.60
Workmates	10	10	3	.30

Situation	N Pretest	N Survey	N ident.	k_c
s1	204	230	151	.70
s2	75	72	39	.53
s3	43	48	22	.48
s4	231	263	170	.69
s5	187	195	149	.78
s6	222	251	170	.72
s9	70	99	66	.78
s10	185	170	147	.83
s12	337	435	284	.74

N Pretest Overall number of cases named in the pretest
 N Survey Overall number of cases named in the survey
 N ident. Number of cases named in the pretest as well as
 in the survey

- s1 With whom do you discuss personal matters?
 s2 Who gives sometimes or regularly financial aid to you?
 s3 To whom do you give sometimes or regularly financial aid?
 s4 To whom do you have a close emotional relationship?
 s5 With whom do you have dinner regularly?
 s6 With whom do you spend most of your leisure time?
- s7 Name your parents!
 s8 Name the parents of your partner!
 In the pretest s7 and s8 (own parents and parents of the partner) were asked together in one item. Therefore, those items in the pretest and the survey cannot be compared.
- s9 Name your children!
 s10 Who of the persons listed above live in your household?
 Name the persons living in your household who are not on your list yet.
 s12 Which persons on your list do you recognize as members of your family?

Hence, as we see on an aggregate level, the stability of the overall number of relation categories remain relatively high. This is especially true for those categories concerning core family relationships, whereas relationships to friends or other kin seem to be weaker.

Regarding the consistency of the name generators (situations), we observed high scores in those situations which represent classical family functions like "living in the same household" (s10), "joint meals" (s5), "leisure time" (s6) and "discussing personal matters" (s1). Other functions were a little less stable probably because they are subjective and more sensitive to the comprehension of the respondent. This may be especially true for the item "perceived family" (s12) and "emotional feeling" (s4).

2. Stability of interaction between relation categories and used situations

An analysis was performed on the interaction of nominations of situations and relation categories. For computing the reliability of the name generators (used situations) in interaction with each relation category, we used a quotient which relates twice the number of identically used situations per relation category to the sum of all reported situations per relation in the pretest and the survey.

$$(3) \quad k_s = \frac{2 \times \sum_{ijk} I_{ijk}}{\sum_{ijk} P_{ijk} + \sum_{ijk} S_{ijk}}$$

k_s Coefficient of stability of a used situation $_{k1-12}$ per named person specified for a relation category

$\sum_{ijk} I_{ijk}$ Number of identically used situations $_{k1-12}$ per person $_{j1-20}$ named in both interviews by the respondent $_{i1-99}$

$\sum_{ijk} P_{ijk}$ Number of all situations $_{k1-12}$ per person $_{j1-20}$ named in the pretest by the respondent $_{i1-99}$

$\sum_{ijk} S_{ijk}$ Number of all situations $_{k1-12}$ per person $_{j1-20}$ named in the main survey by the respondent $_{i1-99}$

The results are shown in Table 3.

We did not calculate the estimation k_s if the number of nominations per situation either in the pretest or in the survey were less than 10. Therefore, we obtained empty cells in categories with low frequencies, like "Partner's parents" or "Other kin".

Table 3 indicates a different perspective on the micro level of analysis. Hence, looking at the rows of the table we see again that classical family relationships remain stable. The highest scores in interaction with the name generators shows category of "partner", whereas generally the scores in the turn of the categories "children", "parents" and "siblings" decrease. Unsurprisingly, the scores of category "friends" thus remain relatively low.

Concerning the columns of the table we obtain visible differences between some name generators (functions). Classical family related situations or functions like s5 "joint meals", s10 "living in the same household" show a constant stability across so called core family relation categories like mentioned above.

On the other hand, certain situations – those which are more vaguely defined and also win their significance through the subjective understanding of the respondents (eg. s1 "discussing personal matters", s4 "emotional feeling", s12 "perceived family") – show decreasing values from clearly defined family relationships, like, partner or children, to more distant relationships, like, siblings, parents, grandparents, other kin, or friends.

A comparably low stability is observed in the more exchange-oriented items s2 and s3 which deal with the matter of receiving or giving financial aid. The difference observed may not be a matter of reliability or a borderline case at least, because we asked the respondents whether they "regularly or sometimes" give (or receive) financial aid to (or from) somebody. Another reason for lowering consistency may be that respondents to a survey are likely to refuse this information and thus produce missing data.