

CONNECTIONS

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CONTRIBUTIONS 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 programmes, conference information, abstracts, teaching aids, etc.

NETWORK NOTEBOOK

In This Issue

Our feature article is an ancient relic: Mark Granovetter's early version of "The Strength of Weak Ties," published May, 1973 in the AMERICAN JOURNAL OF SOCIOLOGY. But this paper is quite different --and quite nice. Shows what happens before hard-nosed journal editors get at things. It has been circulating in mimeo for many years, and we asked Mark if we could share it with you.

Many of our other offerings tell you how to work with networks. Peter and Trudy Johnson-Lenz have invented a genuine networkers' tool-chest, suitable for your micro-computer; Don Hildum shows a new way of thinking psycholinguistics; Karen Anderson's thesis shows how to use Nancy Howell's AMBUSH demographic simulation program to make inferences about the sexual division of labor among the Huron Indians (James Fennimore Cooper always knew the Hurons lay in ambush), and Peter Marsden presents a shiny package of new computer programs. Plus, a big batch of abstracts which finally clears up our backlog. And lots of juicy info. in Network Notebook. Read on!

To Overseas Subscribers

For the first four volumes of CONNECTIONS, we mailed issues air mail to all INSNA members outside of North America without any additional fee. In effect, the more numerous North American subscribers subsidized the overseas subscribers. The recent, more than 100% increase in Canadian postal rates have made this an untenable policy. (We are desperately trying to keep INSNA dues under ten bucks a year.) Therefore, we experimented in Volume 5, #1 by mailing surface rate (the Canadian Post Office assured us that such mailings almost always go by air), and asking for feedback on receipt dates. The returns are in. We have received good feedback from Europe (2-3 weeks) and from Australia. Therefore, we shall continue to mail surface rate there (where almost all of our overseas subscribers are) and subsidize air mail to the few other subscribers -- usually in impoverished countries whose postal service is even worse than Canada's. Further discussion of this issue is welcomed.

SOCIAL NETWORKS

Even though Volume 4, #1 of SOCIAL NETWORKS has not arrived (we've seen advance galleys though!), INSNA has negotiated 1983 (Volume 5) combined rates with SOCIAL NETWORK's publishers -- North-Holland (Amsterdam). The combined subscription rate for SOCIAL NETWORKS and CONNECTIONS will jump slightly to US\$40.00. And please send us UNITED STATES dollars -- that's what we must send to North-Holland.

Is This What Happens to Those Who Don't Hyphenate 'World-System'?

"Meanwhile, back in Binghamton, a nongothic academic novel has been developing, complete with departmental rivalries, faculty parties, a brilliant but possibly suicidal student who attaches himself to Mickelsson, and a campaign on the part of Marxist members of the Sociology Department to get rid of their beautiful colleague, Professor Jessica Stark." (from Robert Towers' NEW YORK REVIEW OF BOOKS review of John Gardner's novel MICKELSSON'S GHOSTS (24 June 82)).

Editorial Changes at INSNA/CONNECTIONS

R. Jack Richardson -- after three sterling years as Associate Editor -- has been rewarded with a Lecturer post at the Scarborough College Sociology Department, University of Toronto. Richardson is currently writing his thesis, testing alternative models of financial control with Canadian corporate interlock data.

Replacing him as Associate Editors are Liviana Calzavara and June Corman. Calzavara is completing her thesis on the use of personal networks in job searches; Corman is completing her thesis, studying the Potash Corporation of Saskatchewan to see if state ownership makes any difference in corporate behaviour.

Karen Anderson has decided to make her stay more permanent as Managing Associate Editor -- write to her with any queries re manuscripts, subscriptions, etc. Anderson has just gained her doctorate for her study of male/female relations among the 17th century Huron Indians.

The Ultimate Transitivity

"Heavens Union, a California firm, sends messages to the dead. Dead relatives, dead celebrities, anyone you want according to founder Gabe Gabor who has a stable of terminally ill messengers to get the mail through to the hereafter." No messages to pets permitted. Rates: \$60 for 100 words; "priority service" -- \$100 for 50 words. (from Washington Post section of the MANCHESTER GUARDIAN WEEKLY 9 May 82).

Electronic Education Network

Murray Turoff (Computerized Conferencing Center, New Jersey Institute of Technology) is organizing a series of continuing education courses to be offered next year over the Electronic Information Exchange System (EIES)-- an electronic mail/computerized conferencing facility. Taking one three-month course would cost the student \$600 (and earn the instructor \$150/student). Instructors would conduct their seminar through EIES. Truly a network nation notion.

SAP Carries On

The University of Toronto's Connaught Fund has just extended the Structural Analysis Programme for another year (\$40,000). SAP facilitates INSNA in many ways, especially in the preparation of CONNECTIONS copy and the servicing of membership dues. See its list of new publications later in this issue.

Macho Men Do It Spatially

Having trouble figuring out your latest network diagram? "Boys who have a severe deficiency of male hormones in the years of puberty grow up to have less ability in spatial reasoning than others who had normal hormone levels, according to a study in Thursday's issue of THE NEW ENGLAND JOURNAL OF MEDICINE ... The findings suggest that male sex hormones make a permanent contribution to the organization of the brain." (NEW YORK TIMES, 20 May 82).

Abstracts, Books -- Help Wanted

While you are lying on the beach this summer, ever wonder idly how CONNECTIONS gets all those abstracts and new book info.? Frankly, it's the toughest and most haphazard part of this whole operation. For abstracts, our Assistant Editors pour over hundreds of pages of CURRENT CONTENTS, looking for likely sources. (Only such an exercise tells you how many non-network heathen are still out there in the land.) Then Caroline Dumonteil, our Library Searcher, finds the abstracts, and our Editor and Associate Editors sift network wheat from the chaff and prepare them for you. We do a similar job for New Books, except we don't have the great help of CURRENT CONTENTS, and are more uneven in our coverage.

Then how come your abstract or book doesn't get mentioned? Because we missed it, and you were too lazy to send it.

The solution is simple: AUTOMATICALLY SEND INSNA INFORMATION ABOUT EVERY PAPER AND BOOK YOU PUT OUT. Overwhelm your modesty enough to be at service to your fellow networkers -- and help out the sweating Editors.

And You Thought the Articles Denouncing Economists for Being Non-Structuralists Were Exaggerated!

"We are interested in maximizing production and achieving full employment. The issue of distribution -- of who gets the pie -- is a political question and not my concern." Supply-side economist, Robert Mundell (Columbia) in the Toronto GLOBE AND MAIL, 24 April 82.

SOCIAL NETWORKS Editorial Shuffle

Editor Linton Freeman (Social Sciences, California-Irvine) has announced a major restructuring of the SOCIAL NETWORKS editorial board. The lengthy -- and mostly honorific -- Editorial Board is scrapped with Volume 4. In its place are five Associate Editors: Larissa Lomnitz (Anthropology, Mexico), J. Clyde Mitchell (Nuffield College, Oxford), Barry Wellman (Sociology, Toronto), Harrison White (Sociology, Harvard) and Rolf Ziegler (Sociology, München).

Categorical vs Relational Thinking in Sci-Fi

"Our young potter's boy would have brought with him ... a ready-made image of the pyramid of power, and no doubt ... tried to map the whole volume of that pyramid onto a single line, with every thane and duchess in place, each above this one and below that one, the whole forming a cord and could be negotiated knot by knot ... Gorgik ... soon learned... that the hierarchy of prestige branched; that the branches interwove; and that the interweavings in several places formed perfectly closed, if inexplicable loops; as well, he observed that the presence of this earl or that thane (not to mention this steward or that attendant maid) could throw a whole subsection of the system into a different linking altogether." (Samuel F. Delaney, TALES OF NEVERYON, p. 220).

Bucks in Aging

The (U.S.) National Institute on Aging has announced special support for 4 broad categories of research:

1. Older People in the Changing Society -- changing societal and cultural conditions that effect people in their middle and later years with respect to mortality, the burden of illness, SES, needs and attitudes, and the opportunity to lead productive lives.

2. Older People and Social Institutions -- how and with what consequences are people influenced by the intricate network of institutions in which they grow old: families, households, work organizations, educational and religious institutions, political institutions, health and welfare institutions.

3. Social Psychological Aging -- changes and stabilities with aging in the health, behavior, personality and attitudes of people as related to the social environment.

4. Cognitive and Biopsychological Aging.

For information write Behavioral Sciences Research, NIA, Bldg. 31C, Room 5C05, Bethesda, MD 20205 (Tel: 301-496-3136).

Bucks from the NIMH

Among recent grants from the (US) NIMH are

Erdman Palmore (Duke), "Mental illness and social support among the very old," \$172,500.
 Walter Poulshick (Benjamin Rose Inst.), "Caring for elders and mental health of family members," \$123,152.
 Charles Kadushin (Center for Policy Research, NYC), "Stress and peer group support among Vietnam veterans and controls." \$133,032.
 Alfred Dean (Albany Medical College), "Stressful life events, social support and illness," \$211,589.
 David Knoke (Indiana), "An analytical model of voluntary associations," \$40,824.

Openings for Deep Thinkers

The Robert Maynard Hutchins Center for the Study of Democratic Institutions has a limited number of openings for resident Visiting Fellows for the 1982-83 academic year. (You must have your own subsistence funds.) The Center, devoted to "clarifying the basic issues facing democratic societies" is at P.O. Box 4068, Dept. MGB, Santa Barbara CA 93103.

Communications Ph.D.

SUNY-Albany, a network hotbed, is starting a Communication Ph.D. within the Sociology Dept. For information, write the Chair, Nan Lin, at Sociology Dept., SUNY-Albany, Albany NY 12222.

Structural Thinking Comes from Piano Lessons

"(Playing Chopin's etudes) taught me a lifelong lesson: that phenomena perceived to be magical are always the outcome of complex patterns of nonmagical activities taking place at a level below perception. In other words, the magic behind magic is pattern." Douglas Hofstadter, SCIENTIFIC AMERICAN, April, 1982, p. 17.

Info Flows

ROBIN OSTOW awarded Ph.D. from Brandeis for her study of Sardinian labour migrants in northern Europe ... Ostow and spouse, MICHAL BODEMANN (Sociology, Toronto) on leave in West Berlin, 1982-84 ... BARRY EDGINTON appointed Assistant Professor of Sociology, University of Winnipeg ... SUSAN GREENBAUM appointed Assistant Professor of Anthropology, University of South Florida ... PETER CARRINGTON appointed Assistant Professor of Sociology, Erindale College, University of Toronto ... R. JACK RICHARDSON appointed Lecturer in Sociology, Scarborough College, University of Toronto ... STEVE RYTINA appointed Assistant Professor of Sociology, Harvard ... ROBERT LIEBMAN now Assistant Professor of Sociology, Princeton ... LOUISE TILLY promoted to Full Professor of History, University of Michigan ... THEODORE (DAVID) KEMPER promoted to Full Professor of Sociology, St. John's University, NYC ... NANCY HOWELL appointed Associate Graduate Dean of Social Sciences, University of Toronto ... STANLEY WASSERMAN appointed to Department of Psychology and Mathematics, University of Illinois ... FRED KATZ appointed Visiting Professor of History, Johns Hopkins ... ALBERT HUNTER (Sociology, Northwestern) elected Chair of American Sociological Association's Community Section ... JOSEPH GALASKIEWICZ (Sociology, Minnesota) elected to the same sections' Council.

New Journals

JOURNAL OF COMMUNITY COMMUNICATIONS is especially interested in community development and putting computer technology to community-building use. Subs (\$9) from Village Design, P.O. Box 966, Berkeley, CA 94701, USA.

The POST-INDUSTRIAL NON MARKET COMMUNITY ECONOMY SYSTEM NEWSLETTER aims to end violence by altering economic relations. Information from Mark Kinney, Box 150, Mt. Vernon OH43050.

FUTURES: THE JOURNAL OF FORECASTING AND PLANNING looks at models, scenarios, cross-impacts, Delphi, systems and "new thinking" bimonthly. Subs: £30 from Butterworth Scientific, P.O. Box 63, Westbury House, Bury St., Guildford, Surrey, GU2 5BH, England (Tel: 0483-31261).

(NETWORK NOTEBOOK continued on page 34)

RESEARCH REPORTS

MARK S. GRANOVETTER, Department of Sociology, SUNY-Stony Brook. *Alienation Reconsidered: The Strength of Weak Ties.*

Mark Granovetter's "The Strength of Weak Ties" (*American Journal of Sociology*, 1973) has become a standard, important reference in network analytic work. Yet its final published form was preceded by earlier versions, fascinating and important in their own right.

CONNECTIONS is delighted to publish this August 1969 version, written while Granovetter was a student at the Department of Social Relations, Harvard. It has long circulated in mimeo as an underground classic. Students of the sociology of sociology should also consider that it is very much a different paper than the ultimate *AJS* version.

ABSTRACT

Most theorists have associated weak ties between individuals with alienation and social fragmentation, often assuming that weak ties became important only with modernization. Here, it is asserted that weak ties are indispensable for both individual fulfillment and for social cohesion. The basic postulates follow from the principle that people tied weakly to each other move in different circles; thus the weak tie serves to connect those different circles. Several empirical studies of social networks are cited to establish this point.

Through weak ties, the individual has access to information and opportunity beyond that which his immediate circle of strong ties could afford him. This is illustrated with findings from a study of how higher-level personnel find jobs. In the community, it is suggested that where community organization fails it may be due less to "cultural" inability than to lack of weak ties connecting strongly cohesive subsets of people. From analysis of several community studies the question is taken up of what structures in a community facilitate the maintenance of weak ties. It is shown from these studies that where weak ties cannot flourish, individuals are forced to sustain all strong ties or none at all--and that both situations are experienced as unpleasant.

This issue is then raised of whether the importance of weak ties is uniquely modern. Evidence against this assumption is drawn from anthropological analyses of exogamy, ceremonial trading rings and joking relationships, and also from the medieval role of court jesters.

It is concluded that "alienation" can be seen in proper perspective only via a "comparative phenomenology" of different cultures, based on a theory of social structure which effectively links micro and macro levels of society. The analysis of weak ties is proposed as one element in this yet-to-be-constructed theory.

Introduction

A literature too large and well-known to need reviewing here claims that modern society is characterized by a weakening and superficializing of the ties that bind one man to another, and that this process leads to alienation of individuals and fragmentation of the social system (cf. Wirth, 1938; Fromm, 1941; Keniston, 1965). It is argued that the majority of people one knows in modern societies, and especially in cities, fall into the most superficial possible category, that of "acquaintance"--those with whom one has not even any functional tie, who are encountered only more or less accidentally and with whom the only interaction consists of exchange of gossip or "pleasantries." Beyond these specifics there is always the overriding conception that in pre-industrial societies, medieval or tribal depending on the author, all these things were different.

Over the last twenty years this argument has been attacked vigorously, but the grounds of the attack have usually been a demonstration that primary group ties remain important even in large cities and suburbs, the most "modern" possible settings. While this line of attack is certainly pertinent, it does not hit at the heart of the matter--the consequences of weak ties. In this paper, I will argue that a proliferation of weak ties leads neither to alienation nor to social fragmentation, and that, in fact, such ties serve indispensable functions for both individuals and society. I will then consider the question of whether weak ties are indeed a modern product.

The Effects of Weak Ties

I will first present some postulates about the effects of weak ties, which will be applied later to various substantive contexts. I should start by being a little more clear about what is meant by a "weak tie." Most intuitive notions of what this means will probably be satisfied by the following definition: the strength (or weakness) of a tie is proportional to the amount of time, the emotional intensity, and the intimacy (i.e.--mutual confiding) which characterize the tie. It is perhaps not always clear how to measure intimacy or emotional intensity, but all that is required for now is that most of us be able to agree on the classification of some roughly similar set of cases at the weak end of the continuum. (That we do have a continuum rather than a set of quantum jumps between kinds of ties should be made clear from the outset; where the term "weak tie" may seem to imply a qualitative distinction, this is only for convenience of expression.)

The first crucial postulate is this: the weaker one's tie to some individual, X, the fewer other people with whom one has ties will also have ties to X. More simply, people tied weakly to each other move in different circles. Bott's concepts of close-knit and loose-knit networks (1957) provide a useful way of talking about this at a level beyond that of individuals: she defines a "close-knit" network of people as one in which most of one's friends (from the point of view of any ego) are friends to one another. A "loose-knit" network, by contrast, is one in which most of one's friends do not know each other, have no tie to one another. In these terms, I have claimed that the network formed by an individual and those tied weakly to him is more loose-knit than that formed by him and his closer friends.

This follows first from the larger time-commitment involved in strong ties. The probability that any two of your friends will know each other is, among other things, proportional to the time each spends with you. (If meeting each were independent of meeting the other, this probability could be expressed as the product of the total proportion of one's time spent with each one. That is, if I am with A 60% of the time, and with B 40% of the time, I will be with both together 24% of the time. Independence of this sort would be less likely after A and B had met than before.) Moreover, there is evidence that close friends are more likely to be similar to each other than weak friends (R. Brown, 1965:71-90; Laumann, 1968). Any two of one's close friends would then be more likely to be similar to each other than any two of one's weak friends, and thus more likely to strike up a friendship once having met. Applied in reverse, these two factors indicate why any two of one's weak friends are less likely to be tied to one another: they are less likely to meet, and less likely to be compatible if they do.

Why this is important can be seen abstractly by considering the problem of transmitting a message (or rumor, or object) by means of personal contact, to the largest number of people possible. If we drop the message at some random location in a close-knit network it will quickly spread through the entire network, but will be greatly slowed in getting out of it. After a while, in this structure, people will, at each turn, be passing the message on to someone who has already received it. A message dropped into a loose-knit network, on the other hand, while it might take longer to reach any given person, will ultimately reach a far larger number of people since, at each turn, a new person is likely to receive it.

If weak ties form loose-knit networks, and information reaches more people through loose-knit networks, it follows as a composite hypothesis that information passed through weak ties reaches more people. This effect is achieved because one can reach people outside of his own "social circle" more easily through weak ties. Two quite different empirical studies lend credence to this claim. Rapaport and Horvath (1961) studied a junior high school in Michigan. Each individual in the school was asked to list his eight best friends in order of preference. Taking a number of random samples from the population (sample size = 9), the authors traced out, for each sample, the total number of people reached by following along the network of first and second choices; i.e.--the first and second choices of each member of the sample were tabulated, then the first and second choices of these people were added in, etc., counting only names not previously counted, and continuing until no new people were reached. The same procedure was followed using second and third choices, third and fourth choices, etc., up to seventh and eighth. As predicted by the hypothesis above, the fewest total people were reached through the networks generated by first and second choices--these tended to turn back on themselves--and the largest number were reached through the networks resulting from seventh and eighth choices.

A different sort of verification comes from Milgram's "small-world" technique (1967). The name of the method comes from the usual comment of two strangers who discover some common acquaintance; its purpose is a generalization of this situation, an attempt to measure for any two individuals how long a chain of personal contacts would be needed to connect them. A booklet is given to designated senders who are asked to forward it towards some named target person, via someone the sender knows personally, who would be more likely than himself to know the target. The new recipient then advances the booklet similarly; eventually, it reaches the target or someone fails to send it on. The proportion of such chains completed has ranged from 12 to 33% in different studies, and the number of links in completed chains has ranged from 2 to 10, averaging between 5 and 8 (Milgram, 1967; Milgram and Travers, 1969; Korte and Milgram, 1969).

Each time someone forwards a booklet, he also sends a postcard to the researchers indicating, among other information, the relationship between himself and the next recipient. Two categories which can be checked off in giving this information are "friend" or "acquaintance." I will assume that this corresponds to the usage here of "strong tie" and "weak tie."

In one of the studies, white senders were asked to forward the booklet to a target who (unknown to the sender) was Negro. In such a chain, a crucial point was the first sending of the booklet from a white to a Negro. If we look at completed vs. incomplete chains, the nature of the first interracial link should give some insight into the question of what sort of relationships provide the most effective contact. In 25% of the completed chains, but 51% of the incomplete ones, the first interracial link was made by a white sending the booklet to a Negro "friend"; on the other hand, in 36% of completed chains, compared to 26% of incomplete ones, the white said he had sent the booklet on to a Negro "acquaintance." In another 14% of the completed chains, but in none of the incomplete ones, the white sent it to a "role reciprocal" (i.e.--one side of some formally stated inferior-superior relation, such as employee--employer, patient--doctor, student--teacher, etc.). Since most such relationships are likely to be weak ties, we can summarize by saying that the racial barrier was crossed through weak ties in 50% of completed chains, but only 26% of incomplete ones (Korte, 1967). Again, the weaker ties afford more "reach"; in this case they are shown to be instrumental in the bridging of racial barriers. The Negro who has forged close ties with one or more whites has probably done so at the cost of being less well connected into Negro circles, thus being less able to move the booklet on to the designated black target.³

Such experiments are rather artificial, of course, and one can reasonably ask what real implications these findings have for individuals or for society. In fact, the implications are rather impressive. I will discuss them for only three substantive areas, but many other applications are conceivable and deserving of intensive research.

Weak Ties in Mobility Opportunity

Labor economists have known for some time that people moving from one job to another, in blue-collar work, are more likely to find out about the new job through personal contacts than by any other method.⁴ Some recent studies have suggested that this is also true for professional, technical and managerial positions (Shapiro et al., 1965; D. Brown, 1967). I am now conducting a study of this question which lays special emphasis on the nature of the tie between the individual who changes his job and the contact person who provides the information (and often the influence) which makes the change possible. Incomplete but substantial results of mobility among a random sample of professional, technical and managerial workers in a Boston suburb indicate that the person who facilitates mobility is often one related to the job-changer by a weak tie. In most cases, it is someone who is only marginally included in his current network of social contact, often being an old college friend, or a former workmate or employer with whom only sporadic contact has been maintained.

Usually such ties were not even very strong years ago when they were first established. In the case of work-related ties, respondents almost invariably report that they never saw the person in a social (i.e.--non-work) context.⁵ In most cases, contact between the two people had been restricted to once a year, at most, after the initial period. Sometimes there had been no contact for several years at the time when the contact offered job information to my respondent (thirty years in one extreme case, twenty-five in another). In these cases, "chance" meetings or mutual friends operated to reactivate the tie. In very few cases is the contact person related to the job-changer by a close tie.

Moreover, it also appears from preliminary results that the quality of a job varies directly with the method of finding it: ads and agencies produce the jobs seen by incumbents as of lowest quality, while direct, "blind" application to companies produces somewhat better jobs; soliciting personal contacts for information does still better, while the best jobs seem to be those which come unsolicited to people from some person they are weakly tied to, who, in most cases, didn't even know whether the person was interested in changing jobs, but offered the information anyway (cf. D. Brown, 1967).

The centrality of weak ties in mobility should not be so surprising in light of the theoretical framework of this paper. People we are weakly tied to move in different social circles; thus they are more likely to find out about opportunities which we do not and cannot discover directly. Moreover, the tie itself is essential in transmitting the opportunity. We can best appreciate this by comparing the job-changing process to models in various fields which are meant to account for similar processes. In anthropology, sociology and medicine, "diffusion" models have been presented to account for the transmission of information, rumors, innovations, cultural traits and diseases from one social context to another (cf. Coleman, 1964:492-514). These models owe much to the physical analogy on which they are based: the molecules from an opened bottle of perfume diffuse slowly to the opposite side of the room, suffer many setbacks and deflections from other molecules, move more easily along some paths than others, and come in contact with large numbers of other molecules in the course of the trip. A piece of information or an innovation is conceived of as moving in a similar way--from one social setting to another via chains of individuals.

People hear from their friends, who heard in turn from their friends, etc. The chains are long enough that, as with rumors, no one can say just where they began. Very large numbers of people can be "reached" by such a diffusion process, but no particular tie between individuals is crucial. The information or rumor diffuses along so many different paths that if I don't find out from one friend I still stand a good chance of hearing from another.

This is the model of job information which corresponds to the economist's conception of a "labor market." In economic theory, a "perfect market" is characterized by the condition that all buyers of labor (employers) and all sellers of labor (employees) are aware of all openings at any given time. Through the theory specifies no mechanism for such a wide distribution of job information, a diffusion model would fit well here, since every vacancy originates at one point in the social system, and news of it must reach large numbers of individuals unconnected to the original situation.⁶ If the diffusion model were relevant, we would expect the typical job-changer to have heard about his new job rather indirectly--through a friend of a friend of a friend . . . etc. Then there would be many ways one might find out about a job; no particular tie would be a crucial transmitter of information, and many people would find out about the opening.

My empirical results, however, show that job information moves in a radically different way. Chains are short; very rarely is there more than one intermediary contact between the job-changer and the new employer. Often there is not even one (the new employer is the contact person in this case). Thus, the flow of job-information is not a diffusion process in the sense defined. The particular weak tie along which it is transmitted is of crucial importance, since the information is not being sent out more or less randomly, but is highly earmarked for one person. The number of people who find out about an opening is thus small, and determined principally by the weak ties in the "neighborhood" of the vacancy.

Seen from a more macroscopic point of view, weak ties play a role here in effecting social cohesion. When a man changes jobs, he is not only moving from one network of ties to another, but is also establishing a link between these two networks, since he may well keep up some contact with his old work friends, even while establishing new ones. In fact, this weak tie is likely to be of the same kind which facilitated his movement. Especially within professional and technical specialties which are relatively well-defined, this has the effect of setting up an elaborate arrangement of weak ties between the more coherent clusters of ties that constitute operative networks in particular locations. In this way, information and ideas move fairly easily through the specialty, giving it some coherence and even a "sense of community," which is activated at meetings and conventions. These meetings and conventions, especially familiar in, though not limited to academic fields, are essentially a device for the maintenance of weak ties.

Weak Ties in Community Organization

The analogy to community organization drawn in the last few lines can be made more substantial. For some years many people have been curious about why some communities organize easily and effectively, whereas others seem unable to mobilize resources even against their own impending annihilation; the Italian community of Boston's West End, for example, was unable even to form an organization to fight against the "urban renewal" which eventually destroyed it. This seems especially anomalous in view of Gans' convincing description of the West End as a close-knit, cohesive community (1962). An analyst confronted with such a dilemma often suggests an explanation in terms of culture or personality; Gans contrasts lower, working and middle-class subcultures and concludes that only middle-class subcultures provide sufficient trust in leaders and the practice in working towards common goals to form a large, effective organization. This, he concludes, explains why the working-class West End could not resist urban renewal (1962:229-304). Yet, examples can be given of other working-class communities which have successfully mobilized against similar threats (Davies, 1966).

I would suggest that a fresh and more productive way of viewing community organization would be to examine the structure of the network of ties which makes up a community, looking there for factors which might facilitate or block organization. As soon as we shift our viewpoint this way, one of our earlier hypotheses becomes applicable: information passed through strong ties reaches fewer people, since these ties tend to form a close-knit network. Indeed, this immediately suggests a resolution to the paradox of why a close-knit community might be unable to organize: it may be that the close-knitness is primarily a local phenomenon. Though nearly everyone in the community may be enmeshed in a close-knit network, this is not only compatible with overall fragmentation, but even a powerful generator of it. If we could view the network of such a community from above, we might see a large number of close-knit "clumps" with few or no connections between them.

Gans indicates that the typical occupant of the West End "leaves the [street] corner on marriage and from then on participates in a not altogether different peer group existence in the living room and kitchen of his own home," consisting of "related siblings and in-laws" (1962:70). Most "adult friendships outside the family circle are established in childhood or adolescence, and probably outnumber those formed during adulthood" (Gans, 1962:72). Under such conditions it would not be surprising if relatively few weak ties existed to bridge the large number of closely-knit groups. Another vivid example of such a social structure

is provided by Yong and Willmott (1962:104-18), who describe an urban English working-class community in which the main focus of activity is one's particular street, containing 100-200 people, outside of which many feel themselves more or less in "foreign" territory.

There are at least two reasons why such a network structure might make community organization difficult. First, there is the simple problem of spreading information in a personal way. One usually successful community organizer in East Harlem described her failure in a housing project: "friendships do not go into an ever-widening circle. There are certain definite well-traveled paths in the project, and after a while no new people are met. . . . organization leaders have found each other, gotten all involved in each others' social lives, and have ended up talking to nobody but each other Just the mechanics of people learning what is going on is so difficult. It makes the simplest social gains extra hard for these people" (Jacobs, 1961:67-68). It is particularly important that information be transmitted personally. Leafletting, radio announcements or other methods could insure that everyone in the area was aware of some nascent organization; but as Katz and Lazarsfeld found in their study of personal influence (1955), mass media information normally has its impact only when it is also transmitted through personal friends. Otherwise, one has no particular reason to think that an advertised organization is anything he might want to become involved in.

Then there is the problem of trust. I would propose that the main factor determining the degree of trust of a particular person in a particular leader is simply that of whether there exist intermediary personal contacts who can assure the person, from their own knowledge, that the leader is trustworthy, and who can, if necessary, intercede with the leader or his lieutenants on the person's behalf. Trust in leaders is integrally related to the capacity to predict and affect their behavior. Leaders, for their part, have little reason to act in a "trustworthy" way toward those to whom they have no direct or indirect personal ties; nearly everyone has a category of people toward whom he would act amorally with little feeling of guilt--usually those to whom he has no real or potential connection. Thus, the proliferation of weak ties in a community would have the effect of increasing the connectivity of the overall social network, thereby increasing the number of people toward whom any leader might feel obliged to act morally and even responsively.

Given mobility and specialization, middle-class people are likely to form more weak ties than working-class people. Thus it is not surprising, given the above argument, that they have more trust in leaders and are more able to construct efficient organizations. Without appealing to cultural differences we can thus suggest a plausible theory of differential response in community organization, one which would allow for the possibility of any number of different culture-communities to organize competently, given only an adequate configuration of strong and weak ties.

Such a suggestion would be strongly confirmed if I could show that working-class communities which have organized well are characterized by a social structure with many weak ties connecting close-knit clumps. Unfortunately, network data is very difficult to collect, and is not forthcoming in these cases. One piece of positive evidence can be presented from a middle-class community: William H. Whyte, in his study of the "organization man" (1965) noted that, contrary to his original expectation, in the suburb he studied, the courts and blocks which were least cohesive provided the most community leaders. He concludes that there "are only so many enthusiasms a person can sustain, only so many hours in the day, and the amount of leisure one expends outside the group must be deducted from that spent inside" (1956:398). Put in the terms of this paper, people in less cohesive courts are less enmeshed in a close-knit network of strong ties; thus they have more chance to establish weak ties with greater overall contact potential.

Weak Ties and the Quality of Everyday Life

The existence of weak ties in a community is of significance not only to the overall organizational capacity of that community, but also to the quality of life available to those living within it. This point can best be made in the context of several community studies. Young and Willmott (1962), after analyzing the close-knit Bethnal Green area of East London, examined what happened when residents of this area moved to "Greenleigh," a government-sponsored suburban development. Not surprisingly, contact with relatives in the city fell off, on account of transportation and time costs. A more perplexing result was the dissipation of the friendly and warm atmosphere people had remembered from the city. The number of social contacts each person enjoyed fell off to nearly zero; by contrast, back in the city, people would encounter dozens of people they knew in the course of an ordinary day. We cannot fall back on social class differences to explain the difficulty; Young and Willmott found that samples of those who remained in the city and those who moved to the suburb were essentially of the same social background, and that they had also been similarly integrated into the urban community. Those who migrated were those who were especially attracted by the open spaces, better homes and better place to raise children. The situation approximates a controlled experiment. "They all come from the East End of London" explained one of the suburbanites, "but they all seem to change when they come down here" (Young and Willmott, 1962:147); this explanation for apparent widespread unfriendliness is expressed by the informant with some incredulity. With good intuition, he realizes that merely moving to a new place is not likely to result in major personality changes; yet no other

explanation seems available to him for the situation. Young and Willmott, however, point to the different ecology of the two areas. The city was more densely packed and dotted with small shops and pubs. In these pubs, and in walking or shopping at the local stores, many casual acquaintanceships could be initiated, maintained and reinforced. In the suburb, houses were widely separated and all stores were gathered into a shopping center. Pubs were not within walking distance. Admittedly, many of one's acquaintances in Bethnal Green could be accounted for by long-term stability of residence; the friends one had as children still lived in the neighborhood. The suburb contained a whole new group of people, and contact with them could not be mediated by kin. Yet, if these were the primary difficulties, they should have been somewhat mitigated by the passage of time. But those who had been longest in the suburb noticed no difference, and had made no more friends (Young and Willmott, 1962:152). Again, we must fall back on the peculiar ecology to explain the prevalent mistrust and isolation.

But why is this an explanation? A number of missing links in the explanatory chain must be filled in. We can begin by noting that many studies of working-class urban populations show that people carefully restrict the number of people who visit in their homes, and whom they visit (Jacobs, 1961; Young and Willmott, 1962; Gans, 1962; Glazer and Moynihan, 1963). Motives seem to be a desire for privacy and autonomy, combined with the structural constraint that one can have strong ties with only a limited number of people. We can divide all encounters between friends into two categories: intended or unintended. If A encounters B and it is clear to both that the meeting was intended by A (as when A visits B's home), certain risks and obligations are incurred. B is obligated to entertain A unless he does not care about doing some damage to their relationship; A risks rejection. If a relationship can be sustained only in such clearly intended encounters, it must get either stronger or fade to nothing. Each time the obligation to entertain is met, the tie is strengthened; each time it is rejected, the tie is weakened. With frequent fluctuations of this kind it is highly unlikely that a stable weak tie can be formed.

Compare the situation where A encounters B in a shop, a pub or on a walk. The point is that neither has gone out of his way to meet the other; each is doing merely what his round of everyday activities requires him to do. No obligations are incurred, no risks taken. Meeting B accidentally in a shop, A can break off the conversation after a minute to rush off somewhere else without this being taken as an insult. But if A left his home a minute after B arrived there, a certain amount of humiliation would be unavoidable. Thus, the structure of a neighborhood can facilitate the maintenance of weak ties. If one's normal activities bring him into contact with the same people with some frequency, weak ties are likely to result. But if one does all his shopping in a large shopping center, for example, few such ties can be sustained in the process since 1) within strong limits, you can't stop and chat with people you meet while driving and 2) the shopping center serves so many people that the chance of frequently encountering the same ones is reduced (Jacobs, 1961).

Cancy stores, takeout "joints" and street-corners near such places often serve a similar function for younger people; these are places where people tied weakly to each other can "hang out." Though there is more of an intention here to meet friends, it is still true that no specific obligations are incurred. Should a corner be empty, one can leave or perhaps go into the store to have something to eat until people arrive (cf. Liebow, 1967).

The sort of casual, weak ties I have described have a number of functions in the community. If extensive enough, they can, as suggested in the previous section, knit together large numbers of people and make organization possible; they can also facilitate the transmission of information through a community, increasing the sense of cohesion. Less extensive weak ties, as in Bethnal Green, are unable to transcend intensive localism, but do at least make pockets of urban life pleasant for their occupants; streets are full of familiar faces which smile and nod. The utter absence of such ties, as in Greenleigh, leads to a fairly thorough atomization, an atmosphere experienced as unfriendly and unpleasant by the inhabitants.

Moreover, it is not accidental that in this English suburb the absence of weak ties is accompanied also by an absence of strong ones. Especially in a new community it is likely that any strong ties which developed would arise from weak ones. A weak tie may always remain such, or it may give two individuals a chance to feel each other out, to move slowly and carefully into a stronger relationship. But if all ties must be mediated by intended encounters, as in the suburb where no facilities exist for the maintenance of weak, casual ties, then people are forced to an all-or-nothing situation; for any existing tie they must either quickly make it a strong one or give it up entirely. In Young and Willmott's suburb the nothing side was chosen.

In Park Forest, by contrast, the upper-middle class American suburb studied by Whyte (1956), all-or-nothing was resolved by "all." In this suburb, home of those junior executives Whyte dubs the "organization men," the situation is similar to Greenleigh in that there are few weak ties, and for much the same reasons; but a striking difference is that many people are so caught up in a social whirl with close friends that an individual can barely maintain any privacy. Not only do people enter each other's homes without knocking, but one is actually accountable to friends as to where he was if not home when a visit was attempted. "The lack of privacy is retroactive," Whyte comments (1956:389).

It is not entirely clear why the people of Park Forest have these strong ties and those in Greenleigh nearly no ties. What is clear is that where there are no facilities for the sustaining of weak ties, this is the choice: all strong ties or none. Neither is a very desirable alternative.⁸ Individuals in Greenleigh suffered from loneliness, those in Park Forest from the lack of a private life. The difference between the two situations may have resulted from different educational levels--those in Park Forest were perhaps more sophisticated and more ready to throw themselves into strong friendships without a testing period which a weak tie would allow; those coming from Bethnal Green, on the other hand, would have been accustomed to making friends only on the basis of years of acquaintance. I also suspect that housing density was higher in Park Forest than in Greenleigh, and houses laid out less in straight rows, thus increasing the number of people one would encounter in the course of everyday activity. Whyte noticed that friendship patterns were remarkably predictable from the physical layout of the courts into which houses were grouped (cf. Festinger et al., 1950).

Whyte attributes the large impact of housing as well as the more generalized conformist attitudes among his respondents to the decline of the Protestant Ethic and the rise of the Social Ethic, that "contemporary body of thought which makes morally legitimate the pressures of society against the individual" (1957:7), an ethic particularly characteristic of junior executives in America. I think this no more convincing than the explanation of the behavior of people in Greenleigh offered by a resident--that people suddenly became "unfriendly" when they moved from the city. In both cases, the naming of a phenomenon is mistaken for its explanation. The framework organized in this paper seems adequate to explain the behavior of people in Park Forest without recourse to a *deus ex machina* in the form of a change in values, a "Social Ethic." The influence of housing on friendship patterns is explained by the fact that there is essentially no other way to strike up the weak ties which lead into closer ones. Because there are few facilities for sustaining weak ties, and because the people here begin without any close ones, these weak ties are rapidly converted to strong ones. To the extent that conformity is a characteristic of Park Forest, it is probably more a *result* than a cause of friendship patterns. A key postulate suggested earlier was that strong ties tend to form close-knit networks. It is a corollary that, other things being equal, conformity of behavior is more likely the more close-knit the network one is in. This follows easily from the information-transmission properties of close-knit networks: word of what one does gets around quickly to everyone in the group, since everyone tends to know everyone else. Nothing can be hidden, as it could if one had friends who had no communication with each other. Norms stabilize more in a close-knit interaction system; confusion about proper behavior is more difficult to sustain since there are no clearly demarcated subsets of individuals around which different definitions of correct behavior might crystallize (cf. Bott, 1957:192-215).

Still another variation of these issues is suggested by Lym's analysis (1969) of the social system described in Liebow's *Tally's Corner* (1967), a study of "Negro Streetcorner men" in Washington, D.C. Lym points out that the friendship ties of the lower-class black males in this setting are multi-stranded--involving economic ties, exchange of services (e.g., sharing clothes) and emotional support; relations between the sexes are similarly multi-stranded. He then concludes that the fragility of these ties is due to poor cognitive ability to differentiate the various strands in these relations--so that a falling-out over money spills over to the other aspects of these ties and leads to a breakup of emotional and mutual-help relations as well. "Black communities," Lym comments, "have no precedents by which to legitimize 'freedom' friendships in which friendship might imply exchange in some modes but not all. Such a friendship might imply exchanges of gossip but not necessarily exchanges of money or clothing. . . . clearly roles intermediate between friend and stranger . . . are needed in the lower-class black communities" (1969:9). He goes on to relate the absence of such roles to styles of child-raising and consequent cognitive development in black urban ghettos.

With a shift of emphasis this line of argument supplements the claims of this paper. Multi-stranded ties are almost invariably strong ones.⁹ Thus, in terms of the strength of ties, Lym is saying that because of the absence of stable weak ties in black ghettos, inhabitants put a great strain on existing ties, trying to make them serve all the functions which might otherwise be partly served by weaker, single-stranded, specialized ties. Trying to make every tie into a strong tie results in endemic instability of interpersonal relations. This is another example of the all-or-nothing problem already discussed for Greenleigh and Park Forest: the absence of stable weak ties forces any relationship to become strong or to break up.

In explaining the absence of weak ties, I would look, rather than to cognitive style, to the absence of those facilities in the community which ordinarily facilitate weak ties. We are handicapped in this area by the lack of adequate community studies of blacks in America. We can only extrapolate a bit from previous conclusions. Many weak ties, for example, are formed in the course of one's work. For many people, work-friends and social-friends are separate categories. Thus, having a stable work situation provides one, generally, with a certain number of weak ties which meet some of the economic and emotional needs he has. The well-known employment difficulties of black Americans, particularly salient in Liebow's study, therefore deprive them of a common source of weak ties. This not only takes its toll in reducing emotional and economic satisfactions, but also, in the long run, reduces the potential for mobility opportunity which is so often mediated through weak ties.

Also, from reading autobiographical accounts such as those of Claude Brown (1965) and Malcolm X (1964), I have the impression that black areas are fragmented into a large number of close-knit networks with few of the weak ties which might connect such networks; it is curious that in reading these accounts, one gets almost no sense of the overall social structure of the community. The same characters recur over and over again as if the rest of the people living in an area did not exist. Such a structure might be both cause and effect of the lack of weak ties. It is almost by definition an effect; but weak ties also have a way of generating more weak ties, since one is more likely to meet someone he doesn't already know through a weak tie than through a strong one.

This fragmentation might partially explain riot-proneness of certain black ghettos. Where there is little overall cohesion, little leverage is needed to start a riot; there are few previous alliances and intricate systems of widespread ties to mobilize or overcome. According to the Kerner report, the only area of the Detroit ghetto which remained immune to rioting was one 150 square block area which was organized through block clubs. Riots, far from being the product of detailed organization, can probably flourish only in a relatively unorganized social structure (Kerner, 1968:54).

The Functions of Weak Ties

No one has the emotional resources, or even the time, to form a strong tie with everyone he knows, unless this is only a handful of people. The situation of having only strong ties would be a great strain. The strain might be that of having no private life, as in Park Forest, or that of unpleasant fragility of social ties, taxed beyond their capacity, as on "Tally's corner." In either case, the point is that weak ties serve important life-needs of individuals which cannot ordinarily be met through strong ones. In addition to emotional needs, these ties connect the individual with a wider community than his immediate circle, making possible mobility opportunity, participation in community-wide activities and organization, and a general sense of integration into this wider community. Weak ties generate both further weak ties (by introducing people to new people) and some strong ties (by evolving, themselves, into such ties). Where no stable weak ties exist, it may be that no strong ones will ever be formed either, as in Greenleigh.

Weak ties also enrich the life-experience of individuals by being natural generators of diversity. Strong ties are likely to be to individuals similar in most ways to one's self. Ties to people who are very different are likely to exist at all only in a weak form; yet, as such, these ties are valuable and enriching, widening the perspectives and experiences of those involved in them. When the apparently large dissimilarity is actually superficial, it may be that only a stable weak tie will allow enough contact to make this clear.

The most important application of this particular principle may be to race relations. Where integration has succeeded, it has generally been in those urban settings where high density and frequent "public territory" (stores, etc.) make weak ties sustainable. Suburbs with no such facilities, on the other hand, are notorious for their failure to develop harmonious interracial living. Jane Jacobs observed in a Baltimore suburb that "when mothers of different income or color or educational background bring their children to the street park, they and their children are rudely and pointedly ostracized." One could account for such a situation by pointing to the different values, attitudes or personality structures of those who leave the city for the suburbs. It seems simpler to accept the comments of one resident in this street: "If only we had a couple of stores on the street . . . then the telephone calls and warming up . . . could be done naturally in public, and then people would act more decent to each other because everybody would have a right to be here" (Jacobs, 1961:63-64). Given the situation, however, these functions cannot be performed without entering private homes, and therefore the private lives of their occupants. It is all-or-nothing, and the choice is nothing.¹⁰

Weak Ties as a Product of Modernization

Is the frequent assumption correct that modernization and urbanization substantially change the structure of a typical individual's social relations? For most analysts, the changes in technology and human density typical of modernization have been so impressive that corresponding changes in social structure have been taken for granted. In recent years this view has been modified to accommodate the many studies showing that modern man has not lost his strong, primary ties to the extent that had been supposed. We can also ask whether weak ties have become important and numerous for the first time in modern societies.

On prima facie grounds this assumption would be suspicious; in the typical tribal or medieval village, individuals live among several hundred compatriots, most of whom are usually known to them. How many human beings are capable of sustaining several hundred strong ties? Clearly the majority of such ties must be relatively weak, and if so, might well serve the various connective and other functions outlined earlier for weak ties in the modern setting.

Support for this assertion can be drawn from many anthropological accounts. Exogamy, for example, whether enforced by rules, customs or demographic pressures, has long been recognized as an important cohesive force; it establishes an intricate and wide-ranging network of kinship ties between villages which might otherwise have little to knit them together (Lévi-Strauss, 1969; Middleton and Tait, 1958; Mayer, 1961).

Because these are kinship ties, our immediate impulse may be to class them as strong ones. Yet, by any reasonable criterion, such affinal ties are invariably weak. They usually are held across distances too great to allow frequent visiting. People bound by such ties often see each other no more than a few times a year, if that often, and even then only on ritual occasions--funerals, weddings, kinship exchange obligations. When the kinship system does not generate such weak ties, other customs may do so. The "kula ring" described by Malinowski (1922) is a famous example. "The Kula is a form of exchange . . . carried on by communities inhabiting a wide ring of islands the Trobriand Islands which form a closed circuit. . . . Along this route, articles of two kinds, and these two kinds only, are constantly travelling in opposite directions. In the direction of the hands of a clock, moves constantly one of these kinds--long necklaces of red shell In the opposite direction moves the other kind, bracelets of white shell . . ." (Malinowski, 1922:81). This ceremonial exchange is carried out only between clearly defined kula partners; partnership, like kinship, is a "lifelong affair" (1922:83). Moreover, this trading "is not done on the spur of the moment but happens periodically, at dates settled in advance, and it is carried on along definite trade routes, which must lead to fixed trysting places" (1922:85). Each man has only a few partners with whom he carries on this trade; Malinowski divides these partners into two categories: "An average man has a few partners nearby, as a rule his relations-in-law or his friends, and with these partners he is generally on very friendly terms The overseas partner is, on the other hand, a host, patron and ally in a land of danger and insecurity" (1922:91-92). "There would not be any great intimacy between two overseas partners. But, in sharp contrast to the essential hostility between two strange tribesmen, such a relationship of friendship would stand out as the most remarkable deviation from the general rule" (1922:276).

Thus, it is the weak ties in the kula system, those activated only on the annual, long-distance kula expeditions undertaken by groups of Trobrianders, which bear the brunt of maintaining cohesion over a wide area, among a large, intricate network of individuals who would not otherwise be tied together, and would likely fall into hostility if confrontation arose. These weak ties, as in modern society, also breed cohesion by generating cultural similarity: "It is easy to see that in the long run not only objects of material culture, but also customs, songs, art motives and general cultural influences travel along the Kula route (Malinowski, 1922:92). The Kula is only one example; many tribal societies display ceremonial trading patterns which could be analyzed similarly (cf. Belshaw, 1965:11-52).

Parallels in modern society are very close. It is common for those travelling far from home to call on and even stay with old friends they have not seen for years. While having such hosts may not be needed as a protection against local hostility, as among the Trobrianders, it does serve the same function of making one feel at home in a strange environment thus facilitating and encouraging travel, exchange of ideas and information between different parts of a society. Upon moving to a new area, one might find the existence of such weak ties crucial for integrating one's self into the local social structure.

Moreover, the methods of maintaining such ties are little different in modern than in tribal or medieval society. Funerals, weddings, Christmas dinners and other family get-togethers serve the function of maintaining weak ties among relatives just as ritual clan worship, weddings and funerals do in "simpler" societies. Telephone calls and Christmas cards are about all we have added to these. When the weak ties are among other than kin, we also have equivalents of institutions like the Kula--annual meetings involving long travel, where ceremonial exchange procedures are followed: these are called professional meetings. The exchange of papers at these meetings is widely acknowledged to be secondary to the more important purpose--keeping in touch with others in one's field at a personal level, catching up with the gossip--maintaining weak ties (cf. F. Katz, 1958).

Another timeless function of weak ties is discussed by Gluckman, in his analysis of Tonga and Tallensi social control; he emphasizes the importance of individuals "seemingly on the very fringe of one's social relations" in enforcing morality, especially through institutionalized joking relationships (1965:130). In the Middle Ages, court jesters played a similar role: "it was the job of the jester to gibe. In a system where it was difficult for others to rebuke the head of a political unit, we might have here . . . a joker able to express feelings of outraged morality Jester of this kind were also attached to many African monarchs" (1965:133). People tied only weakly to a situation are given licence to moralize about it precisely because they are open to less suspicion of selfish motives. "The roles of lawyers, arbitrators and others in modern life are sometimes similar: they can propose courses of action . . . which if proposed by an insider would be rejected by others as self-interested" (1965:131). One might add to this description such roles as that of marriage counselor and street worker in boys' gangs. As in the tribal situation and in the medieval one, the existence of such weak ties provides a certain flexibility in social systems. Tensions and conflicts arising in one social interaction system, which if contained there entirely might not be resolved, can be siphoned off to a third party for dilution. "The non-partisan shows each party the claims and arguments of the other; they thus lose the tone of subjective passion which usually provokes the same tone on the part of the adversary. What is so often regrettable here appears as something wholesome, namely that the feeling which accompanies a psychological content when one individual has it, usually weakens greatly when it is transferred to a second" (Simmel, 1950:147).¹¹

Conclusion

This paper has left more than one loose end. To begin with, a reader enticed by my title may now feel cheated since I have said very little about alienation, as such. But then, only a reconsideration was promised; I have reconsidered the proposition that alienation in modern society is the product of an excess of weak ties, and found it wanting. I have neither denied nor explained the existence of alienation. In 1969, such a denial would be ludicrous; its author, if an academic, would be more than likely to have interrupted his work during the past year to involve himself in turmoil brought on by this very real state of mind, now especially prevalent among, though not confined to young people. None of the current and popular theories purporting to explain this phenomenon can be considered intellectually satisfying.

One difficulty is that we lack perspective. Like weak ties, alienation is often described as a relatively recent, modern development (cf. Keniston, 1965). I am sceptical about this, but can only offer programmatic suggestions for research. What is needed is a new branch of social science which we might dub "comparative phenomenology," a field which asks of many cultures in different times and places, "how does it feel to exist as a member of this culture; what is the subjective quality of life-experience?"--and systematically compares the answers. This very difficult and essentially unbegun task must not be conceived only as a comparative psychology. If this essay has demonstrated nothing else, it should have at least shown that the personal experience of individuals is closely bound up with large-scale aspects of social structure which go well beyond the purview or control of any particular individual. Thus, no reasonable attempt to study alienation or other aspects of the quality of life in different societies can proceed without a detailed study of social structure, informed by a theory of social structure which effectively links together the micro and macro levels of society.

No such theory now exists, but this paper has had the purpose of highlighting one element which might be of importance in constructing one: the effect of the strength of ties between individuals on the overall social system created by the aggregation of all their interactions. This element needs to be placed in a larger framework of theories and concepts; such a framework would use demographic information, and details on "ties," "roles," and "values" not as mere descriptive attributes of social structure, but rather as social phenomena lying at the boundary of micro and macro--caused in determinate ways by individual actions, and reacting in turn to shape larger structures.

This viewpoint would allow incorporation of recent developments in psychology more systematically than has yet been possible. Most use of psychology in social theory has been excessively reductionistic, neglecting the subjective experience of individuals. This is because behaviorist and Freudian emphases have dominated; neither takes account of interaction beyond rather small groups, and both hold that the observer can give a better description of behavior than the observed. (Though Freudians make detailed use of introspective reports, these must be fitted into the theoretical system before they are considered valid.) Cognitive psychology and phenomenology, however, offer different possibilities to social theory. The latter has as its primary principle the prima facie validity of the subjective report. Cognitive studies with their emphasis on information processing and category formation, may prove useful in analyzing the generation of social structure from individual interaction. The fact that weak ties often provide the decisive leverage in mobility opportunity and community organization might, for example, be explained in terms of information processing requirements. For the person hiring a new employee, or for the prospective joiner of an organization, the fact that such a choice is supported by recommendation through a weak tie offers enough information for decision simply because other courses of action may be illuminated by nearly no information at all (cf. Rees, 1966).

A New York Times article (February 9, 1969) described the results of a Nixon administration talent search that "sent out forms to 80,000 Americans, including most everyone in 'Who's Who.'" One official admitted that the search was "the worst mistake of the Nixon administration to date." There were "more than 30,000 solicited and unsolicited letters about jobs, swamping the Nixon administration"; "screeners are struggling to keep up . . . Applicants must go through a six-step filter process ending with a security check that is 'fouling up' the machinery of the F.B.I. according to one informant." The head of the operation would not comment on how many had been hired by this method, but the reporter drew his own conclusion: "Hiring results at the top demonstrate that there may be no such thing as a 'systematic' or 'scientific' talent hunt in government, that what counts are whom you know and who vouches for you." When faced with hundreds of applications and resumes which look the same on paper, or where the accuracy of the information is suspect, anything that makes one applicant distinguishable from another may be enough to effect his selection. This extra information is often that supplied through a weak tie.¹²

Another inadequacy of this discussion is that treating only the strength of ties ignores all the important issues involving their content. Especially important is the question of how specialized ties are, whether they are single or multi-"stranded." The relation between strength and specialization of ties is of great interest, but rather complex. Although hunter-gatherer or tribal societies may not differ

substantially from modern ones in the importance of weak ties, for example, it seems clear that specialized ties have become more significant and common in the modern context. It may be a virtue of the analysis of weak ties that it shows one basic similarity between "simple" and "complex" societies, but that analysis can also be faulted on these grounds: sharp analytical tools should be capable of differentiation as well as integration.

The main concepts of this paper, beside being placed in a broader framework, need also to be stated less vaguely. The analysis of social networks is an area which is easy to talk about loosely, as I have here, and which has acquired a certain vogue in the last ten years. But as soon as one immerses himself in the dissection of a single real network of size one-hundred or more, technical difficulties become formidable. The number of possible pairwise ties increases as the square of the number in the network, so that, while the network of 100 contains about 5000 potential dyads, that of 300 produces nearly 45,000. (To be exact, the number of dyads in a network of size n is $[n(n-1)]/2$.) Since most of us have a network of well over 100 if we count weak ties (as I hope this paper suggests we should) and since not only dyads but also indirect ties are of crucial importance, we are faced with a staggering task which most sociologists have avoided by their habit of introducing individuals into social theory always abstractly, not concretely as particular persons.¹³

Three general strategies can be adopted for dealing with this difficulty. One is to adopt clever methods of sampling networks; the second is to devise a small number of parameters which adequately describe the network; the third is to develop formal models and techniques for reducing networks into manageable sub-categories.

Milgram's "small-world" research, described earlier, is essentially a sampling technique. As such, it has many potential but not yet attempted applications. Community studies would benefit, for example, by judicious selection of starting points and targets for small-world chains, within the community. This method has the complication that the sampling theory, unlike that of survey sampling, is almost completely undeveloped, and is likely to be considerably more complex. In most survey sampling, respondents are interchangeable, and the refusal of one person to cooperate has no result other than the possible introduction of sampling bias. But in network sampling, respondents are not independent of each other, since a whole chain may be broken off by the failure of one to cooperate (cf. White, 1969c).

Reducing networks to descriptive parameters has been undertaken especially by Rapoport and his collaborators (cf. Rapoport and Horvath, 1961). Parameters chosen usually have to do with the "overlap" properties of networks (referred to in the present paper as the "kntiness"), the number of people "chosen" by each individual, and various "biasses" which induce deviations from a randomly generated network. These overall statistical properties provide a valuable first glance at a network. But, like sampling methods, they do not always provide us with the local details which may be crucial.

This problem of local detail is often tackled through reduction rules. Techniques for reducing networks into subsets were introduced in the late 1940s (Luce, 1950; Luce and Perry, 1949; Festinger, 1949). These methods rely on matrix multiplication of sociograms (expressed in matrix form, all entries being "1" or "0") to sort out "cliques," sets of individuals all of whom are connected by a chain of n or less links in the network (e.g., if A does not know C, but knows B who knows C, then A and C are connected by a chain of length 2). Such methods have been further developed by Coleman (1964:444-55). Graph theory and balance theory, especially in the formulation of Davis (1967), have also been used as reduction methods, and have the advantage over clique methods that they permit more than one kind of tie within a network. Another promising approach is the use of algebraic theorems from the theories of groups and semigroups, to map networks into "image" sets with smaller numbers of members, in such a way that each member of the original network is identified with one and only one point in the image. (White, 1963, 1969a).¹⁴ This approach permits, even requires, more than one kind of tie, and goes the farthest toward recognizing the importance of indirect ties between individuals. Since indirect ties generate many weak ties, this model comes closest to describing some of the phenomena I have dealt with here. The method grew out of a concern with classificatory kinship patterns, and is rooted in social theory in the sense that reduction rules are not automatic, as in other techniques, but depend on the particular social system being considered. Once demographic and probabilistic considerations have been worked into this model, it may yield fruitful applications in analyzing complex situations.

My comments on weak ties, therefore, must be both broadened and deepened before they can constitute a significant contribution to social theory. This paper should be considered no more than exploratory or programmatic, and, in that spirit, I have not hesitated to go beyond the evidence to make assertions which may or may not be validated. I have tried harder to be provocative than profound and hope that a few readers will feel motivated towards research to clarify some of these complexities of social structure.

Notes

1. Cf. the detailed bibliography in Guterman's recent defense of Louis Wirth (1969).
2. Some empirical confirmation is presented in Laumann and Schuman (1967), and in Rapoport and Horvath (1961). The latter present nearly the same hypothesis.
3. Many cases come to mind of blacks formerly trusted by whites as "representative" of their people. Whites who once thought, on this basis, that they "knew Negroes" now are considering the need of weaker ties with those who really do have access to the opinions and ears of many blacks.
4. Parnes (1954) provides an excellent review of these studies in Chapter 5.
5. Often when I asked respondents whether a friend had told them about their current job, they would say, "he's not a friend, he's an acquaintance." It was, in fact, the frequency of this comment which suggested this section of the paper to me. I take the term "acquaintance" as an operational definition of "weak tie"; one reason why I have spent little time defining the concept more formally is that individuals seem already to have a good intuitive notion of its meaning--good enough to repeatedly make the friend-acquaintance distinction in the relevant context.
6. An alternative model would involve the mass media, but all studies indicate that no more than about 10% of jobs are found through advertisements. See Parnes, 1954.
7. I am indebted to Richard Wolfe for bringing this point to my attention.
8. In some suburbs it appears that a vigorous set of voluntary organizations may offset ecological problems and make possible the maintenance of weak ties (cf. Gans, 1967). Analysis of what characteristics of a suburb lead to this result is an important, difficult problem, beyond the scope of this paper.
9. Single-stranded ones, on the other hand, while often weak, are not necessarily so. Cf. Simmel's comments on this point (1950:317-29).
10. Facilities for the maintenance of weak interracial ties are proposed here only as a necessary, not a sufficient condition for successful integration. The difficulties of initiating these weak ties may explain why areas which could sustain them often do not have them.
11. Cf. Simmel's entire, illuminating discussion of "The Triad" (1950:145-69).
12. But not necessarily: in my own study, a respondent told me of an excellent job he had secured as a result of having filled out the application with green ink and fancy lettering. The recruiter, going through a large pile of forms, immediately was struck by this application, read it carefully, and subsequently hired the individual.
13. An important, recent exception is White (1969b).
14. In algebraic terms, the method is known as that of homomorphic mapping.

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The Semantic Connection*

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As a student of communication, I was struck a couple of years ago by some possible parallels between semantic analysis and network analysis.

References to cognitive or associative networks have become common in recent years in discussions of cognitive psychology and artificial intelligence. The units in these hypothetical networks are not elements of hardware, but functional units called concepts or -- with much hesitation -- words. It has often been suggested that the semantic system of a person or an artificial intelligence can be usefully represented as a network where the concept-nodes are joined by links standing for associations.

The interpretation of "association" is as ambiguous in semantics as in sociology. At the tough-minded extreme, it may be merely the observation that two words (concepts) occur together at some stated frequency. More generously, the association may be treated as an attraction or valence linking two works in the mind of a user, so that one will tend to call out the other. Network scholars apparently must confront everywhere the questions of whether a particular set of observations can be treated as a key to an underlying distribution of transitional probabilities, and, if so, what reliability and validity we can give it. In semantics, there is evidence (Kammann, 1968) that we are fairly safe on both counts, but the work of Bernard, Killworth, and Sailer (1980) leaves us in some doubt for people-networks.

Even if one is confident of the stability and significance of one's association data, however, a problem arises in the attempt to derive from it a description of something variously called semantic, cognitive, or conceptual space. It is tempting to use association measures as measures of proximity in the space (Deese, 1965), and this indeed can yield coherent results. But, as social network researchers have seen (Rogers and Kincaid, 1981), there is a distinction between connectedness and structural equivalence. Put more generally, a network may be said to reside in, define, or even generate a space, but not to be identical with it. That is, network is a topological rather than a metric construct.

Jakobson and Halle (1956) discussed a duality in language which corresponds to this distinction: the sequential (horizontal, associative) relations which characterize prose, with its emphasis on story; and the substitution relations characteristic of poetry, the sphere of metaphor and contrast. Using the terms of Miller, Galanter, and Pribram (1960), and Boulding (1956), respectively, I prefer to call these processes plan and image. (You may find them more familiar, though perhaps too abstract, under the labels "function" and "structure.") They should be joined by the postulate that each generates the other in a person's experience.

What emerges from this view in semantics is the proposition that word meaning is association pattern, or, more precisely, that word meaning emerges from the overlap of repeated, somewhat varied association sets, mostly with other words, but to a significant degree with nonverbal events. To construct a semantic space, one must use as distances the dissimilarities between association patterns of the words which define that space. Analogously, to construct a sociometric space for a group, one must locate members so that structurally equivalent ones are close together, which means comparing them in terms of their sets of links. In this view, various forms of network analysis designed to yield clique boundaries, while they surely offer interesting and valuable information, should be kept distinct from a spatial or structural analysis. If only strong ties count and transitivity holds in every triad, clique diagrams are also maps of group space, but once we acknowledge weak ties and imperfect balance, the two are different.

I am presently experimenting with an application of multidimensional scaling to network data which aims to preserve the above distinctions. Its input is a sociometric ("plan") matrix which I regard as a matrix of influence relations. That requires some explanation. Communication is best defined by its effect on a receiver. The sender crying in the wilderness is a standard symbol of communication failure. Our expectation that communication entails a receiver is an expectation about influence: the receiver has been changed in some way, at the least in that he/she remembers having received the message, but frequently in terms of his/her image of the sender or their common environment. Such influence may, of course, be outside of the sender's awareness or memory, and perhaps wholly other than what she/he intended. The influence matrix need not be symmetric, regardless of the apparent symmetry of the reported behavior. If A reports having talked with B, but B does not report the contact, then it seems appropriate -- with the limits of validity of the cognitive data -- to presume that B has influenced A but not vice versa.

* This is a work in progress. I have been rethinking the stopping rule for the multidimensional scaler and the diversity measure discussed in this paper.

The influence matrix may be simply the original sociometric matrix, or it may take into account paths of more than one link -- that is, higher powers of the original matrix. If, because of the nature of the group situation, higher powers are used, they are weighted inversely (on the assumption that influence is attenuated as it passes through more network links) and added to the original matrix. The matrix is multiplied with zeroes on the diagonal, but at the end of this process the diagonal values are compared to the high values in their respective rows and, if they are lower, set equal to the high values.

For every pair of group members their structural difference (distance apart in the group space) is taken to be the sum of their absolute cell differences along rows and columns, after the row and column values have been normalized to equate the members on total amount of influence sent or received. (The row - sending - total is not discarded, but dealt with separately, as detailed below.) The result is a symmetric distance matrix which is then scaled multidimensionally.

I spare you most of the details of the scaling routine, but these may be of interest: It is mathematically unsophisticated-- points are placed by an initial approximation and moved repeatedly to approach the values in the distance matrix. Each dimension is built on the largest residual distance in the iteration. The program starts with one dimension and may attempt up to six; the space is Euclidean. On each dimension, average dispersion around the center is compared to that for previous dimensions on the basis of an entropy measure. If, for example, three trial dimensions have equal average dispersion, the "complexity" of the solution is listed as 3.0 and the program tries a fourth dimension. If the average dispersions are unequal, complexity will be lower than 3.0. If, at any stage, the complexity is more than 0.5 below the number of dimensions, the last trial dimension is discarded and the previous solution is printed out.

Along with the location of each point on each dimension, the output includes an extra dimension representing the row sums of the influence matrix, so that the high and low status group members can be identified. Since the distance table was derived from the influence patterns rather than totals, more influential members drift toward the center of the diagram and relative isolates drift to the edges.

In addition to the influence table, the dimensional solutions, and the complexity measure, the program puts out a "remaining variance" figure and three group parameters. The variance figure is produced at the end of each retained dimensional solution by performing a product-moment correlation between the $n(n-1)/2$ distances in the upper triangle of the distance matrix and the corresponding inter-point distances in the current solution, and printing out $1-r^2$.

The three group parameters are rather experimental, and require some explanation. I have elsewhere (Hildum, 1979) offered a social relationship theory built on three oblique factors which I call superiority, identity, and diversity, pictured as forces pulling away from each other in a plane at mutual 120° angles, equivalent to correlations of $-.5$. Defined in dyads, these relations involve, respectively (and very briefly), the mutual assumption that one member is superior to another across a wide range of interactions (S); that both members are the same across many interactions (I); or that the two members are different in ability or leadership across many interactions, with the advantage balanced between them (D). My current attempts to get aggregate measurements of these three relations for groups are as follows:

S: Compare, in all possible pairs, the row sums of the influence matrix, sorting each pair into a large and a small value. Now divide the average small value by the square root of the average squared large value (thus emphasizing the larger inequalities) and subtract the result from one. S may vary from zero to one.

I: For each mirror pair in the influence matrix (that is, x_{ij} and x_{ji}), sort out the large and small values. I is the average small value divided by the square root of the average squared large value. This varies from zero to one. A symmetric matrix will tend to have higher values than a nonsymmetric one, but the maximum value is possible only if all influence values are the same.

D: Divide the complexity measure, minus one (its minimum value), by the log (base 2) of the number of group members, minus one, and multiply by the proportion of variance accounted for. Rationale: the number of dimensions needed for a solution reflects the number of different strands (kinds of interaction) entering into each link in the network. D may vary from zero to about one. (It may exceed one insofar as the dimensions are less "efficient" than binary dimensions would be, and the solution uses, for instance, more than 4 dimensions to account for 16 points, or more than 5 account for 32.)

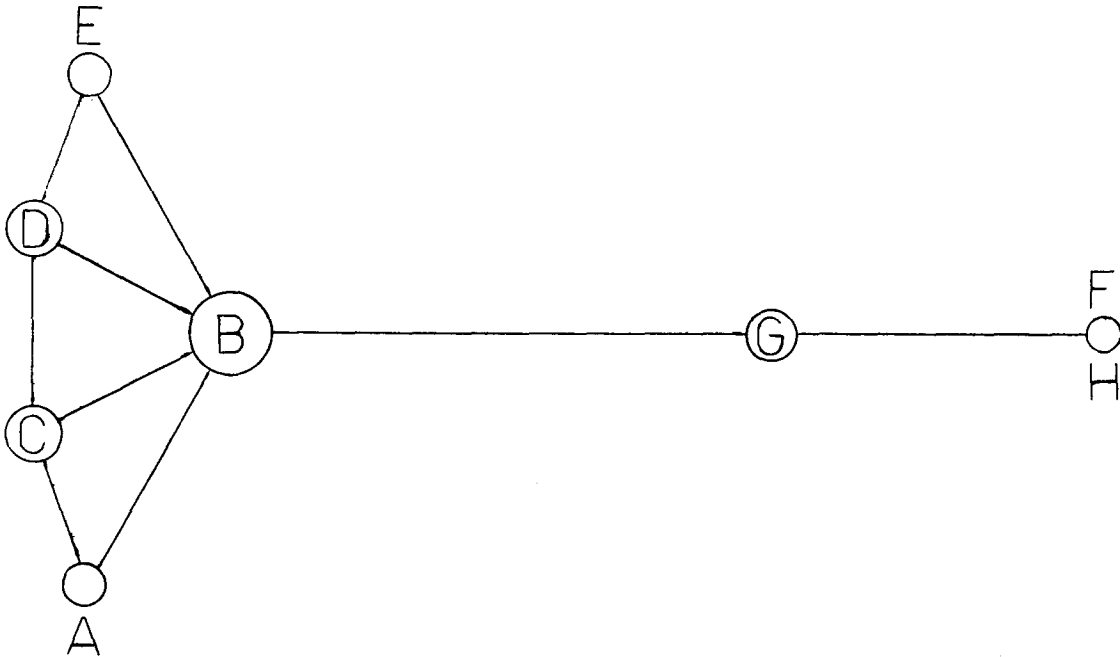
As you see, these measurement attempts are so far speculative. Your suggestions would be welcome.

A sample problem:

	A	B	C	D	E	F	G	H
A	0	1	1	0	0	0	0	0
B	1	0	1	1	1	0	1	0
C	1	1	0	1	0	0	0	0
D	0	1	1	0	1	0	0	0
E	0	1	0	1	0	0	0	0
F	0	0	0	0	0	0	1	1
G	0	1	0	0	0	1	0	1
H	0	0	0	0	0	1	1	0

	A	B	C	D	E	F	G	H
A	1.86	1.86	1.77	0.68	0.41	0.05	0.32	0.05
B	1.86	2.18	2.18	2.18	1.86	0.32	1.58	0.32
C	1.77	2.18	2.18	1.86	0.68	0.05	0.36	0.05
D	0.68	2.18	1.86	2.18	1.77	0.05	0.36	0.05
E	0.41	1.86	0.68	1.77	1.86	0.05	0.32	0.05
F	0.05	0.32	0.05	0.05	0.05	1.72	1.72	1.68
G	0.32	1.58	0.36	0.36	0.32	1.72	1.72	1.72
H	0.05	0.32	0.05	0.05	0.05	1.68	1.72	1.72

On the left, the (symmetrical) input matrix. On the right, the weighted sum of the first, second, and third powers of the matrix, normalized to an average of one per cell after each diagonal value was set equal to its row maximum. The first power is shown because the network diameter is 3, so the resulting influence table is the first one without zeroes. The one-dimensional solution accounted for 91% of the variance; the two-dimensional for 99%. Complexity - 1.9; Superiority - .297; Identity - .735; Diversity - .465,



Since semantic networks provided the inspiration for much of this approach, it seems proper to conclude by wondering whether some group characteristics might not throw light on semantic relations if we analyzed a word network as if it were a people network. In this case the status scale for individual words would index the centrality of words in the text, the most central ones having their occurrence controlled by factors outside the text (author's intention, environment), and least central ones being controlled by other words. The S value for the text would show its degree of centralization around a limited number of words. The I value would indicate the degree to which words clustered rather than chained in the text. And the D value might reflect the complexity of word meaning in the text.

Eventually, communication analysts will have to learn how to deal simultaneously with two levels of networks. The significance of social networks is that they provide the pattern within which the semantic networks carried by their human nodes may act upon each other. I think there is reason to hope that we may realize some economies by developing analytic tools suitable to both levels.

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SPECIAL JOURNAL ISSUES

Abstracts from SOCIAL NETWORKS vol. 4(1) 1982.

ORNSTEIN, Michael D. (York). *"Interlocking directorates in Canada: evidence from replacement patterns."*

Cross-sectional studies of interlocking directorates cannot adequately address the question of whether the network is primarily an accumulation of planned liaisons between specific pairs of firms or whether it reflects a more diffuse collective interest of the capitalist class. By examining the outcomes when ties are broken, it is possible to discover if ties between specific firms are usually replaced, as would occur if planned liaisons dominated the network. Replacement patterns are examined for interlocks among all firms ever among the one hundred largest Canadian firms between 1946 and 1977. About 30 percent of the broken ties are replaced by ties between the same pair of firms. Ties involving an executive of one of the firms ("insider ties") are more likely to be replaced as are ties between firms with two or more interlocks. The findings suggest that interlocks serve both as vehicles of intercorporate control and liaison and as reflections of the class character of the group from which the directors of large firms are recruited.

DOREIAN, Patrick (Pittsburgh). *"Leveling coalitions as network phenomena."*

The formation of leveling coalitions is discussed as the outcome of a network process. A simplicial complex is used to formalize the concept of a reticulum, and the interlocking of reticulums is naturally analyzed by a Q-analysis. This connective structure of reticulums forms the backcloth for the formation of leveling coalitions. A structure theorem that claims leveling coalitions will fail if the backcloth prohibits them, and may succeed if the backcloth permits them, is supported by data for two social networks.

WIGAND, Rolf T. (Arizona State). *"The communication industry in economic integration: the case of West Germany."*

National economies can be viewed as networks of interdependent relations among the firms, industries and sectors that make up the total economic system. Within this economic system, the communications industry plays a central role by providing message and media products and services, i.e. the linking and coordinating infrastructure.

Some limited research has been conducted on the nature and importance of the communication industry in the total economic network of a nation. The study reported here, however, represents the first application of currently existing network analysis techniques to this problem on a large-scale basis. The data used for this study represent the interorganizational relationships among 365 West German firms, with a 1970-based stock value of \$333,000 or more. Interorganizational linkages are a function of (1) direction of ownership, and (2) magnitude of ownership (percentage of stock owned weighted by the value of the owned firm).

The data analysis reveals that there are a number of dominating industrial groups, including a communications industry. The inter-firm relationships of the communication industry have been mapped and measured. The analysis demonstrates that there is relatively little dominance in and widespread integration with other major economic clusters of the economy. These findings are considered as being preliminary since only publically reported data were available, i.e. privately controlled firms are not included in the analysis. A number of measures for connectedness and integrativeness are presented that suggest themselves in addition to the technique of network analysis per se as potential alternative measures. Media scholars as well as economists may want to utilize network analysis as a method to study various forms of economic concentration and ownership in national industries.

PANNING, William H. (Iowa). *"Fitting blockmodels to data."*

Whether the important conceptual advantages of blockmodeling can be practically utilized depends crucially upon the development of a satisfactory method for fitting blockmodels to data. Existing procedures suffer from several important limitations, principal among which is the lack of consensus on a measure of the goodness of fit of a blockmodel to the data it represents. In this paper I present a measure of goodness of fit, and an algorithm for finding blockmodels with maximal fit to data, that together render blockmodeling mathematically equivalent to regression analysis. To facilitate more detailed analyses, I also present measures of the degree to which individuals and their relations deviate from the overall pattern of the blockmodel, of the sharpness with which each cluster is defined, and of the distances between clusters. The algorithm and measures are applied to data concerning international trade in the Western Hemisphere in two different decades.

Abstracts from JOURNAL OF GRAPH THEORY 5(3) 1981.

THOMASSEN, Carsten (Technical University of Denmark). "Kuratowski's theorem."

We present three short proofs of Kuratowski's theorem on planarity of graphs and discuss applications, extensions, and some related problems.

ARCHDEACON, Dan (Kansas). "A Kuratowski theorem for the projective plane."

A graph G is irreducible for a surface S if G does not embed in S but any proper subgraph of G does embed in S . Kuratowski's theorem states that any graph which is irreducible for the sphere is homeomorphic to either K_5 or to $K_{3,3}$. H. Glover, J. Huneke, and C.S. Wang have constructed a list of 103 pair-wise nonhomeomorphic graphs which are irreducible for the projective plane.

THEOREM. Their list is complete, i.e., any graph which is irreducible for the projective plane is homeomorphic to a graph in their list.

DeWERRA, D. (Ecole Polytechnique Federale de Lausanne). "On the existence of generalized good and equitable edge colorings."

Some classes of graphs are described which are extensions of bipartite multigraphs. Exclusion of some specific partial subgraphs gives some properties of edge colorability. In particular sufficient conditions are developed for the existence of generalized good and equitable colorings.

KELMANS, Alexander K. (Institute of Central Science, Moscow). "A new planarity criterion for 3-connected graphs."

Direct proofs of some planarity criteria are presented.

JAEGGER, F. (Laboratoire IMAG, Grenoble) and H. SHANK (Waterloo). "On the edge-coloring problem for a class of 4-regular maps."

A (plane) 4-regular map G is called C -simple if it arises as a superposition of simple closed curves (tangencies are not allowed); in this case $\sigma(G)$ is the smallest integer k such that the curves of G can be colored with k colors in such a way that no two curves of the same color intersect. We prove that if $\sigma(G) \leq 4$, G is edge colorable with 4 colors. Moreover we show that a similar result for maps G with $\sigma(G) \leq 5$ would imply the Four-Color Theorem.

GARDNER, M.L. (Worcester Polytechnic). "The λ -complete multigraphs."

Let E_1, \dots, E_m be the edges of a hypergraph. Assume each element in the union of the edges occurs in at least two of E_1, \dots, E_m . Assume further that every pair of distinct edges, E_i and E_j , intersect in at most one element and that for each such pair there are exactly λ other edges E_k such that E_i and E_j both intersect E_k . We characterize the hypergraphs for which each $|E_i| \leq 2$. These are the λ -complete multigraphs.

GODSIL, C.D. (Institut für Mathematik und Angewandte Geometrie Montanuniversität Leoben, Austria). "Matching and walks in graphs."

The matching polynomial $\alpha(G, x)$ of a graph G is a form of the generating function for the number of sets of k independent edges of G . In this paper we show that if G is a graph with vertex v then there is a tree T with vertex w such that

$$\frac{\alpha(G \setminus v, x)}{\alpha(G, x)} = \frac{\alpha(T \setminus w, x)}{\alpha(T, x)}.$$

This result has a number of consequences. Here we use it to prove that $\alpha(G \setminus v, 1/x) / \alpha(G, 1/x)$ is the generating function for a certain class of walks in G . As an application of these results we then establish some new properties of $\alpha(G, x)$.

MILLER, Zevi (Miami) and Heinrich MULLER (Stuttgart). "Chromatic numbers of hypergraphs and coverings of graphs."

Burr recently proved that for positive integers m_1, m_2, \dots, m_k and any graph G we have $\chi(G) \leq \prod_{i=1}^k m_i$ if and only if G can be expressed as the edge disjoint union of subgraphs F_i satisfying $\chi(F_i) \leq m_i$. This theorem is generalized to hypergraphs. By suitable interpretations the generalization is then used to deduce propositions on coverings of graphs.

BRUALDI, Richard A. and Robert F. SHANNY (Wisconsin). "Hamiltonian line graphs."

Sufficient conditions on the degrees of a graph are given in order that its line graph have a hamiltonian cycle.

BAREFOOT, Curtiss A. and R.C. ENTRINGER (New Mexico). "A census of maximum uniquely hamiltonian graphs."

We show that there are $2^{\lfloor n/2 \rfloor - 4}$ largest graphs of order $n \geq 7$ having exactly one hamiltonian cycle. A recursive procedure for constructing these graphs is described.

HOWORKA, Edward (Virginia). "A characterization of ptolemaic graphs."

A connected graph G is ptolemaic provided that for each four vertices u_i , $1 \leq i \leq 4$, of G , the six distances $d_{ij} = d_G(u_i, u_j)$, $i \neq j$ satisfy the inequality $d_{12}d_{34} \leq d_{13}d_{24} + d_{14}d_{23}$ (shown by Ptolemy to hold in Euclidean spaces). Ptolemaic graphs were first investigated by Chartrand and Kay, who showed that weakly geodetic ptolemaic graphs are precisely Husimi trees (in particular, trees are ptolemaic). In the present paper several characterizations of ptolemaic graphs are given. It is shown, for example, that a connected graph G is ptolemaic if and only if for each nondisjoint cliques P, Q of G , their intersection is a cutset of G which separates $P-Q$ and $Q-P$. An operation is exhibited which generates all finite ptolemaic graphs from complete graphs.

WOJDA, A.P. (Academy of Mining and Metallurgy, Krakow). "Meyniel's theorem for strongly (p, q) -hamiltonian digraphs."

We give the following theorem: Let $D = (V, E)$ be a strongly $(p + q + 1)$ -connected digraph with $n \geq p + q + 1$ vertices. where p and q are non-negative integers, $p \leq n - 2$, $n \geq 2$. Suppose that, for each four vertices u, v, w, z (not necessarily distinct) such that $(u, v) \cap (w, z) = \emptyset$, $(w, u) \notin E$, $(v, z) \notin E$, we have $id(u) + od(v) + od(w) + id(z) \geq 2(n + p + q) - 1$. Then D is strongly (p, q) -Hamiltonian.

TUCKER, Thomas W. (Colgate). "Some results on the genus of a group."

This Note announces two results on the genus of a group. First, there is exactly one group of genus two, thus answering a question of V.K. Proulx. Second, the genus of the full symmetric group of degree n is $n!/168 + 1$, for all $n > 167$.

Abstracts from JOURNAL OF GRAPH THEORY 5(4) 1981.

MENGER, Karl (Illinois Institute of Technology). "On the origin of the n -arc theorem."

The object of this article is to describe how I came to conjecture and then prove the following theorem whose variants have been the subject of recent interest.

THEOREM. Let G be a graph with A and B two disjoint n -tuples of vertices. Then either G contains n pairwise disjoint AB -paths (each connecting a point of A and point B) or there exists a set of less than n vertices that separates A and B .

THOMASSEN, Carsten (Technical University of Denmark). "Nonseparating cycles in k -connected graphs."

We show that every k -connected graph with no 3-cycle contains an edge whose contraction results in a k -connected graph and use this to prove that every $(k + 3)$ -connected graph contains a cycle whose deletion results in a k -connected graph. This settles a problem of L. Lovasz.

ANDERSON, Ian (Glasgow). "Quadrilateral embeddings of bipartite graphs."

Current graphs and a theorem of White are used to show the existence of almost complete regular bipartite graphs with quadrilateral embeddings conjectured by Pisanski. Decompositions of K_n and $K_{n,n}$ into graphs with quadrilateral embeddings are discussed, and some thickness results are obtained. Some new genus results are also obtained.

EXOO, Geoffrey (Michigan). "On an adjacency property of graphs."

A graph G has property $A(m, n, k)$ if for any sequence of $m + n$ distinct points of G , there are at least k other points, each of which is adjacent to the first m points of the sequence but not adjacent to any of the latter n points. The minimum order among all graphs with property $A(m, n, k)$ is denoted $a(m, n, k)$. Bounds are given on the number $a(m, n, k)$ and some exact results are indicated.

KANE, V.G. (National Information Center, New Dehli), S.P. Mohanty (Indian Institute of Technology, Kanpur) and E.G. STRAUS (California-Los Angeles). "Which rational numbers are binding numbers?"

The concept of the binding number of a graph was introduced by Woodall in 1973. In this paper we characterize the set F_n of all pairs (a,b) of integers such that there is a graph G with n vertices and binding numbers a/b that has a realizing set of b vertices.

CVETKOVIC, Dragos (Belgrade), Michael DOOB (Manitoba) and Slobodan SIMIC (Belgrade). "Generalized line graphs."

Generalized line graphs extend the ideas of both line graphs and cocktail party graphs. They were originally motivated by spectral considerations. In this paper several (nonspectral) classical theorems about line graphs are extended to generalize line graphs, including the derivation and construction of the 31 minimal nongeneralized line graphs, a Krausz-type covering characterization and Whitney-type theorems on isomorphisms and automorphisms.

ZASLAVSKY, Thomas (Ohio State). "Characterizations of signed graphs."

The possible classes of balanced circles of a signed graph are characterized in two ways.

STIMMONS, Gustavus J. (Sandia National Laboratories, Albuquerque). "Maximal non-hamilton-laceable graphs."

For bipartite graphs the property of being Hamilton laceable is analogous to the property of being Hamilton connected for simple graphs. In this paper it is proven that all of the graphs obtained by deleting fewer than $m - 1$ edges from either of the complete bipartite graphs $K_{m,m}$ or $K_{m,m+1}$ are Hamilton laceable. It is also proven that the deletion of $m - 1$ edges results in a non-Hamilton-laceable graph if and only if the graph is either the complement of the star $K_{1,m-1}$ in $K_{m,m}$ or $K_{m,m+1}$ or else the complement in $K_{3,3}$ of a pair of nonadjacent edges.

VINCE, Andrew (Michigan). "Locally homogeneous graphs from groups."

A graph is called locally homogeneous if the subgraphs induced at any two points are isomorphic. In this Note we give a method for constructing locally homogeneous graphs from groups. The graphs constructable in this way are exactly the locally homogeneous graphs with a point symmetric universal cover. As an example we characterize the graphs that are locally n -cycles.

LEHEL, Jenö (Hungarian Academy of Sciences, Budapest). "Generating all 4-regular planar graphs from the graph of the octahedron."

It has been communicated by P. Manca in this journal that all 4-regular connected planar graphs can be generated from the graph of the octahedron using simple planar graph operations. We point out an error in the generating procedure and correct it by including an additional operation.

BUCKLEY, Fred (St. John's), Zevi MILLER (Miami) and Peter J. SLATER (Sandia Laboratories, Albuquerque). "On graphs containing a given graph as center."

We examine the problem of embedding a graph H as the center of a supergraph G , and we consider what properties one can restrict G to have. Letting $A(H)$ denote the smallest difference $|V(G)| - |V(H)|$ over graphs G having center isomorphic to H it is demonstrated that $A(H) \leq 4$ for all H , and for $0 \leq i \leq 4$ we characterize the class of trees T with $A(T) = i$. For $n \geq 2$ and any graph H , we demonstrate a graph G with point and edge connectivity equal to n , with chromatic number $\chi(G) = n + \chi(H)$, and whose center is isomorphic to H . Finally, if $|V(H)| \geq 9$ and $|V(H)| + 1$, then for n sufficiently large (with n even when k is odd) we can construct a k -regular graph on n vertices whose center is isomorphic to H .

BLASS, Andreas, Geoffrey EXOO and Frank HARARY (Michigan). "Paley graphs satisfy all first-order adjacency axioms."

A graph satisfies Axiom n if, for any sequence of $2n$ of its points, there is another point adjacent to the first n and not to any of the last n . We show that, for each n , all sufficiently large Paley graphs satisfy Axiom n . From this we conclude at once that several properties of graphs are not first order, including self-complementarity and regularity.

THOMASSEN, Carsten (Technical University of Denmark). "A remark on the factor theorems of Lovasz and Tutte."

We present a short proof of factor theorems of Lovasz and Tutte.

CHONG-KEANG, Lim (Malaya, Kuala Lumpur) and Peng YEE-HOCK (Pertanian, Kuala Lumpur). "On graphs without multicliqual edges."

An edge which belongs to more than one clique of a given graph is called a multicliqual edge. We find a necessary and sufficient condition for a graph H to be the clique graph of some graph G without multicliqual edges. We also give a characterization of graphs without multicliqual edges that have a unique critical generator. Finally, it is shown that there are infinitely many self-clique graphs having more than one critical generator.

Abstracts from JOURNAL OF GRAPH THEORY 6(2) 1982.

MALLE, Günter (Universität für Bildungswissenschaften Klagenfurt, Austria). "On maximum bipartite subgraphs."

In this paper are investigated maximum bipartite subgraphs of graphs, i.e., bipartite subgraphs with a maximum number of edges. Such subgraphs are characterized and a criterion is given for a subgraph to be a unique maximum bipartite subgraph of a given graph. In particular maximum bipartite subgraphs of cubic graphs are investigated. It is shown that cubic graphs can be built up from five building stones (called elementary paths). Finally the investigation of a special class of cubic graphs yields a theorem which characterizes the Petersen graph and the dodecahedron graph by means of their maximum bipartite subgraphs.

HOPKINS, Glenn and William STATON (Mississippi). "External bipartite subgraphs of cubic triangle-free graphs."

A cubic triangle-free graph has a bipartite subgraph with at least $4/5$ of the original edges. Examples show that this is a best possible result.

LOCKE, S.C. (Waterloo). "Maximum k -colorable subgraphs."

A lower bound is established on the number of edges in a maximum k -colorable subgraph of a loopless graph G . For the special case of 3-regular graphs, lower bounds are also determined on the maximum number of edges in a bipartite subgraph whose color classes are of equal size.

GRANT, Douglas D. (Napier College, Edinburgh), F. JAEGER and C. PAYAN (I.R.M.A., Grenoble). "On digraphs without antidirected cycles."

Let $t(n)$ denote the greatest number of arcs in a digraph of order n which does not contain any antidirected cycles. We show that $\lceil \frac{6}{5}(n-1) \rceil \leq t(n) \leq \frac{7}{2}(n-1)$ for $n \geq 5$. Let $t_n(n)$ denote the corresponding quantity for r -colorable digraphs. We show that $\lceil \frac{15}{5}(n-1) \rceil \leq t_5(n) \leq t_6(n) \leq \frac{10}{3}(n-1)$ for $n \geq 5$ and that $t_4(n) = 3(n-1)$ for $n \geq 3$.

ZNAM, Stefan (Komensky University, Bratislava). "On a conjecture of Bollobas and Bosak."

It is shown that, for all sufficiently large k , the complete graph K_n can be decomposed into k factors of diameter 2 if and only if $n \geq 6k$.

BOLLOBAS, Bela (Cambridge). "Vertices of given degree in a random graph."

This paper concerns the degree sequence $d_1 \geq d_2 \geq \dots \geq d_n$ of a randomly labeled graph of order n in which the probability of an edge is $p(n) \leq 1/2$. Among other results the following questions are answered. What are the values of $p(n)$ for which d_1 , the maximum degree, is the same for almost every graph? For what values of $p(n)$ is it true that $d_1 > d_2$ for almost every graph, that is, there is a unique vertex of maximum degree? The answers are (essentially) $p(n) = o(\log n/n)$ and $p(n)n/\log n \rightarrow \infty$. Also included is a detailed study of the distribution of degrees when $0 < \liminf n p(n)/\log n \leq \limsup n p(n)/\log n < \infty$.

COOK, R.J. and D.G. Pryce (University College of Swansea). "A class of geodetic blocks."

A new class of geodetic blocks is constructed and it is shown how these are derived from Plesnik's geodetic homeomorphs of complete graphs.

JACKSON, Brad (California-Santa Cruz) and T.D. PARSONS (Pennsylvania State). "A shortness exponent for r -regular r -connected graphs."

Let $r \geq 3$ be an integer. It is shown that there exist $\epsilon = \epsilon(r)$, $0 < \epsilon < 1$, and an integer $N = N(r) > 0$ such that for all $n \geq N$ (if r is even) or for all even $n \geq N$ (if r is odd), there is an r -connected regular graph of valency r on exactly n vertices whose longest cycles have fewer than n^ϵ vertices.

ANDERSON, Ian (Glasgow). "On the toroidal thickness of graphs."

The toroidal thickness $t_1(G)$ of a graph G is the minimum value of k such that G is the union of k graphs each of which is embeddable on a torus. We find $t_1(G_m)$, where G_m is the graph obtained from the complete graph K_m by removing a Hamiltonian cycle, and we show that $t_1(K_n(3)) = \lceil \frac{1}{2}n \rceil$ for many values of n . The method of approach involves the construction of sets of triples related to Skolem triples.

OKAMURA, HARUKO (Osaka City University). "Every simple 3-polytope of order 32 or less is Hamiltonian."

Using theorems of Butler, Goodey and Okamura we show that every simple 3-polytope of order 32 or less is Hamiltonian.

BAUER, Douglas (Hofstra University) and Ralph TINDALL (Stevens Institute of Technology). "The connectivities of line and total graphs."

Sharp lower bounds for the point connectivity and line connectivity of the line graph $L(G)$ and the total graph $T(G)$ of a graph G are determined. The lower bounds are expressed in terms of the point connectivity κ , line connectivity λ , and minimum degree δ of G . It is also shown that 2λ is an upper bound for $\kappa(T(G))$ and that $\lambda(T(G)) = 2\delta = \delta(T(G))$. In each case the realizable values beyond the lower bound are determined.

BOYLES, Stephanie M. and Geoffrey EXOO (Bell Laboratories). "A counterexample to a conjecture on paths of bounded length."

In a recent paper Lovasz, Neumann-Lara, and Plummer studied Mengerian theorems for paths of bounded length. Their study led to a conjecture concerning the extent to which Menger's theorem can fail when restricted to paths of bounded length. In this paper we offer counterexamples to this conjecture.

GODSIL, C.D. (Montanuniversität Leoben, Austria). "Some graphs with characteristic polynomials which are not solvable by radicals."

We show that "almost all" trees have characteristic polynomials which are not solvable by radicals.

LIEBECK, Martin W. (University College, Cardiff). "Graphs with nilpotent adjacency matrices."

Given any integer $t \geq 2$ and any prime number p , a graph $\Gamma_{p,t}$ is constructed whose adjacency matrix is nilpotent of index t over \mathbb{Z}_p , the field of p elements.

THOMASEN, Andrew (Cambridge). "Cubic graphs with three Hamiltonian cycles are not always uniquely edge colorable."

The generalized Petersen graph $P(6k+3, 2)$ has exactly 3 Hamiltonian cycles for $k \geq 0$, but for $k \geq 2$ is not uniquely edge colorable. This disproves a conjecture of Greenwall and Kronk.

thesis summaries

HURON WOMEN AND HURON MEN: THE EFFECTS OF DEMOGRAPHY, KINSHIP AND THE SOCIAL DIVISION OF LABOUR ON MALE/FEMALE RELATIONS AMONG THE 17th CENTURY HURON

Karen L. Anderson (Ph.D., Thesis, Sociology, University of Toronto, 1982)

ABSTRACT

Many contemporary theorists concerned with the nature of male/female relations in non-capitalist societies continue to ask the same questions Engels raised a century ago in Origins of the Family, Private Property and the State (1884). Is an egalitarian status possible for women? On what basis can we explain the relative statuses of men and women? What brings about a decline in women's status relative to that of men?

But if there is accord over the questions to be asked, there is discord over the answers given. Nowhere is the disagreement more evident than over whether women's status is best explained in terms of their roles as producers or as reproducers. This thesis addresses that debate through an examination of the 17th century Huron.

The Huron are a particularly good case to which we can address questions concerning male/female relations in non-capitalist societies. Huron women occupied an extraordinarily undominated position relative to that of men. More importantly, that status did not decline after the introduction of the fur trade.

This thesis proposes that the key to understanding male/female relations among the Huron lies in tracing out the connections between demography, the social division of labour, and kinship as social relations of production. By contrast, explanations that concentrate solely on women's role as producers or as reproducers are unsatisfactory. What is called for instead is an examination of the social division of labour as the basis on which society is partitioned into the categories male and female and an examination of kin relations as social relations of production which function to combine men and women into viable units of production, consumption and reproduction.

Finally, the question "under what conditions does the status of women decline relative to that of men?" is asked. This thesis argues that the link between the social division of labour and kinship as social relations of production must be destroyed. Women are open to domination by men when they no longer have direct access to the means of production or the product of social labour in their own right but gain that access only through a relation to some property holder (often their husbands or fathers).

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AN INVESTIGATION OF BLOCK-MODELING TECHNIQUES APPLIED TO INTERNATIONAL TRADE FLOWS

E. Geoffrey Love (B.A. Thesis, Applied Mathematics, Harvard College, 1982)

This paper investigates the structure of international trade using the CONCOR and COBLOC cluster analysis/block-model algorithms. CONCOR has previously been used to analyze trade, in Breiger (1979) and Snyder and Kick (1979), whereas COBLOC has not previously been used for this purpose. The major objective of this paper is to determine whether these blockmodel techniques exhibit enough stability and discrimination to be profitably used in trade analysis.

The COBLOC algorithm, analysing data normalized in a new way, is found to give results (blockings) which are both more stable and more informative than those produced by the CONCOR algorithm. Reasons for this superiority are analysed. I conclude that COBLOC, and CONCOR to a lesser degree, can enhance the study of international trade because of their focus on overarching global structure and changes in that structure, which other methods of analysis have difficulty addressing.

The legitimacy of the blockings is established by their agreement with Linneman's (1966) regression analysis equation. Blockmodel analysis, in fact, enhances his results.

The nature of the paper requires that two explanatory paths be followed to present background information. First, I will give a quick overview of blockmodeling concepts and how they fit into analysis of international trade. In this overview I will discuss where blockmodeling has advantages over existing methods of analysis. Second, I will then review the theory, strategy and implementation of blockmodeling as it has been applied to social networks, for those readers not familiar with it. In this review I will also consider issues particular to blockmodeling of metric trade data, as opposed to binary social network data.

As my point of departure, I will review the results of Breiger's (1979) study of trade among OECD nations in 1972, which inspired this study. I have duplicated his results, and applied CONCOR as he did. I have gone on to apply his methodology to data from different years (1966 and 1978). The resulting blockings produced by COBLOC on the same data, are discussed in detail. I will also consider issues of stability across different populations.

NEW BOOKS

Peter MARSDEN (*Sociology, North Carolina*) and Nan LIN (*Sociology, SUNY-Albany*), eds. *SOCIAL STRUCTURE AND NETWORK ANALYSIS*. Beverly Hills, CA: Sage, 1982 (in press).

Based on a 1981 conference at SUNY-Albany.

CONTENTS: Ronald Breiger, "A structural analysis of occupational mobility." Leo Goodman, "On a structural analysis of occupational mobility." Ronald Breiger, "A reply to Professor Goodman." Gwen Moore and Richard Alba, "Class and prestige origins in the American elite." Barry Wellman, "Studying personal communities." Steve Rytina, "Structural constraints on intergroup contact: size, proportion and inter-marriage." Mark Granovetter, "The strength of weak ties: a network theory revisited." C. Kadushin, "Social density and mental health." Bonnie Erickson, "Networks, ideologies and belief systems." Karen Cook, "Network structures from an exchange perspective." Peter Marsden, "Brokerage behavior in restricted exchange networks." Ronald Burt, "A note on cooptation and definitions of constraint." Joseph Galaskiewicz, "Modes of resource allocation: corporate contributions to nonprofit organizations." David Knoke and Edward Laumann, "The social organization of national policy domains: an exploration of some structural hypotheses." Peter Blau, "Structural sociology and network analysis." Howard Aldrich, "The origins and persistence of network analysis." Nan Lin, "Social resources and instrumental action."

Ernst MAYR. *THE GROWTH OF BIOLOGICAL THOUGHT: DIVERSITY, EVOLUTION AND INHERITANCE*. Cambridge, Mass: Harvard University Press, 1982, 974pp. \$30.

(Mayr's) vision is that the history of biology has been a struggle between two world views -- essentialism and population biology. The essentialist view holds that there are a finite number of kinds of animals and plants, each kind characterized by certain essential features which it is the business of the biologist to recognize. These "kinds" correspond to what we today call species. The members of a species share an identical essence. They may differ from one another in various ways, as people differ in height, hair color, and fingerprints, but these differences are accidental and unimportant; they do not alter the essence. The populational view holds that individuals are bound together, not by the possession of a common essence, but by the fact that they interbreed. (From John Maynard Smith's review in *THE NEW YORK REVIEW OF BOOKS*, 13 May 82).

Peter BLAU (*Sociology, SUNY-Albany and Columbia*) and Robert MERTON (*Sociology, Columbia*), eds. *CONTINUITIES IN STRUCTURAL INQUIRY*. Beverly Hills, CA: Sage, 1981, 393pp.

Studies of social structure can proceed from a variety of theoretical viewpoints -- from the structuralism of Levi-Strauss to that of British anthropology and Radcliffe-Brown. The papers in this book explore both the diversity and the underlying continuity of structural inquiry. Peter Blau demonstrates in his introduction an aspect of their work that distinguishes structural analysis from other theoretical orientations, and the essays themselves epitomize the common strands that make structural inquiry a coherent perspective.

CONTENTS: Peter Blau, "Diverse views of social structure and their common denominator." Edmund Leach, "British social anthropology and Levi-Straussian structuralism." Ino Rossi, "Transformational structuralism: Levi-Strauss' definition of social structure." Wolf Heydebrand, "Marxist structuralism." Maurice Zeitlin, "Class, state and capitalist development: the civil wars in Chile (1851 and 1859)." S.N. Eisenstadt, "Some observations on structuralism in sociology, with special, and paradoxical, reference to Max Weber." Charles Warriner, "Levels in the study of social structure." Walter Wallace, "Hierarchic structure in social phenomena." Charles Kadushin, "Notes on expectations of reward in N-person networks." Raymond Boudon, "Undesired consequences and types of structures of systems of interdependence." Bruce Mayhew and Paul Schollaert, "A structural theory of rank differentiation." J. Miller McPherson, "Voluntary affiliation: a structural approach." Ronald Breiger, "Structures of economic interdependence among nations."

Wolfgang SODEUR (*Sociology, Wuppertal*), ed. *MATHEMATISCHE ANALYSE VON ORGANISATIONSSTRUKTUREN UND -PROZESSEN*. Duisburg: Sozialwissenschaftlichen Kooperative, 1982. 280pp.

Papers given at a 1981 conference at Bad Homburg.

CONTENTS: Peter Blau, "Application of a macrosociological theory." Josef Zelger, "Zielsetzungsprozesse in einer Gruppe." Siegwald Lindenberg, "A theory of sharing groups and suggested applications." Bruce Mayhew, "Hierarchical differentiation in imperatively coordinated associations." Patrick Doreian, "Models of organizational change." Michael Hannan and John Freeman, "Organizational niche width: test of a model."

Anatol RAPOPORT (*Institute of Advanced Study, Wein and Toronto*). *MATHEMATISCHE METHODEN IN DEN SOZIALWISSENSCHAFTEN*. Würzburg-Wein: Physica, 1980. 346pp. DM45.

This is the book you should read, if you want a detailed introduction to what mathematics means for social research beyond adding numbers, what "turning concepts into mathematical models" actually consists of. Indeed the book considers modelling -- rather than the deduction of increasingly complex statistical applications out of the initial computation of the usual distributional parameters -- as the primary aim of applying mathematics to problems posed by social research. It starts therefore with a short introduction into the basic aims and concepts of modelling as a research methodology, applying the ideas presented then to an introduction to "classical" modelling. Rapoport presents models for demography -- relatively close to the grass roots found in historical archives -- as well as global modelling, as in the case of models for the World Wars. As a next step Rapoport goes on to stochastic modelling. Among the examples given we find again some about the application of such models to demography and an explanation of the Markov-type of models for social mobility. Then structural models are introduced: some of you may know, that with the development of GRADAP in the Netherlands graph-analytical approaches will in the near future be as easily available as survey oriented ones were made by SPSS and similar developments. The introduction into network analysis and the analysis of social power comes rather timely therefore. An introduction into the theory of games finishes this part. In the final one of the book Rapoport discusses the problems by the operationalisation of concepts into measurable variables. The book closes, then with a general reflection upon the virtues and pitfalls of mathematics in the social sciences. He is outspoken with regard to the dangers of an unreflected usage of mathematics, immunizing all too often bad research. (from Manfred Thaller's review in QUANTUM 22).

William GAMSON (*Sociology, Michigan*), Bruce FIREMAN (*Sociology, California-Berkeley*) and Steven RYTINA (*Sociology, Harvard*). *ENCOUNTERS WITH UNJUST AUTHORITY*. Homewood, IL: Dorsey, 1982. 171pp.

We offer here an intellectual porridge of Tilly and Goffman. Charles Tilly is a suitable symbol for the roots of this study of groups that mobilized for collective action. Erving Goffman's work (on encounters) provided the inspiration for much of our analysis of ongoing interaction. (From acknowledgements.)

CONTENTS: Micromobilization. Encounters with authorities. Fabrications. The MHRC encounter. Rebellion careers. The context of encounters. Assets. Working together. Breaking out. Adopting an injustice frame. Luck and skill in the MHRC encounter. The theory and practice of rebellion.

Roy MOTTAAHEDEH. *LOYALTY AND LEADERSHIP IN AN EARLY ISLAM SOCIETY*. Princeton: Princeton University Press, 1981. 209pp. \$18.50

(This is a) "tightly focused study of social bonds during the period of Buyid domination of southern Iraq and Western Iran in the 10th and 11th centuries ... Mottahedeh sees the Buyid society as divided between loyalties of two sorts: acquired loyalties and loyalties of category. Acquired loyalties were those a person accumulated as he hatched conspiracies, built alliances, collected dependents, and found protectors while navigating his way through life. Loyalties of category were those he had as a result of interests shared with others: common ancestry, occupation, political aim, class standing, religious function, habitat, age level, and ... gender. This distinction between loyalties was real enough in Buyid eyes -- acquired ties were cemented by formal oaths and public vows, categorical ones by informal promises and private understandings. But ... at bottom, all loyalties were radically personal, the result of one person giving, before witnesses and before God, his word to another." (from Clifford Geertz's review, NEW YORK REVIEW OF BOOKS, 27 May 82).

David KALINICH (*Michigan State*). *THE INMATE ECONOMY*. Lexington, MA: Lexington Books, 1980. 128pp. \$15.95.

Investigates institutional contraband markets and their effect on the stability of the prison community. Included in the analyses are comparative prices of goods and services, availability and demand elasticities, buyer and seller typologies, and descriptions of weaknesses in the system that foster black-market activity. (Publisher's blurb).

CONTENTS: Prison management: patterns of inmate exchange. The prison community. The legitimate economic sector. The contraband system. Factors facilitating the flow of contraband. The value of contraband. The future of prison management.

Bernard COHEN (*Queens College, New York City*). *DEVIANT STREET NETWORKS: PROSTITUTION IN NEW YORK CITY*. Lexington, MA: Lexington Books. 1980. 224pp. \$21.95.

Examines the social and ecological structures of visible street deviance in thirteen separate locations. Emphasis is on patterns of deviance and the place of law enforcement within these patterns. (Publisher's blurb).

CONTENTS: Research Strategy. Deviant Street Network Profiles. Characteristics and Patterns of Visible Street Deviance. The Police. The Division of Deviance. Deviant Street Network Stratification. Determinants of Deviant Street Locations. The Deviant Street Location Cycle. Maintaining Deviance. Recommendations.

Margaret PEIL (*West African Studies, Birmingham*). *CITIES AND SUBURBS: URBAN LIFE IN WEST AFRICA*. New York: Holmes and Meier, 1982.

Focussing on eight flourishing urban centres in three West African nations, Peil analyzes and compares their social structures and interactions. The cities are: Banjul and Serekunda, in the Gambia; Tema and Ashaiman, in Ghana; and Aba, Abeokuta, Ajegunle, and Kakuri, in Nigeria. Among the specific aspects of structure and interaction surveyed, by means of extensive interviews, are: patterns of migration from rural areas; adaptation to urban life; occupational categories; labour force participation; housing conditions; marriage and kinship customs; friendship networks; functions of membership association; and problems of status, alienation, and employment. (Publisher's blurb).

Abner COHEN (*Anthropology, SOAS*). *THE POLITICS OF ELITE CULTURE: EXPLORATIONS IN THE DRAMATURGY OF POWER IN A MODERN AFRICAN SOCIETY*. Berkeley: University of California Press, 1981. 257pp. \$6.95.

"Cohen analyzes (Sierra Leone) Creole society ... , taking for his theoretical inspiration the work of Marx, Simmel and C. Wright Mills and merging it with the superb tradition of analytical ethnography developed by British social anthropology, specifically by the so-called Manchester school of Max Gluckman. In Cohen's formulation, all elites in liberal societies ... face a contradiction that they must 'mystify' since it is unresolvable: on the one hand, the elite must maintain its exclusive in-group values and interests, and on the other, it must present its position as serving 'universalistic' society-wide values and interests. Accordingly, the Creoles have stressed their attachment to such (universalistic) values ... At the same time, there has been, since independence, a tightening of Creole networks through such in-group institutions as churches, exclusive clubs and social affairs; secretive masonic lodges, and funerals and ancestral cults." (from the *American Journal of Sociology* by Igor Kopytoff, 3/82).

Lisa PEATTIE (*Urban Planning, MIT*). *THINKING ABOUT DEVELOPMENT*. New York: Plenum, 1981. 208pp. \$19.95.

Explores the integration of technical and social criteria in social planning, the organization of work, educational planning, and family planning.

CONTENTS: The moral and the technical order. Anthropological perspectives: the human species and the production of culture. Development economics as a social study. Social planning: the attempt to enter the moral order via the technical order. Moral incentives in Cuba: the politicising of work. Family in development. Education, learning, development and related issues. Development planning and the quality of life.

Keith **WRIGHTSON**. *ENGLISH SOCIETY: 1580-1680*. London: Hutchinson, £5.95.

"In his second chapter, the novelty and the purpose of the book are clearer: 'Social relations in the local community' deals with migration, kinship and neighbourly attitudes before asking questions about paternalism and conflict in village society. The rural concentration is sustained throughout much of the book, which treats in turn marriage and courtship, family formation and children, the interplay between demographic environments and economic resources, crime and the law, riot, literacy, education and religious zeal. (This) book is the first to bring so much of this work successfully, and elegantly before a more general audience. It marks the end of a phase that began with Peter Laslett's *THE WORLD WE HAVE LOST*." (from David Souden's *NEW SOCIETY* review).

Anthony **COHEN** (*Anthropology, Manchester*) ed. *BELONGING: IDENTITY AND SOCIAL ORGANISATION IN BRITISH RURAL CULTURES*. St. John's, Newfoundland: Institute of Social and Economic Research, Memorial University. \$15.

This book explores the cultures of rural Britain through the ways people manage social relationships in their own locality. Revealing the diversity of British cultures, it calls into question the ill-informed stereotypes which popularly characterise them. There are essays on bilateral kinship and cognatic descent, on ethnic and sectarian relations, on migration and on the 'interpretative' approach to culture. (from publisher's blurb).

Steve **JOHNSON**. *INFORMATION AND COMMUNICATION TECHNOLOGY FOR THE COMMUNITY*. Portland, OR: Rain, 1982. \$6.

A guide to the implications of the emerging information-base society and to applications of the new electronic technologies which can help community groups better cope with the current realities of short staffs and non-flowing cash. For people intrigued by "computer conferencing", "electronic mail," and "database communication," this book provides concise descriptions and scores of examples of ways in which the new information and communication technologies are being (or could be) put to socially beneficial uses. (from publisher's blurb).

Peggy **WIREMAN** (*HUD*). *NEW SOCIAL FABRIC FOR URBAN NEIGHBORHOODS*. Lexington, MA: Lexington Books, 1982 (in press).

This book focuses on understanding how today's urban neighborhoods function and to what extent they provide or could provide the kinds of support for individuals and families popularly considered to have been part of traditional communities. Individual programs are examined and policy implications drawn for delivery of government services in a manner which fosters better networks and neighborhoods. (publisher's blurb).

Gene F. **SUMMERS** (*Rural Sociology, Wisconsin*) and Arne **SELVIK** (*Industrial Economics, Bergen*). *ENERGY RESOURCE COMMUNITIES*. Madison, Wis.: MJM Publishing, 1982. 225pp. \$12.50.

Conference report from the Institute of Industrial Economics, Bergen (August, 1981). Researchers contributed papers on a range of issues focusing on the needs for comparative research.

SELECTED CONTENTS: Howard Newby, "A Sociological Approach." Kjell Stenstadvoid, "Local Labor Market Dynamics." Eirik Vatne, "Local Production Networks." John Gartrell, "Community as a Social Collective."

Tamara **HAREVEN**. *FAMILY TIME AND INDUSTRIAL TIME: THE RELATIONSHIP BETWEEN FAMILY AND WORK IN A NEW ENGLAND INDUSTRIAL COMMUNITY*. New York: Cambridge University Press, 1981. \$17.95.

Explores the work and the lives of workers at the Amoskeag Corp., the great textile factory that dominated Manchester, N.H. and analyzes the extent and purpose of the Corp.'s paternalism. She tells us how workers of various ethnic backgrounds used kinship networks to gain advantages and to overcome arbitrary management decisions. She dispels the myth that industrialization broke down traditional family ties. (from publisher's blurb).

Michael KATZ, Michael DOUCET and Mark STERN. *SOCIAL ORGANIZATION OF EARLY INDUSTRIAL CAPITALISM*. Cambridge, MA: Harvard University Press, 1982. \$37.50.

The ways in which early industrial capitalism intersected with the organization of family life and the development of social institutions in 19th century North America. (from publisher's blurb).

Josef EHMER. *FAMILIENSTRUKTUR UND ARBEITSORGANISATION IM FRÜHINDUSTRIELLEN WEIN*. München: Oldenbourg, 1980. DM46.

"According to Ehmer, the transformation of the Viennese economy into a capitalist, industrial order by the last quarter of the 19th century was accompanied by the emergence of the dominant role of the family in the social reproduction of the working-class. Drawing evidence from long-term demographic data, Ehmer argues that this was a discontinuous process with the 1850's-1860's representing a social watershed. The industrial revolution in Vienna (then) reduced the importance of the family in working-class life in two ways. On the one hand, the mechanization of textile production not only destroyed the organizational basis of the family cottage economy, it also meant the exodus of textile production to locations that better met the energy and construction requirements of the new factories. On the other hand those industries which did expand did so on the basis of artisanal work-organization with an increase in the number of workers co-residing with the owner of the means of production. The further transformation which established the dominance of wage-labour in large-scale productive units divorced from the place of residence restored and enlarged the position of the family.

"The centerpiece of Ehmer's investigation is a detailed computer-assisted analysis of census manuscripts for 1857 in the inner-city and two suburbs which are dominated by handicrafts and workers. The analysis is thoroughly and carefully differentiated by both occupation and age. In the conclusion, Ehmer speculates about the linkage between family life and socio-political organization of the working class in Vienna." (condensed from William Hubbard's review in QUANTUM 22).

Stephen BANK and Michael KAHN. *THE SIBLING BOND*. New York: Basic Books, 1982. \$16.95.

Based on a decade of research and clinical evidence, (this) study explore(s) the emotional connections between brothers and sisters and offer(s) a theory of the ways siblings attach, create each other's identities, and affect the course of each other's adult lives. (from publisher's blurb).

Meindert FENNEMA (Amsterdam). *INTERNATIONAL NETWORKS OF BANKS AND INDUSTRY*. The Hague/Boston: Martinus Nijhoff, 1982. 220pp. \$30.

This book focuses on the international network of interlocking directorates among the largest corporations from 12 countries in 1970 and 1976. The network has become more compact in this period: the economic world crisis has induced a further integration of the international business community.

Comparison of this international network of interlocking directorates with the network of international bank consortia shows that the banks form international coalitions to strengthen their position both at home and abroad. The underlying principle in the formation of these consortia is the search for international cooperation with the enemies of its enemies' friends.

The study presented here is new in three respects. First, it is a quantitative and systematic investigation of interlocking directorates based on application of graph-theoretical concepts and an organized set of computer programs for the analysis of graphs, recently developed in the Netherlands. Second, it is the first monograph on the international network of interlocking directorates. Third, the result of this analysis are used to assess a number of economic theories of imperialism. (supplied by author).

Edward HERMAN. *THE REAL TERROR NETWORK: TERRORISM IN FACT AND PROPAGANDA*. Boston: South End Press, 1982.

Examines the construction of the myth of an "international terrorist conspiracy" and illustrates how it is used to mask political realities and set the limits of political discourse. (The author) takes the reader on a global tour of the real terror campaigns of U.S. supported dictatorships. He exposes the effects of the "development model," with its elite bias, its horrifying results for the poor, and its systematic links to state terror. (from publisher's blurb).

Frank WILKINSON, ed. *THE DYNAMICS OF LABOR MARKET SEGMENTATION*. New York: Academic Press, 1981. 308pp. \$26.

The book includes contributions to the segmented labor market debate by research workers in the US and Europe. The papers analyse the impact on the structure of the labor market of industrial concentration, labor organisation, changing technology and the increase in economic uncertainty. The papers re-emphasise the relevance of the segmented labour market approach but demonstrate how the boundaries between segments are modified by changes in the economic and institutional environment and warn against simple unicausal theories of labour market structure.

Steven SPIEGEL (UCLA). *DOMINANCE AND DIVERSITY: THE INTERNATIONAL HIERARCHY*. Boston: Little, Brown, 1972.

This book concentrates on the diversity of present-day international politics -- the variety of states, conflicts and international relations. Particularly concerned with the complexity of the international hierarchy as delineated by the distribution of power throughout the world, this book argues that only by concentrating on the various strata of international relations and analyzing their interconnection can foreign policies and specific events be fully understood. (from publisher's blurb).

Carolyn MULLINS. *THE COMPLETE MANUSCRIPT PREPARATION STYLE GUIDE*. Englewood Cliffs, N.J.: Prentice-Hall, 1982. \$12.95.

Here -- in one practical, easy-to-use handbook -- is everything you need to know to make your writing, editing and typing time more productive and more profitable. (It provides step-by-step guidelines for preparing manuscripts in all major styles (plus) sample typed pages that show headings, titles, figures, tables, references (etc.) (Also has info on word processing), how to run a successful manuscript typing service; and information on copyright and permission rules. With proofreader's marks for use in correcting a manuscript plus a Greek alphabet.

(NETWORK NOTEBOOK continued from page 3)

MIGRATION TODAY presents editorials, news analyses, book reviews and documentation in 5 issues annually. (Free sample issue). Subs: \$17 from 209 Flagg Place, Staten Island, NY 10304.

STATISTICS AND PROBABILITY LETTERS features refereed, concise (6pp) articles, rapid publication, broad coverage. Accepted Ms. will be published within 3 months of submission (editor's note: so are most things at CONNECTIONS.) The subject matter can be theory, methods, empirical studies or applications. Ms.: Richard Johnson, Dept. of Statistics, University of Wisconsin, Madison, WI 53706. Subs: US\$68 from North Holland Publishing, Molenwerf 1, 1014 AG, Amsterdam, The Netherlands.

Probably our Last Dean Joke for a While -- Now that Nancy is One

Seems a group of academics decided to take a Caribbean cruise, as a kind of "planning retreat," with their Dean. A freak wave rocked the boat and the Dean went overboard. As everyone tried frantically to lower a life boat, they saw twelve large, black fins moving in from all directions on the Dean. All seemed lost, but at the last moment, only 10 feet from the Dean, the fins stopped and began to circle. They circled around and around the Dean until the faculty could lower a life boat and rescue their leader. As the Dean was hoisted back aboard, one member of the faculty exclaimed, "God, what a miracle!" and another retorted "Nonsense! Just the best damned example of professional courtesy you'll ever see!" (Submitted by Russ Bernard).

(NETWORK NOTEBOOK continued on page 54)

ABSTRACTS

ADELMAN, Alan (University of Pittsburgh). "Colombian friendship groups: constraints on a rural development acquisition system." *JOURNAL OF DEVELOPING AREAS* 15:457-470. 1981.

This paper focuses on the *Grupos de Amistad*, friendship groups of FEDERACAFE, and their function as a rural development acquisition system. The objective is to analyze the program, methods, and doctrine of this system in the context of the doctrine, organizational structure, linkages, and patterns of control within and related to FEDERACAFE. By studying the structural framework in which informal education takes place, we can put its role within the rural development process in proper perspective.

ALBA, Richard D and Gwen MOORE (SUNY-Albany). "Ethnicity in the American elite." *AMERICAN SOCIOLOGICAL REVIEW* 47(June):373-383. 1982.

A common view of the political elite in the United States is of a WASP-dominated group which excludes nearly all persons of less favored origins from elite positions, activities, and networks. We assess the accuracy of this conception, using data from a unique set of interviews with 545 top position holders in powerful political, economic, and social institutions in the United States. We examine ethnic representation within the elite as well as its impact on elite activities and interaction. The evidence reviewed here is inconsistent with the usual portrait of an ethnically exclusionary establishment but does indicate that ethnic stratification retains an important impact on entry into the elite.

ALEKSEYEV, A.I., DANILOVA, I.A., ZUBAREVICH, N.V. and Ye.I. NIKULIN (Moscow). "Urban-rural migration in the non-Cheremzov zone of the RSFSR." *SOVIET GEOGRAPHY* xxi(5). 1980.

The extent and factors in migration from urban to rural places in the USSR has been a neglected topic for research in the Soviet Union. A survey of a sample of urban-rural migrants in Vologda Oblast, northern European Russia, finds a considerable return stream of former rural residents who were unable to adapt to urban life styles, including a surprising number of young people. The composition and motives of these migrants are analyzed.

ARNDT, Johan, Kjell GRONHAUG and Sigurd V. TROYE. "Information exchange among scientists: a two-step sociometric study." *SOCIOLOGY* vol.14,no.3. 1980.

Scientific communication is purposeful and highly motivated. A common goal of scientists is to produce knowledge, communicate the findings to the community of colleagues and to add to the cumulative body of knowledge of their discipline. In fact, publish-or-perish norms used by universities and other research institutions, make formal communication output a main criterion for career success. Second, communication is also a major input to the scientific process, since scientists add to the body of knowledge by building upon and extending results achieved by colleagues. Hence, effective communication among scientists is an indispensable part of scientific activities.

The growth in formal communications has created an 'information overload' for many scientists, who experience more and more difficulty in keeping up to date with their field of interest, searching the literature, and retrieving relevant information. In the midst of this 'communications explosion', several studies of communications behaviour of scientists have reaffirmed the continual importance of informal channels such as exchange of working papers, and discussing with colleagues at conventions or on the telephone. In a way, there is some complementarity between the formal and informal channels. An important function for the formal channels is to provide a cumulative record for 'certified knowledge' existing at any point in time. The informal channels, on the other hand, offer advantages by being timely, open-ended, and relevant, and by enabling immediate feed-back and reinforcement. In this study, the emphasis is on informal communication among geographically separated scientists working on similar research problems.

BALDASSARE, Mark (Columbia and Irvine) and William Protash (Columbia). "Growth controls, population growth, and community satisfaction." *AMERICAN SOCIOLOGICAL REVIEW* 47(June):339-346. 1982.

There is considerable conjecture but little evidence regarding the social contexts in which municipalities adopt growth controls. Likewise, the influence of planning interventions on growth rates and community satisfaction is not known. The best predictor of antigrowth policies among Northern California city planning agencies is the percentage white collar population and not, as recent urban literature predicts, relative community status or social homogeneity. The hypothesis that associations between city planning practices and community variables are mediated through local activism is given support. However, growth rates are not influenced by growth controls or the social variables associated with antigrowth policies. Further, a survey of Northern California residents suggests that those living in growth control communities report less community satisfaction.

BARNES, Annie. "The black kinship system." *PHYLON* 17(4). 1981.

This paper is part of a larger study of the black family in Atlanta, conducted between September, 1969 and August, 1970. The adults in thirty-nine of the forty-one Golden Towers households were interviewed in their homes, on the telephone, and on their jobs concerning kin contact, mutual help patterns, emotional support, kin information, and explanation of kin knowledge. When the genealogical data were collected, prestructured interview schedules, filled out by the investigator at the time of inquiry, were used for finding out the first and last name of relatives in their genealogy and related information. Following its collection, a genealogical chart was constructed for each respondent and utilized to determine the nature and extent of kin naming, while ethnographic data obtained from participant observation and genealogies supplemented the survey data. An attempt is made to determine the influence of socio-economic factors on interaction in the kinship system, genealogical knowledge, and the respondents' knowledge of their antebellum ancestry.

BARNES, J.A. (Churchill College, Cambridge). "Kinship studies: some impressions of the current state of play." *MAN* 15(2). 1980.

Although kinship was formerly a central category of anthropological analysis, since 1950 it has less often been the focus of study and its analytic utility has been challenged. Kinship terminology has become a sophisticated area of specialisation; relations between kin have been studied in a cultural rather than a social framework. Sociology and social anthropology have converged in their studies of law, religion, politics and economics but have shunned each other in kinship studies, partly because of the relatively undeveloped state of Marxist analyses. The revival of sociobiology has prompted anthropologists to waver from an exclusive preoccupation with culture, if only to preserve their stake in the social arena. The study of symbolic structures has been intellectually rewarding but the time has come to resume what Levi-Strauss postponed, the study of events, a task for which sophisticated mathematical tools are ready for adaptation.

BARRETT, Richard E. (Illinois) and Martin King WHYTE (Michigan). "Dependency theory and Taiwan: analysis of a deviant case." *AMERICAN JOURNAL OF SOCIOLOGY* 87(5):1064-1089. 1982.

The case of Taiwan represents a challenge to two predictions from dependency theory: that foreign economic penetration leads to slow economic growth and also to heightened inequality. Since the early 1950s Taiwan has received massive foreign aid and investment, but it has also had one of the highest sustained rates of growth in the world, while income inequality on the island has decreased substantially. An examination of this deviant case is pursued by consideration of the various mechanisms dependency theorists claim are responsible for the linkage of foreign economic penetration to stagnation and inequality. In the Taiwan case, none of these mechanisms work out as predicted. Instead, a variety of factors -- including the nature of the Japanese colonial experience, the emphasis on labor-intensive enterprises, and the absence of an entrenched bourgeoisie -- created a situation in which both rapid growth and increasing equality could occur. Consideration of Taiwan draws attention to flaws in the arguments of most dependency theorists and suggests a more optimistic picture for at least some developing societies that have to deal with foreign economic penetration.

BLAIR, Eric (North Carolina) and Charles LAWRENCE (NY Dept. of Health). "A Queueing network approach to health care planning with an application to burn care in New York state." *SOCIO-ECON PLAN SCI* 15(5):207-216. 1981.

Treatment of severe thermal burns is a medical care problem which has not previously received the support and attention required on both the national and state level. With the advent of the Health Systems Agencies and the Systems Perspective to Health Care Planning, there will be a need for analytical planning and evaluation models which produce results with respect to controlling health care costs. A descriptive planning model has been developed based on the theory of finite capacity multiserver queues and continuous-time Markov chains, which can be used to describe the operations of a system of burn care facilities linked

together by a referral policy to accommodate patient overflow. This model has been combined with a heuristic optimization procedure to answer the relevant questions for burn care in New York State.

BORNSCHIER, Volker (Zurich) and Jean-Pierre HOBY. "Economic policy and multinational corporations in development: the measurable impacts in cross-national perspective." *SOCIAL PROBLEMS* 28(4). 1981.

In this article we report the main findings of a research project at the University of Zurich on Multinational Corporations, Economic Policy and National Development in the World System. For reasons of space the focus is on cross-national empirical findings rather than on theoretical discussion. Dimensions of economic policy against multinational corporations are established and operationalized. A combination of these dimensions is the basis of typology of economic policy. The article presents the distribution of 73 countries according to different types of economic policy for the period 1960 to 1975. Analyses of the determinants and concomitants of economic policies are reported as well as their effect on foreign capital and development. Results are presented in the context of cross-national findings of how multinational corporations affect development. These findings relate to the impact of multinational corporations on subsequent economic growth and on social inequality.

BURT, Ronald S. (U. of California). "Relational contents in multiple network systems." Berkeley: Survey Research Center, University of California, Working Paper 42. 1980.

Models of network structure in terms of relational form are utilized in analyzing relational content. Content domains are defined in terms of structurally substitutable interaction activities in a confusion matrix and content ambiguity is defined in terms of prominence in the same matrix. Social stress and entrepreneurial action are discussed as implications of an actor's network ambiguity. My conclusion is that methods developed to describe the form of network structure can be usefully employed to describe the content of multiple network social structure.

BURT, Ronald S. (U. of California). "Distinguishing relational contents," in R. Burt and J. Minor (eds.). *APPLIED NETWORK ANALYSIS*. 1982.

Before network data are gathered specific relational contents must be selected for analysis. The selection can be informed significantly by pretest data and readily available network models of relational form. This chapter is a methodological discussion of using survey data to distinguish the content, the substantive meaning, of relations in the multiple network social system from which survey respondents were drawn. Two relational contents are defined as distinct to the extent that they are used by respondents in a nonsubstitutable way and with different levels of ambiguity. Illustrative material is taken from interviews with San Francisco Bay area adults conducted in 1977. I conclude with comments on selecting contents for a network analysis.

CAPLOW, Theodore (Virginia). "Christmas gifts and kin networks." *AMERICAN SOCIOLOGICAL REVIEW* 47(JUNE): 383-392. 1982.

The ritual Christmas gift giving in Middletown involves virtually the entire population and is governed by elaborate unwritten rules that are remarkably well enforced without obvious means of enforcement. Most gifts are scaled to the formal relationship between giver and receiver. It is proposed that ritualized gift giving in this society, as in others, is a way of reinforcing relationships that are highly valued but insecure.

CARRINGTON, Peter (Toronto) and Barry WELLMAN (Toronto). "Three SAS databases combining social network and attribute data." Presented at the Annual Meeting of the Canadian Sociology and Anthropology Association, June 1982.

This paper describes three SAS (Statistical Analysis System) databases with combined social network and attribute data that have recently been created by researchers at the University of Toronto. The power of SAS in handling network data is shown by descriptions of the file structures and examples of data manipulation procedures.

CHASE, Ivan. "Behavioral sequences during dominance hierarchy formation in chickens." *SCIENCE* 216(23): 439-440. 1982.

Dominance hierarchies near linearity (containing mostly transitive and few intransitive triads) are common in many species. Analysis of the possible sequences for forming dominance relationships shows that two ensure transitivity, and two others produce either transitive or intransitive triads. Experiments with chickens show that in groups of three and four they most often use the two sequences that ensure transitivity and thus linear hierarchies. Examination of such sequences may help explain the formation of near linear hierarchies in other species.

VERBRUGGE, Lois M. (Michigan). *"Multiple roles and health of U.S. women and men."*

Multiple roles (employment plus marriage/parenthood) are becoming common for US women and concern has been voiced that heavy role responsibilities will cause their health to deteriorate. National Health Interview Survey data for 1957-1978 are used to examine health profiles of US women and men according to employment, marital and parental status and trends in their health profiles. Employment and marriage are each associated with good health. People with multiple roles (employed married) enjoy the best health. Parenthood has no consistent relationship to health. Over the past two decades, the health profile of US women and men has worsened. People with fewest roles (nonemployed nonmarried) show the sharpest declines; in contrast, those with both a job and spouse show a stable or improving health profile. What accounts for the profiles and trends? Both social causation and social selection are probably at work; both processes are discussed.

WELLMAN, Barry, Peter CARRINGTON and Alan HALL (U. of Toronto). *"The community question: some descriptive answers with theoretical implications."*

While the Community Question is often posed in terms of theoretical adequacy, much of its substance is argument over sheer description: just what is the prevalent mode of contemporary communities? Are they lost, saved, or liberated? Answers to these questions are provided, using quantitative and qualitative evidence from the new East York Study about the composition, structure, and contents of "personal communities."

WINSON, Anthony (U. of Toronto). *"The state, class and rural development in Costa Rica."*

Provided is an overview of State-promoted programs oriented to the intensification of coffee production in Costa Rica for the period following WWII. The distribution of the benefits of these programs among the various classes of producers is assessed, using data pertaining to the utilization of chemical fertilizer, new plant varieties, agrochemical inputs, and agricultural credit. Particular attention is given to the impact of these programs on the once powerful coffee producer-processor group, with a view to determining the class content of contemporary State policy.

ZIMMERMAN, DeLore and Steven STACK (Pennsylvania State). *"The impact of world economy on income inequality: a reassessment."*

Research on the world systems model of income distribution has been marked by confusion: there have been conflicting reports on whether or not periphery status is significantly related to inequality. Writers such as Rubinson argue for the salience of the world systems model, while authors such as Weede claim that is it insignificant if a correctly specified control for level of development is introduced into the analysis. This confusion is based in part of a debate over how periphery status should be measured. Previous work has often used measures of questionable validity, eg, foreign trade as a % of GNP. Developed is a new conceptualization of dependency on the world market based on the concentration of export receiving nations. A multiple-regression analysis of data from 43 nations indicates that the index of periphery status does influence indicators of inequality, including the Gini index. However, the parabolic model of level of development tends to explain more of the variance in inequality than the world systems factor. Finally, a control for political democracy gave no support for the political paradigm on inequality.

Selected papers from the CENTER FOR RESEARCH ON SOCIAL ORGANIZATION WORKING PAPER SERIES (University of Michigan)

FRANZOSI, Roberto (Michigan). *"One hundred years of strike statistics: data, methodology, and theoretical issues in quantitative strike research." W.P. no. 257. 1982.*

The central purpose of this paper is to assess both the reliability of available official strike material, and the methodological adequacy of quantitative strike analysis. The focus is on the ways data and methodological problems may have affected theoretically relevant conclusions. All too often, sound theories are rejected and bad ones put forward on the basis of poor empirical work, either in terms of unreliable data or methodological pitfalls. More broadly, the paper also critically evaluates a set of relevant references, highlights the central issues and problems in the field, offers some suggestions on how to overcome existing discrepancies in findings, and explores lines for future research. It draws especially on my experience in analyzing Italian strikes since 1945, but also ranges widely across other countries and times.

The first three sections of the paper (sections 2 through 4) appraise the quality of official data on which most empirical works are based. Sections 5 and 6 survey the major findings and the methodological weaknesses and strengths of quantitative strike research, concentrating on the study of both economic and political/organizational determinants of strikes. The lack of integration and the discrepancies in empirical findings between these two lines of inquiry will be addressed in section 7. In section 8 an attempt is made at clearly spelling out the limitations of the quantitative approach to the study of strikes and at exploring profitable alternatives. The conclusions bring together the focal points of the paper, highlighting unexplored lines of research.

COQUERY-VIDROVITCH, Catherine. "Les structures du pouvoir et la communauté rurale pré-coloniale." *CANADIAN JOURNAL OF AFRICAN STUDIES* 15(3):433-449. 1981.

Power is analysed from the perspective of the rural community; the village, when it exists; the lineage or the fraction thereof; or most often, the household. In Black Africa, this central core of production and subsistence never was an autarchic entity but rather was linked to the outside in three different ways:

- first, through lineage relations, based on family ties;
- second, through formal political links or the recognition of a state and territorial authority (even if the state appeared to overlay other authority and if, at the village level, the state was present almost exclusively in the form of coercion);
- and third, through personal ties, which reinforced or opposed the two preceding forms of relations through networks of exchange and responsibility, either horizontal (from lineage to lineage or from village to village) or vertical (from the village to superior authority, sometimes passing through intermediate levels).

Family ties, territorial authority, personal obligations: the complex workings of these three variables suggest the flexibility of the entire system of power, of which one finds in Africa multiple variations, ranging from the so-called "stateless" lineage societies to highly structured political formations.

COX, Kevin, R. (Ohio State). "Social change, turf politics, and concepts of turf politics." Paper prepared for a Symposium on Public Provisions and Urban Development, Washington, D.C., June, 1982.

It is the contention of this paper that not only is the object of knowledge defined by the way the world appears -- specifically by the appearance in the 1960s and 1970s of locational conflicts, resident groups and their exclusionary tactics and the like; but so are the means through which knowledge is produced -- such concepts as "residential preference," "objective characteristics of neighborhoods" and "externality effects." By postulating a set of generative mechanisms through which those appearances are produced, it is the ultimate aim of this paper to elucidate not only turf politics but also the concepts through which attempts have been made to grasp the phenomenon. These concepts can then be demonstrated as affording only limited insight into the real world emergence and development of turf politics. The paper is divided into two major sections. In the first section the literature dealing with turf politics is characterized both in terms of its focus (i.e., its object of knowledge) and its concepts (i.e., the means of producing knowledge in this substantive area). The historical specificity of the object of knowledge is validated, and that of the concepts through which one attempts to understand it is outlined. In the second and longer section of the paper we proceed to an investigation of the historical emergence of turf politics. Here we demonstrate how both it and the concepts employed by orthodox social science to understand it are embedded in phenomenal forms, and how these phenomenal forms are produced, reproduced and transformed by much more fundamental generative mechanisms, the nature of which is belied by the contemporary literature.

DARROCH, A. Gordon (York). "Migrants in the nineteenth century: fugitives or families in motion?" *JOURNAL OF FAMILY HISTORY* Fall:247-277. 1981.

In this article I reconsider some aspects of that rhythm of geographic mobility. A common interpretation implies that nineteenth-century mobility was largely rootless, individualistic wandering. Reexamining a variety of studies, I offer another interpretation of migration. I argue that migration was very often undertaken within family and kinship networks, or by whole families. The effects of widespread migration were not merely modified or deflected by the bonds of family and kin, but migration itself was often undertaken within family-centred networks and as an integral part of a familial economic and moral order. I suggest several specific historical circumstances in which migration under family sponsorship was especially likely.

DAVENPORT, Judith and Joseph DAVENPORT III (Wyoming). "Utilizing the social network in rural communities." *SOCIAL CASEWORK* 63(2). 1982.

The concept of social network appears to be gaining in acceptance, understanding, and applicability in social work circles. Although this concept is germane to the profession in general, some practitioners believe that it is of greater importance to social work in rural areas. This article provides an overview of the concept, discussing its applicability in rural areas and making recommendations for social work and social work education.

DESERAN, Forrest and Lisa BLACK (Louisiana). "Problems with using self reports in network analysis: some empirical findings in rural counties." *RURAL SOCIOLOGY* 46(2):310-318. 1981.

A review of findings from network studies reveals a pattern of high rates of nonreciprocation among informants' accounts of contact or relationship. These findings may indicate a tendency for inaccuracies or error in network data derived from self reports of actors. Because nonreciprocated accounts are 'symmetrized' in much current research on decision-making or influence networks, figures are seldom published about the degree of agreement or disagreement among informants' accounts. This research note reports such findings for data from 13 case studies of decision-making networks in southern rural counties. Implications of these findings are discussed.

DONOHEW, Lewis and SPRINGER, Edward. "Information seeking versus information diffusion: implications for the change agent of an alternative paradigm." *COMMUNITY DEVELOPMENT JOURNAL* 15(3). 1980.

This paper involves a comparison of two models used in communication and development at the community level. One is diffusion of innovations model which, as often applied in development programmes, involves sending persuasive messages from the top down. That is, decisions about innovations that are "needed" by a population usually are made by outside experts, often from a different culture. The selected innovations usually are intended to make less developed countries (or communities) become more like those that already were developed. This model has come in for considerable criticism in the past few years and, as noted by Everett Rogers and associates in an assessment of the state of development models and processes, is one that has gone into sharp decline since the beginning of the past decade. A second model, far less developed at this point, involves the stimulation of collective problem-solving through information seeking and processing by residents of a developing area and information exchange with agencies set up to assist in development. The latter model originally was developed as a general model describing communication behaviours in decision-making.

DOREIAN, Patrick (Pittsburgh). "Maximum likelihood methods for linear models." *SOCIOLOGICAL METHODS AND RESEARCH* 10(3):243-269. 1982.

This article presents a model that is a natural generalization of both the spatial effects linear model and the linear model with spatial disturbances. Maximum likelihood methods are presented that provide estimates of the parameters of the model together with the asymptotic variance-covariance matrix of the estimates. Numerical illustrations of these methods are provided.

EULAU, Heinz (Stanford) and Jonathan W. SEIGEL (Stanford). "Social network analysis and political behavior: a feasibility study." *THE WESTERN POLITICAL QUARTERLY* 34(4). 1981.

A "Pilot Study" conducted in March and April, 1979, by the Center for Political Studies, included a number of questions seeking to discover a person's "primary zone" -- those individuals with whom he/she interacts directly in face-to-face situations. The purpose of the CPS Pilot Study was exclusively methodological -- to examine the reliability and validity of a variety of new survey measures. The purpose of this article is to report on the network-related questions that were used and particularly on a measure of "primary zone." This concept should not be confused with that of "primary group." The concept of primary zone makes no assumptions about whether those named by survey respondents themselves interact with each other. In order to establish the existence of a primary group one would have to validate a nomination by interviewing the nominee or, as a surrogate, ask the nominator whether those named interact with each other. We have no such data. Nevertheless, it is permissible to make use of theoretical notions that can be derived from classical primary group theory.

FALLCREEK, Stephanie (Washington) and Neil GILBERT (Berkeley). "Aging network in transition: problems and prospects." *SOCIAL WORK* 26(3). 1981.

Implementation of the 1978 amendments to the Older American Act will stimulate change in the basic structure of the aging network. Designating facilities to act as focal points in each community for the delivery of services to the aged will involve changes in the allocation of resources and in the interorganizational relationships within the network. The authors review issues involved in this transition and suggest possible patterns of change and resistance.

FEELDMAN, Martha and James MARCH. "Information in organizations as signal and symbol." *ADMINISTRATIVE SCIENCE QUARTERLY* 26:171-186. 1981.

Formal theories of rational choice suggest that information about the possible consequences of alternative actions will be sought and used only if the precision, relevance, and reliability of the information are compatible with its cost. Empirical studies of information in organizations portray a pattern that is hard to rationalize in such terms. In particular, organizations systematically gather more information than they use, yet continue to ask for more. We suggest that this behavior is a consequence of some ways in which organizational settings for information use differ from those anticipated in a simple decision-theory vision. In particular, the use of information is embedded in social norms that make it highly symbolic. Some of the implications of such a pattern of information use of discussed.

FINE, Gary Alan (Minnesota) and Sherryl KLEINMAN (North Carolina). "Network as symbolic interaction: understanding structure through action." *Unpublished paper*. 1982.

Although symbolic interactionists conceive of social structure as interaction, they have not developed concepts which take structure into account. We propose that interactionists use "social network" as a metaphor which links individual behavior to the larger social system. We provide a formulation of network, consistent with symbolic interactionist assumptions, arguing that it: 1) approximates the original, anthropological formulation better than the current "structural" conception does, 2) offers symbolic interactionists a unit of social organization better suited to their perspective than their usual unit of social organization, the interacting group, and 3) allows symbolic interactionists to deal with "macro" sociological concerns. Network is conceived of as a set of relationships which people imbue with meaning and use for personal or collective purposes. By emphasizing subjective meaning, and suggesting that researchers investigate multi-purpose and weak ties, the interactionist formulation provides theoretical insights into the social construction of society which "structural" approaches overlook. Support for this formulation is drawn from a participant observation study of Little League baseball teams.

FRIEDKIN, Noah (Santa Barbara). "Horizons of observability and the limits of informal control in intra-organizational communication networks." *SOCIAL FORCES* (forthcoming).

A variety of viewpoints bear on the relationship between the interpersonal communication networks within organizations and informal social control. The relative merits of some of these viewpoints can be assessed by an examination of the distribution of interpersonal relations of observability in communication networks. In a study of six communication networks, it is demonstrated that there is a "horizon" to observability (a distance in a communication network beyond which persons are unlikely to be aware of the role performance of other persons). Observability tends to be restricted to persons who are either in direct contact or who have at least one contact in common. It is shown, moreover, that the number of contacts shared by two persons is a powerful predictor of the probability that one person is aware of the role performance of another, according to a simple stochastic function. Based on this evidence, some viewpoints on informal control structures are more plausible than others. A theory is presented that is consistent with both the present evidence and current thinking on the relationship of communication network structure and informal control. It is hoped that the theory will provide a useful starting point for future work concerned with this relationship.

FRIEDMAN, Kenneth, Helen BISCHOFF, Robert DAVIS, Andresa PERSON (Victim Services Agency). "Victims and helpers: reactions to crime." (Summary of a report to the U.S. National Institute of Justice) New York: Victim Services Agency, January, 1982.

Data for the study was generated from interviews with 274 crime victims, a four month follow-up interview with 182 of the same victims, and 152 interviews with supporters named by the victims. The term "supporter" was defined to include those friends, relatives, and neighbors of the victim and others who rendered either tangible or psychological assistance. The interviews were limited to victims of household burglaries, robberies, and assaults who were 18 years old or older and residents or people who worked or spent a lot of time in the neighborhood. In cases involving multiple victims, interviews were conducted with the first adult victim reached. The neighborhoods selected for study included a high crime-low income neighborhood, or middle-class area; and a high crime, mixed income neighborhood or heterogeneous area.

All but two of the 274 victims in the sample got some help to deal with their problems from friends, relatives, and neighbors. When victims got all the help they needed, they adjusted better, regardless of the number of helpers they had.

The victim's informal support network -- their relatives, friends, and neighbors -- were best able to provide emotional support and least able to provide technical and legal assistance. Providing financial assistance to crime victims was particularly burdensome for helpers.

In providing aid, supporters suffered many of the psychological responses (increased fear and anxiety) that the victims had. Eighty percent of the supporters reported experiencing some form of secondary or indirect victimization.

Formal assistance agencies had a limited impact on helping crime victims since only one in five victims knew of such agencies. However, three-quarters of those who know of such agencies went to them for assistance.

On all measures, victims who were indigent, from ethnic minorities, lived in the inner city, or had limited education, suffered more than other victims: they had more psychological and practical problems as a result of the victimization; problems persisted longer; they were less likely to get all the help they needed; and their helpers were particularly burdened by providing assistance.

GANNON, Thomas (Loyola) and Elizabeth FREIDHEIM (Mundelein). " 'Structuralism' or structure: a comment on Mayhew." *SOCIAL FORCES* 60(3). 1982.

Mayhew's escape from meaning thus leads him to structuralism rather than the study of social structure. He presents an abstract, mechanistic model of relationships. He defines social structure as a "communication network mapped on some population" and argues that the map should be analyzed as a series of (point/line) graphs. We can trace the direction of communication (lines) and not concern ourselves with the qualities of people or groups or symbols or other objects (points). Mayhew's own work on dominance relations in work-group triads shows that structures of dominance communication persist even as individuals change position in the triad. Clearly such structuralism reveals the mechanistic nature of structure. But does it tell us all we care to know? Does it tell us when and how structures prevail? Mayhew himself has doubts. His own study of artificial groups shows that patterns between individual points prove less stable than the overall structure, at least in transitive structures. In other words, people or groups change their dominance over some other people or groups, even though one point remains most dominant, one least dominant, for the set of points.

GREENBAUM, Susan (South Florida). "Bridging ties at the neighborhood level." Unpublished paper. 1982.

This paper examines the relevance of the "strength of weak ties" model (Granovetter 1973) in devising community development strategies for urban neighborhoods. The policy implications of this model for activities designed to promote neighborhood identification and cohesion are outlined, and Granovetter's specific assumptions about the structure and functioning of urban neighborhood social networks are assessed in light of existing research. Little support is found for the presumed absence of bridging weak ties among urban neighbors, or for the assumption that strong ties create an obstacle to effective political mobilization in working-class neighborhoods. An alternative model of local-level integrations is suggested, which retains Granovetter's concept of dense clusters of network ties linked by "local bridges," but re-examines the role of weak ties in effecting such bridges.

HARRIGAN, F.J. (Strathclyde). "The relationship between industrial and geographical linkages: a case study of the United Kingdom." *JOURNAL OF REGIONAL SCIENCE* 22(1):19-31. 1982.

This paper tests the hypothesis suggested by classical location theory that interindustry relations exert forces of spatial attraction which lead to industrial agglomerations. The balance of evidence produced by previous tests of the hypothesis suggests that industry integration does influence the areal distribution of economic activity, if only weakly. There are two main reasons why the present study may usefully supplement earlier works. Firstly, it relates to a spatially smaller national economy (mainland United Kingdom) than is normally considered in the literature. This aspect of the study is of interest because it reasonably may be expected that the locational pull exerted on industrial activity by transport and communication costs will diminish with area size. It is not clear, therefore, that findings derived from studies of larger economies will necessarily apply in the present case. Secondly, the paper breaks some new methodological ground, insofar as it evolves a comprehensive cluster analytic approach to the testing of the maintained hypothesis. Cluster analytic procedures are used to identify both groups of economically integrated and spatially associated industries, the explanatory power of the hypothesis being assessed by comparing the composition of the respective cluster groupings.

HAYWARD, Mark (Seattle), Charles RAGIN (Northwestern) and Shelley COVERMAN (Tulane). "Major labor disputes in Britain, 1902-1938: the relationship between resource expenditure and outcome." *AMERICAN SOCIOLOGICAL REVIEW* 47:238-252. 1982.

While there have been many studies of the frequency of strikes, only a few researchers (e.g. Snyder and Kelly, 1976) have studied strike outcomes. This topic has been ignored partly because the dominant perspective in the study of industrial conflict, the resource mobilization perspective, treats strikes as acts that contribute primarily to workers' long-term political interests. We argue that strikes are at least as much acts of economic instrumentalism as they are political acts and that the resource mobilization perspective should address strike outcomes. In this study of the relationship between resource expenditure and strike outcomes, we pay special attention to the way change in the status of a contender (Tilly, 1978) affects the relationship between resource expenditure and outcome. Our analysis of the outcomes of 753 major labor disputes in Britain over the 1902 to 1938 period shows that labor's change from challenger to member status improved its returns to collective action.

JOHNSON, Steve. "Reach out, reach out and byte someone." *AFRIKA* 3(July):4-8. 1982.

Summarizes community-based applications of new computer-based information and communications technologies. Describes how groups around the country are using these technologies in a variety of ways. Provides guides to organizations using computers and telecommunications to build community.

KANDAWIRE, J.A.K. "Village segmentation and class formation in southern Malawi." *AFRIKA* 50(2). 1980.

This paper is about a problem which arises from James Clyde Mitchell's study of the Yao village in southern Malawi. Then writing about the Yao, Mitchell drew our attention to their system of group segmentation which he portrayed as though it were perpetual in character (Mitchell 1952:18-20). Here I analyse the implication of this process of group segmentation in a situation which is governed by administrative regulations that make it difficult for segmenting groups to spread as freely as they used to do before Britain colonised the country in 1891. What I want to argue is that owing to changes in population, against the background of fixed administrative or even political boundaries, group segmentation in southern Malawi is bound to throw into the open the old scars of structural inequality. Two types of facts are, therefore, required to carry out this demonstration: demographic and historical. Consequently, I divide this paper into three major sections: one in which I present figures showing population densities in Malawi in general, and in southern Malawi in particular; one in which I attempt to show that from the available historical information we can discern processes that led to the formation of classes in Malawi and how these classes were simplified by the formation of the colonial situation which reduced, at one stroke, all Africans into a dependent class vis-a-vis the European colonisers. But despite this over-simplified picture of the two classes in the colonial situation, there is evidence at the local level which shows that as land is increasingly becoming scarce, relative to population growth, village disputes over land illuminate the traditional structure of inequalities. I hold the view that the inevitable result of the contradiction between population growth and land shortage is class formation.

LASLETT, Barbara (Southern California). "Production, reproduction and social change: the family in historical perspective," in *THE STATE OF SOCIOLOGY: PROBLEMS AND PROSPECTS*, James Short (ed.) Beverly Hills: Sage Publications, 1981.

In the past several years, social history and historical sociology have expanded in both empirical and theoretical directions. On the one hand, primary historical research on topics such as marriage and sexuality, domestic life and deviance, birth and death, education and work, social class and gender inequality, social movements and politics, ideology and attitudes has been conducted to an unprecedented degree. On the other hand, although different theoretical perspectives -- functionalist, feminist, Marxist and modernization -- have been used to interpret the topics investigated, theoretical efforts at integrating this varied empirical work have been less extensive. This paper attempts a preliminary (and necessarily brief) theoretical synthesis of recent historical research concerned with changes in the social organization of material production on the one hand and changes in the social organization of human reproduction on the other. Specifically, I am concerned with the development of Western capitalism and its relationship to the forms and functions of family life.

LEHNERS, Jean-Paul. "Schwerpunkte Historisch-Demographischer Forschung in West- und Mitteleuropa." *QUANTUM* 22(4):3-14. 1982.

For several years the limits of the methods employed in Historical Demography (aggregative studies, family reconstitution) have been recognized with greater clarity and therefore new techniques have appeared (representative sample, back projection). The territorial and temporal frame of research was enlarged, while central factors of the evolution of demographic structures (nuptiality, household and family structures, differential mortality for instance) were examined. Interdisciplinary contacts were promoted (in recent times particularly with anthropology) and models and theories checked with the help of empirical studies. In all fields the use of computers became of increasing importance.

LIN, Nan and Mary DUMIN (SUNY-New York). "Access to occupational resources through social ties." Paper presented at the Symposium on Social Network Analysis, SUNY-Plattsburgh, December. 1981.

Previous studies in the examination of the theory linking social resources to instrumental action have focused on a particular activated set of social ties relative to a specific action (finding a job or finding a stranger). This paper reported a study, on the other hand, on general access to occupations through one's social ties. By examining access to 20 selected occupations through social ties, we have found evidence to support two major propositions in the theory proposed by Lin and others about social resources and instrumental action. We found that the strength of positions (as indicated by father's occupation) as well as the strength of ties (as indicated by the nature of the tie being a relative, friend or acquaintance) affect one's access to high-prestige occupations and to the range of occupations. Higher original positions and weaker ties (friends and acquaintances rather than relatives) provide better

access to white-collar or more prestigious occupations. There is also some evidence that while friends, of intermedium-strength compared to relatives and acquaintances, may have the widest access to different positions in the occupational structure, acquaintances, the weak-strength ties, may have greater direct effect on the success of instrumental action (getting a good job).

LOMNITZ, Larissa (Mexico). "Horizontal and vertical relations and the social structure of urban Mexico." *LATIN AMERICAN REVIEW* xvii(2). 1982.

Our approach to social structure consists of looking at the complicated interactions between people at different levels within the power structure. We allow the actors to describe the social structure through their own performance, and through the conceptualizations that they derive from their experiences within the system. Political wisdom, in this perspective, is not necessarily equivalent to an understanding of how the power structure originates, or how it relates to a given model of class domination. In fact, such an understanding can be an obstacle to political wisdom as it is commonly conceived of and appreciated in Mexico. Fundamentally, there is an existing authority structure in Mexico. This authority structure can be altered, subverted, or overthrown; yet there seems to be an underlying assumption among the actors that alternative structures will resemble the present one in most operationally relevant aspects. This Mexican attitude toward social structure, which outsiders may see as "pragmatism" or "cynicism," depending on their sympathies or prejudices, is really plain common sense to members of Mexican society.

LUMB, Rosemary. "A community-based approach to the analysis of migration in the Highlands and Islands of Scotland." *SOCIOLOGICAL REVIEW* 28(3). 1980.

In this paper it is argued that the migration experiences of present residents may have profound implications for both the structure and organization of a local population, and an analytical framework is proposed which takes account of the variety of types of migration encountered in the Highlands and Islands. Firstly, the categories used in the analysis are explained; secondly, data are presented on the distribution of migrant types in seven study areas; and thirdly, some suggestions are made as to the implications of different types of migration experience for the communities concerned. Whilst all seven places have at least until recently suffered net migration losses in varying degrees, the aim here is to show that out-migration is not the only type of movement which has an impact on the local society; the focus, therefore, is entirely on the resident population and out-migration will not be considered in this paper.

McLANAHAN, Sara (Wisconsin), Nancy WEDEMEYER (Texas) and Tina ADELBERG (Texas). "Network structure, social support, and psychological well-being in the single-parent family." *JOURNAL OF MARRIAGE AND THE FAMILY* August:601-612. 1981.

This research examines the relationships among network structure, social support, and psychological well-being in the single-parent family. Three network types are identified: the family of origin network, the extended network, and the conjugal network. Findings indicate that network structure is associated with type of support, and that effects of structure and support on psychological well-being are mediated by a third variable, role orientation of the mother. Theoretical and methodological implications for research on stress and psychological distress as well as practical implications for community mental health services are suggested.

MITCHELL, Roger E. (Stanford). "Problem-solving, family climate and the social networks of psychiatric clients." Paper presented at the 88th Annual Meeting of the American Psychological Association, Montreal, September, 1980.

This study examines the extent to which characteristics of psychiatric patients and their families (i.e. problem-solving, family climate, and family social resources) were associated with dimensions of patients' social networks (i.e., size, support, satisfaction). Multiple regression analysis was used to explain the variation in social network dimensions as a function of individual and family characteristics. Such an approach provides a means for identifying correlates of social networks which might later be studied more intensively in longitudinal studies. The particular individual and family characteristics chosen here are significant for several reasons. First, they reflect the ecological perspective that both person and environment characteristics must be viewed in understanding individuals' behavior. Second, the inclusion of problem-solving as a person variable reflects a focus on the adaptive capacities of the individual.

MONTGOMERY, James (Georgia). "The economics of supportive services for families with disabled and aging members." *FAMILY RELATIONS* 31:19-27. 1982.

The rapid growth of the frail elderly, high cost of institutionalization, and scarcity of programs to assist caring families bring into question government policy. Today family and kin expend more money and energy on the care of the elderly than all combined forms of public assistance. The general public understates what families do and exaggerates what government agencies do. Many persons erroneously believe that most

families abandon their disabled elderly. Beliefs need to reflect reality; federal efforts need to be altered to provide greater support, economic and otherwise, for families which increasingly are becoming major caretakers of their elderly.

MOORE, Gwen (Brockport) and John HIGLEY, Desley DEACON and David CARRICK (Australian National University). "National elite networks in the United States and Australia." *AUSTRALIA AND NEW ZEALAND JOURNAL OF SOCIOLOGY* 16(1). 1980.

The purpose of this article is to confront some of the long-standing questions about national elite integration with sociometric data from these two studies. By linking these data to the social background variables that have been the foci of most research on elite integration, we seek to provide a more definitive test of the competing models of elite integration. Our general conclusion is that none of the conventional models satisfactorily fits or explains the structures of personal interaction networks among American and Australian national elites.

MULLINS, Partick (Queensland). "Theoretical perspectives on Australian urbanisation: 1. Material components in the reproduction of Australian labour power." *AUSTRALIA-NEWZEALAND JOURNAL OF SOCIOLOGY* 17(1):65-76. 1981.

This paper and its companion (Mullins, 1981) explore a number of theoretical questions concerning Australian urbanisation and the process of reproducing Australian labour power. They attempt not only to express urban processes shared by all capitalist countries but, more importantly, they try to elucidate features unique to Australian urbanisation. It must be stressed that these two papers provide only an introductory analysis, raising a number of theoretical questions and posing a series of hypotheses suitable for empirical testing. It is hoped that in this way some groundwork will be laid for a more concise theory relating Australian urbanisation, specifically in terms of labour power reproduction, to Australian capitalism.

OLIVERI, Mary Ellen and David REISS (George Washington). "The structure of families' ties to their kin: the shaping role of social constructions." *JOURNAL OF MARRIAGE AND THE FAMILY* May. 1981.

Comparison of objectively-monitored problem-solving behavior of nuclear families with kinship network structure indicates strong parallels between intra-family and extra-family interaction processes. Findings are consistent with theory of variation in how families regulate their relationships with the social environment and highlight factors intrinsic to families that contribute to the process of family-network inter-change.

ORNSTEIN, Michael D. (York). "Political cleavages in the Canadian capitalist class." Toronto: York-IBR, York University. Research paper.

Examines whether differences in the economic functions of firms cause political cleavages among their leaders. The argument that executives of large firms are more liberal and small businessmen more conservative was not upheld. A comparison of top Canadian executives with politicians, civil servants and trade union leaders revealed a striking lack of an economic basis for political differences within the capitalist class.

ORNSTEIN, Michael (York). "Capital and the Canadian state." Toronto: York-IBR, York University. Research paper.

An analysis of the political attitudes of the capitalist class, the state, and other elites. While members of the capitalist class are more conservative than labour leaders and state elites, they are not opposed to important elements of the "welfare state." They are, however, opposed to the redistribution of income and to measures to increase the rights of workers and powers of trade unions.

PRICE, Frances (Lancaster). "Only connect? Issues in charting social networks." *SOCIOLOGICAL REVIEW* 29(2). 1981.

In this paper the substantive theme is that the presuppositions and data-collection practices of contemporary sociologists engaged in network analysis largely reflect only one of two broad types of social analysis, variously labelled. The emphasis has been on techniques for abstracting structural properties of networks in a static framework and there has been a widespread reliance on survey techniques for data collection. Of the morphological and interactional characteristics of a social network analytically distinguished by Clyde Mitchell and not detailed here, density, a morphological characteristic relating to the problem of linkages in a network, serves to point up the theme of the paper.

The object of the paper is to illustrate these various points by reference to specific attempts by sociologists to chart kin- and/or friendship-networks for a sample of unconnected individuals for particular purposes. In the following section, aspects of research projects which use network ideas and implicate the notion of density are highlighted with the intention of pointing up discrepancies and complexities which complicate the interpretation of the findings. I am not so much concerned here with the issue of the validity of the studies as to employ them as a vehicle to illustrate shared procedural characteristics and specific problems in a particular usage of the network idea.

REITZ, Jeffrey (Toronto). "Ethnic group control of jobs." Toronto: Centre for Urban and Community Studies, University of Toronto. Research Paper No. 133. February. 1982.

This research examines ethnic group control over the allocation of occupational rewards such as status and income. The theory that a majority ethnic group controls reward allocation among ethnic minority groups, and that mobility for minority groups is either blocked by discrimination or occurs primarily through conformity to cultural or other criteria imposed by the majority ethnic group, is examined in survey data (N=1554) representing men and women in eight ethnic groups in and around Metropolitan Toronto. The data permit a comparison of predictions based on majority groups control with observations of actual reward allocation. The data also contain measures of potential minority groups control over jobs. This permits an examination of the supplementary hypothesis that in certain instances, specific minority groups may achieve upward mobility by gaining autonomous control over job reward allocation within particular job domains. In such cases, the occupational success of individual minority group members depends upon resources which can be mobilized collectively within such domains, rather than on individual abilities to meet criteria imposed by a majority group.

RICE, Ronald E. (Stanford). "Longitudinal system structure and role occupancy of research groups using a computer conferencing system." In Burgoon, M. (ed.), COMMUNICATION YEARBOOK 6. Beverly Hills: Sage, 1982.

Analysis of computer-monitored communication network data from 24 months of information exchanges among 10 groups in a nation-wide computer conferencing system offers some insights into what attributes define these exchanges. Substantive results indicate: (1) reciprocation between groups is an important attribute; (2) system structure (in terms of which attributes describe this system) becomes quite stable after users' early information-seeking establishes rewarding information exchanges; (3) task-orientation of a group seems to play a quite strong part in affecting which information-based role (carrier, transmitter, receiver, isolate) a group can occupy over time, as task-bound groups either start as or become isolates; and (4) groups can monitor their network behavior for tendencies in role occupancy. Methodological results include: (1) computer-monitored longitudinal network data can provide insights unobtainable from cross-sectional self-report data; and (2) a new method for network analysis offers a rigorous approach to describing social structure.

ROGERSON, P. (Northwestern) and R.D. MacKINNON (Buffalo). "Interregional migration models with source and interaction information." ENVIRONMENT AND PLANNING A 14:445-454. 1982.

The importance of information flows in models of migration are emphasized. In particular, migrants are assumed to react to two types of information about job vacancies. 'Interaction information' may be defined as interpersonal communication between recent migrants and their former neighbors or friends, and 'source information' represents a direct flow of information from employers or agencies to individuals. Models are developed that investigate the effects of various communication rates and information retention levels on vacancy and labor-force population trajectories. It is found that attempts by planners to reduce regional inequities in vacancy rates through controlled advertising may be successful, but at the possible cost of increasing temporal fluctuations of regional vacancy rates.

SPREE, Reinhard (Berlin). "The German petite bourgeoisie and the decline of fertility: some statistical evidence from the late 19th and early 20th centuries." QUANTUM 22(4):15-49. 1982.

In this following paper I present some data on fertility differentials in the German petite bourgeoisie and their longterm changes from the end of the 19th century up to the 1930s. As my main interest is in the statistics, I give little attention to the discussion of hypotheses explaining the overall decline of fertility in Germany and the apparent social differences in this decline. After characterizing the trend of secular fertility reduction in Germany since the late 1870s, I concentrate on fertility differentials between various groups of the petite bourgeoisie according to the average number of children per marriage. Afterwards I compare these differing fertility levels with fertility data for some other social groups.

In the period under investigation, the petite bourgeoisie adapted to changing living and working conditions, to a changing distribution of earnings and to changing social networks by quickly reducing marital fertility. With regard to the average family size, differences in demographic behavior between the various parts of the petite bourgeoisie were reduced. But these differences were accentuated with respect to the number of childless couples, as well as the number of very small families, which follow what I call the "single-child-family-model." Whereas the demographic behavior of independent craftsmen resisted this trend, the independents in trade were, with regard to the whole society, one of the leading groups in birth-rate reduction.

TOUSIGNANT, Michel and H.B.M. MURPHY (McGill). "The epidemiological network survey: a new tool of surveying deviance and handicaps -- a research note." *EPIDEMIOLOGICAL NETWORK SURVEY*. 1982.

The Epidemiological Network Survey (E.N.S.) is a new research tool of assessing the prevalence of certain types of deviant behavior and handicapping states such as drug abuse, delinquency, and being victim of street violence. Based on the key informant method in anthropology, it employs randomly selected community respondents to provide information on groups of anonymous acquaintances. The instrument was developed to survey problems about which official records and self-reports have both proved inadequate in the past even when confidentiality is assured, alcohol abuse being one well-documented example of the latter.

WHITE, Charles R. and Sheldon M. EANER. "Participation in neighborhood organizations." *THE JOURNAL OF COMMUNITY ACTION* 1(1):48-52. 1981.

The authors use data from a survey of residents of Portland to address the question of how representative of the general population of that city those who participate in neighborhood organizations are. They find that participants and nonparticipants cannot be distinguished on demographic criteria and do not differ significantly in their support for the funding of city programs. Participants were more aware of city services, but expressed essentially the same evaluations of those services as nonparticipants. In general, those who take part in neighborhood organizations were found to be both demographically and attitudinally representative of the general public.

WELLS, Lillian and Grant MacDONALD. "Interpersonal networks and post-relocation adjustment of the institutionalized elderly." *THE GERONTOLOGIST* 21(2):177-183. 1982.

This study examines the extent of disruption in close interpersonal networks created by inter-institutional relocation to determine if close relationships prior to the move are related to successful physical and psychological adjustment following it. Interpersonal networks of 56 residents in a home for the aged were studied before and after relocation. Results indicate that relocation substantially disrupts the primary relationship networks of many of the residents. Close primary relationships with staff and with family and friends outside the institution were associated with successful adjustment to relocation in terms of the life satisfaction and physical and mental functioning. The importance of maintaining and strengthening the social network of institutionalized elderly is stressed.

WILLIAMS, Peter R. (Australian National University). "Property, power and politics; home ownership and social relations." Paper presented at the A.A.G. Conference. n.d.

The purpose of this paper is to examine the arguments put forward from a variety of positions regarding the impact of home ownership on social relations in advanced societies. From an initial consideration of the arguments from Weberian and Marxist perspectives I proceed to an critical examination of the characteristics assigned to individual home ownership in the light of circumstances prevailing in urban areas in Britain and elsewhere. This analysis forms the basis for an empirical critique of positions adopted and directs attention to the need for reformulation. This reformulation accedes to the positions identified but only as possibilities of certain times and in certain places thus denying the necessary correspondence which has been stressed. As such, this paper is intended as a contribution to work in progress on conceptualizing social relations in urban areas.

WRIGHT, Erik Olin (Wisconsin). "Varieties of Marxist conceptions of class structure." *POLITICS AND SOCIETY* 9(3):323-370. 1980.

The main objective of this paper is to clarify the critical contours of the current debates among Marxists over the proper way to define classes in contemporary capitalism. There are three basic distinguishing features of the whole family of Marxist definitions of class. First, classes are defined in relational rather than in gradational terms. Second, the social relations that define classes are analyzed primarily in terms of the social organization of economic relations rather than the technical organization of economic relations. Third, class relations are primarily defined by the social relations of production rather than by the social relations of exchange.

ZIPP, John (Duke) and Joel SMITH (Duke). "A structural analysis of class voting." *SOCIAL FORCES* 60(3). 1982.

Studies of the issue disagree about the reasons for -- even the existence of -- a low level of class voting in Canada. In order to study class voting, three items must be conceptualized and measured adequately: the class of the voters, the class of the parties, and the structural constraints on political partisanship. Central to our concerns is that the only true leftist party, the New Democrat party (NDP), does not field a candidate in every constituency and is not really a viable party everywhere it does contest the election. Thus, the working classes do not always have the realistic option of voting NDP and research which does not take this into account attenuates the relationship between class and voting. We hypothesize, therefore,

that (a) the level of class voting is higher in constituencies in which the NDP is viable and (b) the level of nonvoting among the working classes is higher where the NDP is not viable. Reconceptualizing class in Marxian terms, our results indicate that class is related to voting and that there is a statistical interaction among class, voting, and the viability of the NDP. Furthermore, nonvoting among the working classes increases in nonviable constituencies and decreases in those constituencies where the NDP is viable, indicating that nonvoting may be a class response similar to voting NDP. Implications of this analysis for other Western democracies are noted.

Selected abstracts of papers presented at the Annual Meeting of the ASSOCIATION OF AMERICAN GEOGRAPHERS, San Antonio, April.

COX, Kevin, R. (Ohio State). *"The commodification of the neighborhood."*

This paper has several objectives. The first section attempts to clarify precisely what is meant by the concept of neighborhood as a commodity. Second, I have attempted to characterize a different relationship to neighborhood, a "community" relationship more prevalent at the beginning of this century; the material bases of this "community" relationship are identified.

SUTCLIFFE, Felicity (Ohio State). *"Community and neighborhood in an industrializing, ethnically homogeneous society."*

The major objective of this paper is to examine the residential choices of migrants in an industrializing, urbanizing society, and thereby to assess the importance of their community of origin in this choice. The paper is organized into four sections. The first section provides a research focus and outlines the specific objectives of the analysis. The second section discusses the methodological problems involved in such research. The third and fourth sections outline the nature of the data used in, and the results of, this analysis respectively.

Selected abstracts from papers presented at the Annual Meeting of the CANADIAN ASSOCIATION OF GEOGRAPHERS, Ottawa, May 1982.

MacKENZIE, Suzanne (Queen's). *"New urban spaces: the organization of daycare."*

In the last forty years, a growing number of women in North America and Britain have taken on dual roles -- working both in the home/community and the wage sector. Dual role women have encountered specific conflicts living and working in cities which embody a functional and spatial separation between "home life" and "work." Yet the continued analytic separation of social and economic concerns in much geographic theory has hindered understanding of the importance of these organization for urban development and change as a whole.

Through focussing on daycare, which is simultaneously an extension of family life, a precondition of women's wage work and a source of employment, this paper proposes a framework for understanding these organizations. Drawing on material from post-war Britain, the paper discusses interrelated changes in demography and the domestic and wage labour processes as these have structured daycare issues, and examines the networks established by users of and workers in daycare.

RADKE, John (British Columbia). *"The use of 'skeletons' in network analysis."*

In Geography there exist several analytical techniques which aid in revealing the morphology of map patterns. Most of these techniques, however, allow only relative comparisons of spatial structure as little attempt has been made to standardize measurements. This paper proposes a method of analysis which involved the creation of a "skeleton" by using a theoretically based generative process along with spatial information gathered from the empirical network being studied. The "skeleton" acts as a benchmark to which the empirical network's link structure can be compared. It is argued that this approach allows for a more general analysis of a network's geometric properties.

TORCHINSKY, Raymon L. (British Columbia). *"Intra-urban industrial linkages and rail terminal location."*

Inner city industrial areas have been characterized as 'zones in transition', implying that such areas do not represent efficient land-use in the context of modern urban spatial organization. The industrial linkages associated with Vancouver's inner city (False Creek) rail terminal are examined to test the hypothesis that firms remaining in the vicinity of the terminal form a viable industrial complex focussed on the terminal operation. A comparison with the linkages associated with Vancouver's other rail/truck general freight terminal shows the similarity of the two terminals' impact on the distribution of local industries. In both cases transport costs are an important factor in explaining linkage patterns. The persistence of industrial activity in the inner city can thus be attributed to the continuing influence of transport-related factors, supporting the hypothesis that an inner city location is not necessarily transitional or inefficient for industrial firms. However, non-terminal linkages of inner city firms do

not diminish with distance; the viability of this complex will be adversely affected by the proposed relocation of the False Creek terminal to a suburban site. Implications for planning strategies are discussed.

WALKER, Gerald (York). *"Urbanites in the urban shadow."*

Who are the people moving into the immediate peri-urban fringe? How do they feel about the geographic zone in which they find themselves? This report is based on a 250 observation sample taken northwest of Metro Toronto. While the urbanites are predominantly middle to upper middle class Anglo-Saxons, a very strong and mixed group of blue collar workers, Italians and other ethnic and class groups were found. Generally the most distant respondents, who were in the Oak Ridges Moraine were upper middle class and those on the Peel Plain were working people. The sampled population were stable, family oriented long term residents. They viewed their areas very positively and critically. They recognized limitation on their residential zone and simultaneously strongly identified themselves with that zone. Nevertheless, the urbanites remain urban both in associations and attitudes. Their links to the surviving rural population are quite slender. Their neighbouring in the area of study is almost exclusively with other urbanites of approximately the same class and ethnic position as themselves.

Selected abstracts of papers presented at the Annual Meeting of the NORTH CENTRAL SOCIOLOGICAL ASSOCIATION, Detroit, May 1982.

CALZAVARA, Liviana (U. of Toronto). *"Do weak ties result in higher income jobs?"*

Reexamined is Granovetter's concept of the "strength of weak ties" in the job search: an identification and clarification of conditions under which the use of weak tie contacts will result in higher income jobs. Utilized are survey data from the Ethnic Pluralism Project, housed at the U of Toronto. The survey provides information about the networks and job referral of 1,000 Ms and Fs, in 3 occupational classes, representing 5 ethnic groups in Metropolitan Toronto.

CARRINGTON, Peter (U. of Toronto). *"Comparison of some indices of directorship interlocking."*

Different ways of measuring directorship interlocks have been proposed and used; at present there is no agreement on the relative merits of these indices because little research has been done relating interlocks to other variables; thus there has been no good criterion by which to compare them. Reviewed are indices of directorship interlocking; a range of them are applied to a set of directorship data for Canada for 1972. The association between interlocking and industry profit margins is used to suggest a ranking of these indices as indicators of intercorporate coordination.

COUSINS, Albert and Kenneth ESLINGER (Cleveland State). *"An analysis of the one-person household: a challenge to the atomistic theory of urbanization."*

The proportion of single-person households has increased sharply in the US since 1970. Among the immediate factors responsible are postponement of marriage, greater survival of the elderly, an increase in divorce, and changes in lifestyle, the latter affecting young men in particular. Demographic data are readily available from current population reports. Widows 65 and older maintain 52% of all one-person households today; such households increased 200% during the 1970s among the divorced and never married. Subsets of the increased prevalence of one-person households are generically attributable to increased affluence and autonomy. Consequently, although the growing incidence of single-person households is a quantitative confirmation of the atomistic theory of Simmel and Wirth, it also constitutes a challenge to the dire, foreboding implications of estrangement and alienation postulated by this outstanding interpretation of urbanization in modern times.

SHELLY, Robert K. and Susan RODGER-STREGAR (Ohio). *"Social exchange and the rural elderly."*

Exchanges involving social actors are shaped by the social context in which they are carried out. Reported is a study involving both a survey (N=170) and a community ethnography covering exchange relationship of a population of rural elderly in Ohio. The study design involved a series of questions about both bureaucratically based and more particularistic exchanges. Most of the formal exchanges cast the elderly in the role of recipients of the altruism of others, although the data indicate that the older people in the study population were attempting to redefine some of these exchanges so that they had a more reciprocal quality. Many of the elderly under study were also involved in reciprocal and at times altruistic exchanges of food and labor; this had important consequences of local perception of the older person. Rules underlying types of exchange are examined for their impact on the social construction of aging in this and similar populations.

WORKING PAPERS FROM THE CENTER FOR RESEARCH ON SOCIAL ORGANIZATION, UNIVERSITY OF MICHIGAN
 GARNER, Roberta (de Paul) and Mayer N. ZALD (Michigan). "Social movement sectors and systemic constraint: toward a structural analysis of social movements." W.P. no. 259. 1982.

Our basic assumption is that to understand the course of social movements we have to understand them as a configuration and within a determining environment. Thus we have to look at the totality of movements in a society, rather than isolated movements, and try to identify the elements of social structure that shape this totality of movements (the movement sector). What we are proposing is, first, a set of terms or conceptual tools for extending the analysis of social movements to the SM sector and, second, a set of propositions for explaining variations in the sector.

We will define the social movement sector, identify its dimensions, and discuss its determinants. Major determinants include the economic base, conjunctions of the business cycle and structural change, and the political and ideological system. Since the object of analysis is sectors within societies our method must be comparative and historical.

HOGAN, Richard (Michigan). " 'Law and order' on the Colorado frontier: the bases of public and private governments." W.P. no. 250. 1981.

This paper relates versions of "law and order" in Nineteenth Century Colorado to the modes of production which characterize different frontier industries. Independent producers who control the means and absorb the costs of production participate in the Carnival of public government, maintaining the independent economic control of producer and merchant. Non-producers who finance the production process and who require political authority to control production rely on private government, the Caucus. The mining and cattle industries of the Colorado frontier provide examples of the modes of production reflected in Carnival and Caucus and offer evidence of the dynamic process of political and economic struggle within the ecological and institutional confines of the American frontier, suggesting considerable room for specification and re-evaluation of theoretical models which offer macro-institutional structure as the determining factor in social change.

LIEBMAN, Robert (Michigan). "Repressive strategies and working class protest in Lyon, 1848-1852." W.P. no. 188. 1979.

This paper describes the political struggles which followed the February Revolution and the ways by which the forces of order consolidated state power. Changes in repressive strategies were central to their success. The intensification of preemptive tactics relative to responsive tactics characterized the shift in strategy. We analyze the set of changes which explain the shift toward preemptive tactics. Political process models argue that changes in the mobilization of the authorities and the challengers shape repressive strategies (Tilly, 1978). This paper argues that changes in the circumstances of conflict between the authorities and the democratic-socialists in Lyon explain the intensification of preemptive tactics.

SCHWEITZER, R.A. and Steven C. SIMMONS (Michigan). "Interactive, direct-entry approaches to event files." W.P. no. 245. 1981.

We begin with seven sources and have researchers read through them in a systematic way, looking for articles that pertain to contentious gatherings. We gather the articles together and match the ones that pertain to the same event and place all of them in a dossier event file. This material is then given an identification number that reflects the year, month, and day the event occurred. It is then logged into a book for further check on reliability of the matching. Next, the event is enumerated to denote the Formations and Action Phases that are involved in the series of claims made by the actors in the event. Now the event is ready to be coded.

Six papers by TILLY, Charles (Michigan).

"The urban historian's dilemma: faceless cities or cities without hinterlands?" W.P. No. 248. 1981.

Let us consider the dilemma faced by historians who write about cities: how to portray the textures of individual cities, and yet to connect those cities firmly to general historical processes. The dilemma confronts an urban historian who wants to place his subject in the overall stream of social change just as surely as it challenges the political or social historian who wants to follow broad processes of change through the lives of particular cities. How shall we fashion a sound analysis of the growth of large-scale manufacturing which permits us to capture the differences in the experiences of people in, say, England's Birmingham and Manchester during nineteenth-century industrialization? How shall we carry out that dual analysis without reducing to bare points on a graph those cities of tenements, alleys, canals, workers, capitalists, widows, brawls, shouts, and stench?

The problem does not result simply from clashing levels of abstraction, from inconsistency between the general and the particular. Here is the difficulty: Cities are, above all, places whose analysis requires a sense of spatial and physical structure; analysis of broad historical processes rarely deal effectively with spatial and physical structure. Working out the implications of broad historical processes for spatial and physical structure is never easy. As a consequence, treatments of urban geography seldom articulate usefully with discussions of the development of national electoral politics, or of the growth of new

ideologies. Likewise, historical accounts of revolution or of changes in family organization usually have only the weakest implications for changes in the characters of cities as places. It is as if the text consisted of clusters of microdots, each cluster conveying its own internal message, but also appearing to form part of a larger message -- while the magnifying glass used to read the text has only two settings, one for the microdots, the other for the whole array, and nothing in between.

Why try to articulate the two? Why not treat the historical development of particular cities, and the changes of whole countries, as distinct problems, each requiring its own intellectual frame? Why not wait for the occasional daring synthesizer to join the two problems? Why not? Because urban history itself will be the loser. Without provisional synthesis, urban historians run the risk either of drifting into antiquarianism or of following strong but poorly formulated questions into confusion.

"British conflicts, 1828-1831." W.P. no. 255. 1982.

Recall the key questions concerning a revolutionary situation: Are many people using the available forms of collective action to press claims which would, if realized, overturn the existing structure and exercise of power? Are they closely connected? Are they acting on behalf of similar interests? Have they committed themselves to leaders or organizations having the capacity to operate the state? Do they include people who are part of the existing structure of power? My preliminary evidence falls pitifully short of answering any of these crucial questions. All it shows is a) widespread mobilization around the issue of Reform, a mobilization resembling previous mobilization around related issues, but surpassing all of them and b) a clustering and coordination of displays of support and opposition that we can reasonably call a social movement -- a sustained challenge to the existing structure of power in the name of an unrepresented constituency. I believe the claims, the connections, the interests, the commitment, and the ties to power were sufficient to make revolution possible in 1831 or 1832. Given the bourgeois-worker coalition making the claims, one might imagine a moderate constitution-making revolution of the nineteenth-century continental variety, and one might well suppose that the merchants, masters, and manufacturers would have been as quick to dump their working-class partners in revolution as they were in the absence of revolution. But these speculations wander far beyond the evidence at hand. The social-movement basis of the mobilization for Reform does, however, set some limits on the debate over revolutionary potential. On the one hand, the scale and timing of contention bespeak widespread involvement in the issue, and effective organization throughout much of Great Britain. On the other hand, the prominence of meetings, associations, petitions and other well-planned activities belies the notion of a welling up of uncontrolled anger.

"Warmaking and statemaking as organized crime." W.P. no. 256. 1982.

This essay concerns the place of organized means of violence in the growth and change of those peculiar forms of government we call national states: relatively centralized, differentiated organizations whose officials more or less successfully claim control over the chief concentrated means of violence with a population inhabiting a large, contiguous territory. The argument grows from historical work on the formation of national states in western Europe, especially on the growth of the French state from 1600 onward. But it takes several deliberate steps away from that work, wheels, and stares hard at it from theoretical ground. The argument brings with it few illustrations, and no evidence worthy of the name. The trimmed-down argument stresses a) the interdependence of warmaking and statemaking, b) the analogy between both of those processes and what, when less successful and smaller in scale, we call organized crime. War makes states, I will claim. Banditry, piracy, gangland rivalry, policing, and warmaking all belong on the same continuum -- that I will claim as well. For the historically-limited period in which national states were becoming the dominant organizations in western countries, I will also claim that c) mercantile capitalism and statemaking reinforced each other.

Here is a preview of the most general argument: Powerholders' pursuit of war involved them willy-nilly in the extraction of resources for warmaking from the populations over which they had control, and in the promotion of capital accumulation by those who could help them borrow and buy. Warmaking, extraction, and capital accumulation interacted to shape European statemaking. Powerholders did not undertake those three momentous activities with the intention of creating national states: centralized, differentiated, autonomous, extensive political organizations. Nor did they ordinarily foresee that national states would emerge from warmaking, extraction, and capital accumulation. Instead, the people who controlled European states and states-in-the-making warred in order to check or overcome their competitors, and thus to enjoy the advantages of power within a secure or expanding territory. To make more effective war, they attempted to locate more capital. In the short run, they might acquire that capital by conquest, by selling off their assets, by coercing or dispossessing accumulators of capital. In the long run, the quest inevitably involved them in establishing regular access to capitalists who could supply and arrange credit, and in imposing one form of regular taxation or another on the people and activities within their spheres of control. As the process continued, they developed a durable interest in promoting the accumulation of capital, sometimes in the guise of direct return to their own enterprises. Variations in the difficulty of these activities -- how hard it was to collect taxes, how expensive was the particular kind of armed force adopted, how much warmaking it took to hold off competitors, and so on -- caused the principal variants in the forms of European states. It all began with the effort to monopolize the means of violence within a delimited territory adjacent to a powerholder's base.

"Conflict and change in France since 1600, as seen from a very small place." W.P. no. 261. 1982.

Will you join me in a conceit? Let us pretend that we are four-hundred-year-old loungers who have spent all those years at the Place de Greve. As we have whiled away our time in the square, we have noticed visible signs of the great changes France experienced after 1600. We have observed the development of French capitalism. We have witnessed the growth of a powerful national state. We have noticed the changing ways in which ordinary people have acted together (or, for that matter, have failed to act together) on their interests. We have formed some ideas about how all these changes fit together. We have seen, for example, that where royal ecclesiastical, mercantile, and municipal interests come together, conflicts of interest become visible; so long as the city and people of Paris remained a powerful independent force in French national life, the Place de Greve continued to be the scene of struggle, display and retribution. But as the state became dominant over all other but major capitalist interests, the Hotel de Ville and the Greve lost their significance in those regards. As a consequence, the early history of the square was often bloody, even grisly; from the later nineteenth century onward, however, mayhem there became less frequent.

Watching very carefully for four hundred years, we have also witnessed the declining importance of corporate structures such as guilds, organized communities such as the city's quartiers, and patron-client networks such as a great lord and his gens as bases of popular collective action. In contrast, we have remarked on the ever-growing influence of special-purpose associations such as parties, firms and voluntary organizations. We have, in short, followed the interaction of capitalism, statemaking, and contention from 1600 onward. Like any good park-bench loungers, we have also noticed the everyday adventures and passing pedestrians of our particular corner. Let us review some of the things we have seen since 1600.

"Five French regions, four contentious centuries, two fundamental processes." W.P. no. 262. 1982.

French people strike, petition, demonstrate, hold protest meetings, conduct electoral campaigns, and (now and then) organize revolutionary conspiracies. They act together, but not in the forms of the seventeenth century. The French have created a different repertoire of collective action, and use it routinely.

Why and how did the change occur? In the largest terms, because in the nearly four hundred years since 1600, France has become an intensely capitalist country with a powerful, centralized national state. The process of capital concentration and statemaking, broadly defined, account for the transformations of collective action over the interval. The point of this essay is not to prove that sweeping assertion, but to sketch a way of examining it closely. It provides an outline of structural change in France since 1600, then limns a comparison of five regions during the same period. This paper's preliminary portrayal of the five regions -- Anjou, Burgundy, Flanders, the Ile de France, and Languedoc -- will not provide an explanation of change in the regions, or in France as a whole. But it will, I hope, provide a context and a prologue for detailed examinations of the contrasting regional experiences with structural change and collective action.

The changes we have to explain, then, are alterations in the character of popular collective action in France from 1600 to 1980. At the most general level, the development of capitalism and the growth of the national state produced those alterations.

"Flows of capital and forms of industry in Europe, 1500-1900." (Revised version). W.P. no. 263. 1982.

The paper's main tasks are:

1. to sketch how that transition to capital-concentrated manufacturing occurred,
2. to place protoindustrialization and deindustrialization within the process,
3. to bring out the importance of shifts in the deployment of capital,
4. to show the continuous interaction of city and country throughout the process, and
5. to stress how much of the whole transformation occurred in the countryside, prior to the massive development of factories, steam power, and large-scale machine production.

ZALD, Mayer N. (Michigan). *"Theological crucibles: social movements in and of religion." W.P. no. 247. 1981. H. Paul Douglass Lecture, Religious Research Association, October, 1981.*

By their nature, religious organizations are deeply involved with theological and ideological beliefs about the relation of individuals and groups to each other, to society, and to the good and just life. Changes in belief systems in the larger society are bound to enter the internal life of denominations, and, in turn, beliefs developed within religious organizations become the basis for action in the larger society.

This paper examines the social movement and political processes which are the carriers through which changes in beliefs are implemented. First, we examine the relation of the rise and fall of classes and groups in a world-economy to social movements. Then, building upon a general framework for the analysis of social movements in organizations, a series of propositions are developed about the causes and consequences of different kinds of social movements in denominations. The focus is upon mass movements and small scale insurrections in different church polities. Religious denominations evidence a variety of political structures and processes and are especially suitable sites for this kind of analysis.

Selected abstracts of papers presented at the Annual Meeting of the ASSOCIATION OF AMERICAN GEOGRAPHERS, San Antonio, April, 1982.

WILLIAMS, Peter (ANU). "Property, power and politics."

This paper will explore the articulations between property ownership, the distribution of power and politics. In particular, it is concerned with questions surrounding the impact of the growth of home ownership upon local and national politics and the exercise of power by and on behalf of the interests surrounding home ownership. It will draw upon examples from Australia, Britain and the United States and will situate these in the context of current attempts to restructure the economies of the three countries.

GOHSTAND, Robert (Cal. State-Northridge). "Kuptsy and Yarmarki: buying and selling in 19th century Russia."

The commercial complex of 19th-century Russia embraced a variety of commercial practices and establishments, the latter including fairs of various kinds, itinerant peddlers, urban market places, trading rows, shops and stores, street vendors, arcades, department stores and commercial travelers. This paper characterizes the various establishment types, comments on their distribution and functioning, and devotes some attention to their relative importance.

RUDNICKI, Ryan (SUNY-Oneonta). "Information channels and immigrant settlement formation."

This paper examines the intricacies of information channels that led to the formation of immigrant settlements. The focus is on American settlements established by southern and eastern European immigrants around the turn of the century. The study begins by describing the operation of five standard information channels by which Europeans learned of America, and which seemed adequate in directing people to specific sites. When the locational perspective is shifted however, from Europe to actual settlement sites within the U.S., the five channels are shown to need significant modification. This paper identifies those changes, illustrates their operation, and attempts to assess their relative significance.

GODDARD, John (Newcastle). "Telecommunications, office location and corporate organisation."

This paper examines the influence of organisational factors on the inter-regional location of office functions, and on the communication patterns of businessmen. Through the analysis of contact diary and business travel survey data the potential influence of developments in telecommunications technology on the location of office functions is assessed. The results are related to patents and processes of regional economic development in Britain.

SHEPPART, Eric (IASA, Laxenburg, Austria). "Inter-regional dependencies and uneven development."

Uneven development has been studied as a difference between sectors or between regions. However, linkages between these two perspectives are rarely well articulated. I shall attempt to fill this gap by indicating how inequities and dependencies are generated between regions because of the geographical dimension to intersectoral flows. Inter-regional commodity trade leads to unequal returns accruing to different regions. Differences in the mobility of both various factions of labour, and various types of capital investment bring about cumulative concentration as well as dramatic counter-polarization. Corporate and "entrepreneurial" decisions on wages, production methods and reinvestment are seen as critical components.

BETANCOURT, Jose (SUNY-Brockport). "Stayers and the migration process: a study of a rural Venezuelan village."

This paper focusses on people left behind in the migration process, in contrast to most previous Third World research. The first task is to extend available theory to account for stayers, employing both the traditional push/pull and the more recent development or societal-structure-based paradigms of migration. The second task is empirical analysis of data collected by personal interviews together with census information. This analysis is both qualitative and quantitative in nature and includes a historical account of the village as it relates to migration. Finally, on the basis of empirical analysis, the alternative migration models are evaluated.

ROSE, Damaris (Rutgers). "On theorising uneven regional development -- 1980's style."

This paper will provide a critical interpretation of concepts of 'uneven regional development'. The potential of these concepts in enabling us to understand some contemporary trends in the regional political economy will be assessed. The focus will be on shifts in state policies that have implications for political alliances both in 'established' peripheral regions and in 'de-industrialising' areas of North America. The paper will argue that the combination of generalised economic recession and the emergence of

new variants of right-wing populism in the 1980s poses some important challenges to the tendency of geographers to define uneven development as an inherently regional problem.

MEYER, David (Brown). "A long term system of cities model: the South as a case study."

A dynamic model of the system of cities for an areally expanding space-economy is extended to the case of the fully-settled space-economy. Financial intermediaries are one set of key actors which provide intercity linkages. Banking in the southern system of cities is examined for 1980 and comparisons with prior studies suggest that a consistent pattern of change in financial linkages covering the period 1880-1980 is compatible with the expectations of the proposed model.

CELANT, Attilo (Rome). "Markov chains and urban network in Italy."

The analysis of the development of the Italian urban areas has been started on three sample areas -- i.e. Po, Lazio, and Basilicata and Apulia areas through the matrices of Markov transition chains. The survey covers one century of history (1871-1971) and is being conducted every ten years in conjunction with census taking. The matrices are composed of eight classes by eight and contain both absolute frequencies and percentiles per line. A series of operations on the matrices allows to analyze thoroughly the trend of the various classes of communes and to obtain elements on the evolution of urban structure. Clusters may complete the survey and allow to observe the influence of some geographic and/or economic components in the determination of the changes in the urban network.

O'HUALLACHAIN, Brendan (Illinois). "The determinants of the interindustry linkages of foreign firms: a statistical analysis."

The role of foreign-based multinational enterprise in the development of regional industrial systems can best be determined through an analysis of foreign firms' backward and forward linkages with local suppliers and markets. The literature suggests that the form and the strength of these linkages is a function of certain characteristics of the foreign plant, its parent corporation, the relationship between them, and the nature of the recipient local economy. This paper attempts to explain the linkage structure of foreign-owned manufacturing firms in Illinois. The linkage structure of such firms is examined and, in addition, the variables controlling this structure are analysed statistically. At present, approximately 175 foreign-owned firms are located in Illinois, the majority of which are concentrated in the chemicals, metal, and machinery sectors. The analysis focuses on these sectors.

(NETWORK NOTEBOOK continued from page 34)

Vermont Summer

Steve Berkowitz writes that planning continues for the University of Vermont to mount a summer institute in "structural analysis" or "social network research." The institute currently is seeking external funds to support activities in July, 1983:

a. a conference/workshop primarily for those with considerable expertise. It would focus on the development and application of "state-of-the-art methods to a range of theoretically germane problems." Probable fee: \$400-\$600.

b. a seminar "for those who felt they needed a broad, systematic, and intensive overview of the basic theoretical issues and techniques involved. Graduate credit would be awarded. Probably fee: \$400-\$500.

Berkowitz requests those interested in participating in either the conference or workshop to contact him at the Vermont Summer Institute Project, Sociology Department, University of Vermont, 31 S. Prospect St., Burlington VT 05405 (Tel: 082-656-3236).

INSNA to Meet at ISA and ASA

INSNA folks in San Francisco for the American Sociological Association meetings will get together Wednesday, September 8, 6:30-8:30 pm at the Hilton's Tamalpais Room for an informal visit and discussion of the shape of networks to come. Look also for the INSNA display table at the meetings -- in the Hilton's North Lounge near the Registration Desk.

INSNA has also asked the ISA for meeting time at the World Congress of Sociology, 15-20 August, Mexico City. No reply as of press time.

(NETWORK NOTEBOOK continued on page 59)

COMPUTER PROGRAMS

MICROCOMPUTER NETWORKING FOR SOCIAL CHANGE: THE MIST SYSTEM

Peter and Trudy Johnson-Lenz

In their recent book, Networking: The First Report and Directory (Doubleday, 1982), Jessica Lipnack and Jeffrey Stamps define networking as "people connecting with people, linking ideas and resources." This simple description captures the essence of our 1978 paper, "On Facilitating Networks for Social Change" (CONNECTIONS, I, 2), in which we outlined methods for facilitating social networks by sharing information about the network among its members.

The Purposes and Processes of Networking

The purposes of networking are to help individuals find other people with whom they can exchange ideas and resources to mutual benefit, to help build community along lines of shared interests, to reweave the increasingly frayed social fabric, and to organize coalitions for broader social change. To achieve these purposes, systems for communication and information exchange are essential. Connecting people with each other requires some means of communication. Linking people, ideas, and resources requires assembling, organizing, and exchanging information.

In our 1978 paper, we cited examples of emerging grassroots networks which were beginning to assemble and exchange network information. The directory portion of Lipnack and Stamps' book is an up-to-date assemblage of information on approximately 1500 grassroots, social change, and other groups (including INSNA) using networking processes to link people, ideas, and resources. The book itself is a grand example of assembling, organizing, and exchanging information about the meta-network made up of the naturally occurring networks cited there. It also contains a clear and creative theoretical statement about the nature and processes of networking.

Since 1975 we have been experimenting with various methods -- with and without computers -- for facilitating networks. In our 1978 paper, we suggested that decentralized microcomputer networks would come to play a central role in the evolving process of social change. The information in Lipnack and Stamps' book, collected through a "snowball" networking process, was assembled, organized, and even prepared for typesetting using their microcomputer.

MIST: The Networker's Electronic Toolchest

During the past year, we designed and developed a unique microcomputer software package called MIST (Microcomputer Information Support Tools), also known as "the networker's electronic toolchest." MIST is a highly integrated system that includes features for word processing (text editing and document formatting), database management (information retrieval, indexing, list and directory preparation), and telecommunications (smart terminal, micro-to-micro linkage, and remote use). It was designed specifically as a tool kit for networks, organizations, associations, centers, and individual networkers to use for assembling, organizing, and exchanging network information. Even though the software was completed only recently, several social change organizations are already using MIST for networking.

Assembling and Organizing Network Information

The RAIN Community Resource Center in Portland, Oregon, associated with RAIN Magazine: A Journal of Appropriate Technology, is using MIST assemble a series of databases of individuals, organizations, and publications as part of their information system. The RAIN information system will be used to provide information, referral, and research services to individuals and organizations in the local community and elsewhere who request information about resources, ideas, individuals, and organizations on a variety of topics. One of the main focuses of the RAIN information system is community self-reliance.

The Center for Urban Education, also in Portland, Oregon, is using their MIST system to prepare a directory of participants at their recent conference on Information and Communication Technology for the Community. This directory will be available in print and on-line form so that conference participants can make contact with each other based on commonalities of interest and geography. The conference registration database, from which the directory will be produced, was also used to facilitate the conference itself. MIST was used to print out lists for workshop leaders with the names, addresses, and telephone numbers of participants registered for each workshop. The database was also demonstrated during the conference so that attendees could find others whom they might like to meet.

These applications of MIST are excellent examples of how a microcomputer and MIST can be used to assemble and organize network information which can be used in a variety of ways to help establish new ties between people, organizations, ideas, and resources. The text, keyword, interactive retrieval, and flexible list and report aspects of the MIST database features (resembling those of large mainframe systems) are ideal for the information processing tasks associated with networking: keyword searches, keyword indices, resource lists, mailing lists, personalized form letters, and other special reports and listings. Additional applications of the same features include barter exchanges, skills exchanges, talent banks, open networks, and community memories, just to name a few.

Exchanging Network Information

Microcomputers can also be used to exchange network information. Steve Johnson of the RAIN Community Resource Center used RAIN MIST to write a 30-page report, Information and Communication Technology for the Community, for the Center for Urban Education's conference of the same name. Then, using the MIST telecommunications features, his draft was transmitted electronically to the CUE MIST system where it was printed out. The resources section of the report is being maintained and updated using RAIN MIST.

Not only can text files and reports be exchanged in this way, but portions of or even entire databases can be exchanged as well. In order to show a variety of databases at our workshops on microcomputer networking, we asked RAIN and CUE for permission to make copies of their databases for demonstration purposes. Using our MIST system, we called up the RAIN and CUE MIST systems and pulled copies of their databases out of their microcomputers and into ours. As Steve Johnson remarked, the ease of moving such information from one place to another "makes for interesting information economics." This is particularly true since the RAIN Community Resource Center charges for some of its information services.

Decentralized Microcomputer Networks

Decentralized microcomputer-based networking ensures local control and ownership of the microcomputer as well as the information in it. It also allows easy transfer of information to other nodes in the network, but only when that is in the interest of the information provider. Furthermore, in such a decentralized network there is no center through which all information passes; rather, there may be many centers working together in shifting patterns of linkage appropriate to the needs of the moment.

A decentralized network gets its information from many places and can diffuse it equally to all members, unlike a centralized, broadcast information system. Potentially, all members can both produce and consume information equally. Together, these network characteristics tend to diffuse economic and political power, increasing local self-reliance and autonomy, while facilitating cooperation and coalition building.

Human Communication via Microcomputer

The possibilities for the decentralized exchange of information go beyond exchanging written reports and files of network information. MIST includes a remote-use feature which allows anyone with a computer terminal or properly equipped microcomputer to operate MIST remotely from anywhere via the phone system. Our own MIST system is "in remote" every night and early morning until we begin our work day. During those hours, friends and colleagues call up our microcomputer, search through our demonstration databases, and leave messages for us using a tailored version of MIST for electronic mail. We leave our responses in "mailboxes" set aside for each remote user. They can also exchange messages with each other.

The Glide Foundation in San Francisco is using its MIST system to link a small group of people active in social change in the Bay Area. Most members of that network have video terminals in their homes or offices which they use for sending and receiving messages via GLIDE MIST. In addition, GLIDE MIST is going to be used to assemble and organize a database of members of the extremely successful small business, right livelihood Briarpatch Network. During a recent workshop on microcomputer networking in Olympia, Washington, we linked electronically with Shali Parsons, coordinator of the Briarpatch Network, for a real-time exchange of questions and answers. We used our MIST system to connect to GLIDE MIST long distance.

Networks of Computers

In addition to linking MIST-to-MIST and using the system for electronic messaging, MIST can be used as a "smart" terminal to other systems, such as The SOURCE and EIES, the Electronic Information Exchange System. With highly automated "connect routines," a MIST user simply types in the name of the system to which s/he wishes to connect, and MIST handles the complex network protocols through Telenet or Tymnet, connects to the host system, and enters the user's account ID and password, all automatically. For the past two years we have been using prototype versions of MIST to reduce substantially our connect charges to such systems. Using advanced connect routines, we can compose our messages off-line in our microcomputer, and then enter a single command to send them automatically to EIES or The SOURCE and retrieve and store any waiting messages in our microcomputer for later reading and response.

In this way, a local MIST system can serve not only as an exchange point for local messages, but also as a gateway to regional, national, and international networks. MIST can "concentrate" local messages into a single stream to be sent to such larger systems. It can also distribute material from a large national computer to members of a local network.

Last summer, MIST was used as the link between two large computer systems. Items entered into a computer conference on one system were transferred to the other system via MIST, thus linking the two larger systems into a meta-conference. The items on the two systems were about the proceedings of two face-to-face conferences in the Pacific Northwest, so participants at both conferences (and users of the two computer systems) were able to find out what was happening at both places at once.

Summary

Networking involves assembling, organizing, and exchanging information about people, ideas, and resources in order to facilitate social change and reweave the social fabric. Microcomputers equipped with the right database management, telecommunications, and word processing software can help in that process by supporting on-line databases, printed network directories, decentralized exchange of network information, and personal message exchange via computer. MIST, "the networker's electronic toolchest," is a tool uniquely appropriate to these networking applications of microcomputers.

Availability of MIST

MIST is currently available for most microcomputers which use the CP/M 2.0 operating system. It requires at least 56K of random access memory, two disk drives with at least 250 kilobytes of storage each, and a PMMI MM-103 modem which requires an S-100 bus. A version for other modems, such as the Hayes Smartmodem, will be available in the last quarter of 1982. License to use MIST on a single microcomputer is available from New Era Technologies, Inc. for a one-time fee of \$1500. An optional software maintenance agreement includes updates, hot-line user support, and membership in the MIST users' on-line network. For more information about MIST, call or write: New Era Technologies, Inc., 2025 Eye Street, N.W., Suite #922, Washington, D.C. 20006, (202) 887-5440, or call toll-free (800) 368-5787.

CALL FOR COMPUTER PROGRAM WRITE-UPS

One of the problems faced by network researchers is that one cannot just walk over to the nearest friendly computer center and find the specialized programs one needs. True, data management tasks can sometimes be handled by the general purpose data management facilities in statistical packages like SAS and P-STAT, but the graph algorithms and other specialized computational resources will not generally be found easily.

The result is a strong need for us to exchange available programs. What we are hoping to do these days in this section of CONNECTIONS is to explore new ways of acting as brokers between program authors who are willing to share the fruits of their labors in return for some citations down the line somewhere, and potential program users.

This note is a plea to those of you with programs you have developed and found useful to send me copies of your write-ups. We would like to continue publishing abstracts of available programs here. We'll take care of writing abstracts, though we would be pleased to have you send short abstracts or discussions of what the programs do, if you like. Please send copies to:

Prof. John A. Sonquist
Social Network Program Exchange
Department of Sociology
University of California
Santa Barbara, CA 93106

To those of you with data sets to analyse, and who would like to use these techniques, please watch this space in CONNECTIONS. We hope to identify programs of potential use to you, and to provide names and addresses of distributors. You can contact them directly to obtain copies of available programs.

The proof of whether a program can, in fact, be transported from one place to another and used successfully lies in actually doing the transporting. So, we are recruiting some volunteers to transport some programs, get them running, and writing up a short set of hints as to what you have to do in order to move that particular program to a new location. How can you do this without paying a programmer? It's relatively simple -- recruit a computer science student and set up an independent study project in which their responsibility is to get the software running. They get some useful and practical experience, and some units or credits toward their degree, and you get the software up and running. You can motivate them even further by offering for them to be the co-author on the "transporting hints" that the original author can then send out with copies of the program. Please write if you would be interested in undertaking a project like this.

In the COMPUTER section of CONNECTIONS we will continue to publish abstracts, and, I hope, some more detailed reviews of available programs as well as discussions of problems people have in using computers with network data. We'd like your ideas on how we can make this section of best use to you. Please write to the above address with your suggestions.

COMPUTER PROGRAM ABSTRACTS

Here are short descriptions of four computer programs, all in standard FORTRAN IV(G), which are available from Peter V. Marsden, University of North Carolina, Chapel Hill, NC 27514.

1. GENMRG3D. Performs a log-linear analysis on a three-way frequency table in which the units of analysis are directed pairs of actors. Used to answer questions like: (a) is a particular entity a transmitter, carrier, receiver, or isolate? (b) are relations dense within a particular category, or not? (c) does a subgroup have the same kind of relationships with other groups, or do its relationships differ?
2. GENMARG. Fits log-linear models with constrained two-variable interaction terms to bivariate tables.
3. DIGRAPH. Computes various measures for binary adjacency matrices of up to 100 points. Measures computed include indegree, outdegree, dyad types, complete path distance matrix, summary counts pertinent to the path distance matrix, enumeration of strong component memberships, condensed adjacency and path distance matrices, and the density matrix for blocks in the condensed graph. Both symmetric and asymmetric matrices can be accommodated. Useful utility program.
4. P1. Fits subsets of the two-variable marginal totals of a g-by-b-by-2-by-2 table by the Deming-Stephan iterative proportional fitting procedure. Output includes G*2, cell deviations, original and fitted counts, goodness of fit statistics, and an index of dissimilarity and an expected sociomatrix.

GRADAP PRICE SLASH

GRADAP -- the SPSS-like network analysis package -- has just reduced its prices drastically for academic institutions. As of now, there is an initial fee of US\$250, with no annual renewal fee. At present, GRADAP only runs on CDC machines. An IBM version has been long-promised, but never delivered. A new description of GRADAP appears in BEHAVIORAL RESEARCH METHODS AND INSTRUMENTATION, 1982, Vol.14(1):32-33. For more information, contact Technisch Centrum FSW, Roeterstraat 15, 1018 WB Amsterdam, The Netherlands. (Tel: 020-522-2702).

COMMENT ON LATTIN AND WONG, "A HIGH-DENSITY CLUSTERING APPROACH TO EXPLORING THE STRUCTURE OF SOCIAL NETWORKS" (CONNECTIONS 5,1 (1982):21-26)

Peter Carrington, Sociology, Erindale College, Toronto

This paper makes three interesting claims: (1) that the "density" on a corporate interlock arc, defined as the ratio between the number of points connected to both of its endpoints and the number of points connected to either of its endpoints (with appropriate weightings where appropriate), is a useful measure of the strength of the tie between the corporations,

(2) that a minimal spanning tree (MST) clustering algorithm on this density is a useful way of partitioning the graph of directorship interlocks, and

(3) that the clustering thus obtained for interlocks among the largest 200 industrials of the 1970 Fortune 800 is "astonishingly similar" to that obtained from a graph generated by a model of random choice of directors by corporations. This claim is only briefly sketched and is developed in Lattin 1981. I mention it here because it is important enough in its implications not to be ignored.

I find (1) to be the most interesting claim, since it attempts to deal with pairwise closeness as a function of local density rather than of the strictly pairwise tie. This suggests a new answer to the bothersome question, When is an observed interlock an indicator of meaningful connection between two corporations, and when is it just "noise"? The answer suggested here is that it is a "real" connection if it is accompanied by the sharing of many alters. This has some intuitive appeal, and seems especially appropriate in a clustering application. Further work is of course necessary to show the validity of the density measure. The application reported here, which produces a trace similar to that for a random graph, is not encouraging. One other problem with the density measure that is mentioned by the authors is the considerable expense of computing it on other than very sparse graphs.

Little evaluation has been done of the use of MST algorithms to cluster corporate networks. Greg Heil and I suggested an MST algorithm using the blockmodel b measure ("COBLOC", Journal of Mathematical Sociology 8 (1981), 103-131), but did not test it. In general, MST algorithms are very fast but not noted for their accuracy. Of course the density measure could be used in slower and more accurate algorithms.

The third claim appears to cast doubt on the view that corporations choose to be interlocked to particular other corporations. However, there are several other possible explanations for Lattin and Wong's findings:

(1) Lattin points out (1981) that there are still further probes to be done of possible structural differences between the partitions of the observed and random graphs.

(2) Lattin (1981) also mentions that the similarity of the clustering traces was assessed only by "eyeballing" -- no measure of similarity was computed.

(3) The fact that the clustering traces are similar does not imply that the graphs necessarily have similar structures.

(4) The high-density-MST approach may be failing to find the true structure in the observed graph. (Heil and I have had very mixed results using an MST algorithm to find blockmodel partitions).

(5) The measurement of arcs may be inaccurate. Many corporate interlock researchers (e.g. Berkowitz and collaborators, Ornstein, Pennings, Mizruchi, Carrington) have found that how interlocks are measured strongly affects research findings: single interlocks may indeed not have structure; director-director ties may be less structured than those involving officers or executive board members; directional ties may be more structured than symmetric ones; intra-enterprise ties may have different characteristics from inter-enterprise ties, etc. Lattin and Wong's weighting scheme may be too simplistic to deal with this complexity.

Reference

Lattin, J.M. 1981. "Examining the interlocking structure of the corporate network." TECHNICAL REPORT #16. Cambridge, Mass.: Sloan School of Management, M.I.T.

(NETWORK NOTEBOOK continued from page 54)

World Futures Society -- Washington, D.C.

The WFS General Assembly will feature a network analysis panel, with Peter and Trudy Johnson-Lenz, Roxanne Hiltz, Robert Theobald, Jessica Lipnack, Jeffrey Stamps, Frank Feather, Ivan Frisch and Leigh Wright. Monday, July 19, 8:30 am. The Johnson-Lenz's will also do MIST workshops: Tuesday, July 20, at 6:30 pm and 8:00 pm. (For a description of MIST, see this issues' Computer Section.)

Association for Humanistic Psychology

The AHP's Annual Meeting will have a network panel including Mark Markeley, Liz Campbell, Jacky Doyle, Jack Drach, Rick Ingrasci, Jessica Lipnack, Jeffrey Stamps, Virginia Satir, Robert Theobald, and Peter and Trudy Johnson-Lenz. Wahington, D.C., July 24, 10:15 am. The Johnson-Lenz's will also play MISTY, July 25, 3:45 pm.

Stress - University of New Hampshire

The National Conference on Social Stress (11-12 Oct 82) will emphasize the sources and consequences of socially patterned stress in the family and in work and community settings. Contact John Theodore Kirkpatrick, Horton Social Science Center, University of New Hampshire, Durham NH 03824.

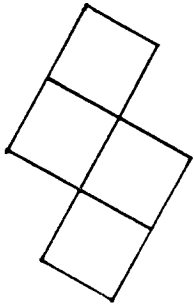
Introduction of Innovations Through Community Development - Seoul

This conference (4-6 April 83) will look at which innovations can be introduced through community development; what are the priorities in the field of innovations; where do the difficulties come from for

the introduction of innovations; must innovation be completely separated from the past; what are the use and efficiency of various techniques, etc. Information from International Association for Community Development, 179, rue de Débarcadère, B-6001 Marcinelle, Belgium, or from the Institute of Saemaul Undong Studies, Seoul, South Korea.

Networkers Unhorsed

Rumor has it that the 1984 Sunbelt Social Network conference will be held at a desert dude ranch. Meanwhile, things proceed for the 1983 conference at Laguna Beach, south of Los Angeles.



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- #35 LORNA R. MARSDEN, "The Labour Force" is an Ideological Structure: a guiding note to the labour economists." June 1982. ISBN 0-7727-2843-7 \$2.00

It is suggested, herein, that the concept "the labour force" may be the true case of an angel on the head of a pin (hence pin-money). \$2.00

- #36 ROBERT J. BRYM, MICHAEL W. GILLESPIE and A.R. GILLIS, "Anomie, Opportunity and the Density of Ethnic Ties: another view of Jewish Exogamy in Canada." July, 1982. ISBN 0-7727-2844-5 \$2.00

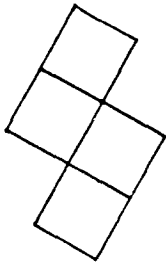
This paper assesses two views of Jewish exogamy in Canada. One focuses on anomie and the disruption of normative ties as the best explanation of out-marriage. The other is a structural explanation which holds that exogamy is largely a result of impaired opportunities to marry within the group. The data are drawn from Statistics Canada, with each province as the unit of analysis. The data are more consistent with the structural view of exogamy than with the anomie argument. A structural equation model illustrates the point.

- #37 NANCY HOWELL, "Kinship Networks of a Simple Society." July, 1982. ISBN 0-7727-284-3 \$2.00

In primitive societies, the social structure can be described as units - which are individuals - with sex and age characteristics, tied together by reciprocal ties of kinship, such as father-son, uncle-niece. These ties are created and disconnected by demographic processes: birth, death, marriage and divorce. The !Kung hunter-gatherers of the Kalahari desert illustrate the intersection of demography and kinship in simple societies.

- #38 BONNIE H. ERICKSON, "The Relational Basis of Attitudes." July, 1982. ISBN 0-7727-2846-1 \$2.00

While most studies attempt to explain individual attitudes in terms of individual attributes, this paper develops hypotheses explaining interpersonal attitude agreement in terms of social relationships. Considering one relationship at a time, agreement is predicted to be stronger for stronger ties with greater frequency of interaction and agreement is predicted to be more wide-ranging for more multiplex ties. Considering the overall structure of reasonably well-bounded networks, predictions vary depending on the kind of structural model chosen. For example, agreement should be greater within denser cliques or structurally equivalent blocks, or for people more closely located in a spatial model. The predictions are motivated by an integration of structural considerations with social comparison theory.



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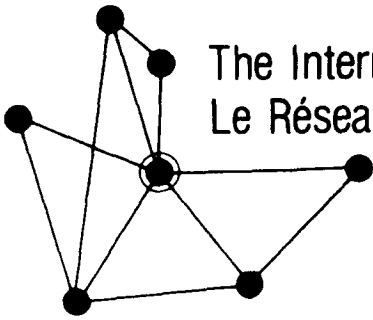
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epidemiology ethnicity exchange systems friendship gerontology health information flows
inter-organizational kinship macro-structure mental health methods migration occupational
organizational phenomenology political recruitment religion sex differences social services
stratification support survey research teaching technological impacts other _____

CURRENT NETWORK ACTIVITY _____

