Social networks in urban situations

Analyses of personal relationships in Central African towns

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J Clyde Mitchell

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Social Networks in Urban Situations

To Max Gluckman

point-source of our network

Preface

This symposium arose out of a set of papers read to a seminar for fieldworkers at the University College of Rhodesia and Nyasaland in 1964 and 1965. Partly by accident and partly by design, a number of young researchers came to be studying various aspects of social relationships in Zambia and Rhodesia, several of them in towns. The potentialities of social networks as a tool for examining the structure of social relationships in 'modern' societies had interested us for some time and it was inevitable that several of the papers should have been organized around this topic. These papers were read at early phases of the fieldwork of the people concerned so that they had the opportunity of taking back to the field the fruits of the discussions we had had on the notion of social networks.

That several of us had been interested in social networks is not difficult to explain. Several of the staff at the University College had had close associations with the Department of Social Anthropology and Sociology at Manchester where John Barnes had been a Simon Research Fellow at the time when he was studying Bremnes and where he had developed his paper, published in 1954, which provided the point of departure for Elizabeth Bott's seminal study. The notion of the social network had remained a constant topic of conversation in the department in Manchester ever since Barnes had read his first paper on the topic to a seminar group there. It took some time, however, before the idea began to influence field enquiries. 'Bill' Epstein's fieldwork in Zambia had been completed before he was appointed lecturer in the Department at Manchester. The papers in which he makes use of the notion were thus based on a re-analysis of his field notes rather than on the conscious use of the concept while he was collecting his field data. Others engaged in fieldwork at the time had been influenced by Barnes's paper and Bott's book so that Phillip Mayer and his colleague Pauw was already analysing their material using social networks. In 1958 when I started some work in the African residential areas of Salisbury I tried myself to collect material on the social networks of different African families, but for a variety of reasons, the attempt was not very successful. But I did not lose confidence in the potential usefulness of the notion particularly in urban studies. The publication of Phillip Mayer's book in 1961 justified this confidence so that it was understandable that when a number of fieldworkers gathered at the Rhodes-Livingstone Institute in Lusaka and the Department of Sociology at the University College in Salisbury, they should have been alive to the possibility of exploring the idea of social network.

The thinking that has gone into this symposium has been the result of much discussion and argument: it represents substantially a collective effort and involved more people than those who have published papers in the symposium. In particular Mr Roger Wood presented fascinating papers about the development of social relationships among African farmers in an area of recent settlement in which he made considerable use of the idea of social networks. Since this symposium was to be concerned specifically with urban studies, however, his papers could not be included here. The group, centred on the Department in Salisbury and the Institute in Lusaka, broke up after November 1965; they are now widely scattered. Further close discussion, except among a few of us who had landed up in Manchester, was no longer possible and some of the contributions have developed beyond the form in which they were originally submitted. There are therefore some discrepancies and differences of opinion from one paper to another.

Furthermore, the papers of Bruce Kapferer, Pru Wheeldon, David Boswell and Peter Harries-Jones were written while they were still engaged in fieldwork and before they had had an opportunity of analysing their material fully. Subsequent analyses may well present different emphases and almost certainly a more sophisticated use of the ideas first put forward here. They show a considerable advance, however, on empirical data on social networks at present available and for this reason alone, irrespective of the intrinsic interest of the analyses themselves they are worth publishing.

Individual authors have expressed their gratitude to those to whom they feel personally indebted. As a group we feel particularly indebted to Max Gluckman who has been the main inspiration in many direct and indirect ways to the studies that are presented here. The ideas had their origin in the Department he established in Manchester, they were developed there under his stimulating guidance and continue to do so today. We also owe a debt to our colleagues who formed part of the seminar in Salisbury and whose observations and contributions we have probably incorporated without knowing their origins. I refer to Sister Mary Aquina, Dr Kingsley Garbett, Mr Peter Fry, Dr Norman Long, Mr Blackson Lukhero, Mr A. Sommerfelt and Professor Jaap van Velsen. We are also indebted to the many colleagues at Manchester who commented on and criticized the papers which Bruce Kapferer, David Boswell and I read at seminars in March 1966. We are also grateful to the Publication Committee of the Institute for Social Research (formerly the Rhodes-Livingstone Institute) of the University of Zambia under whose auspices the book is being published and to Mrs Barbara Hulme who has done much of the typing involved.

J. Clyde Mitchell

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CHAPTER I

The Concept and Use of Social Networks[1]

by
J. Clyde Mitchell

Metaphorical and analytical usages

A colleague of mine who recently sent me a copy of a book he had written, playfully inscribed in it: 'And these three things abideth—class, role and network—and the greatest of these is network.' He was teasing me about our common interest in social networks but his joke, like all jokes, had a serious core to it. It is perhaps too early to say just how important the concept of social network will be in sociology. Insofar as British studies are concerned, the use of 'networks', as an analytical rather than a metaphorical concept, dates only from 1954. Since then there have been a few studies which have made extensive use of it but the idea is becoming more and more popular.[2] This popularity seems to have two quite different origins. The first derives from a growing dissatisfaction with structural-functional analyses and the search, consequently, for alternative ways of interpreting social action. The second is in the development of non-quantitative mathematical ways of rigorously stating the implications entailed in a set of relationships among a number of persons.

The image of 'network of social relations' to represent a complex set of inter-relationships in a social system has had a long history. This use of 'network', however, is purely metaphorical

[1] The notions in this introduction have been developed in close association with the contributors to this symposium and with others who have been members of seminar groups in Salisbury and Manchester. In particular I would like to thank Dr G. K. Garbett, Mr M. B. Lukhero, Mr A. Sommerfelt, Dr J. van Velsen and Mr Roger Wood who were members of the Salisbury seminar. I would like also to thank all those who took part in the Manchester discussions and particularly to Dr André Béteille who discussed his joint paper with Srinivas with me when he was in Manchester in 1966; to Dr G. K. Garbett and Professor J. A. Barnes who guided me on matters of graph theoretic.

[2] Frankenberg (1966: 242) writes for example, 'Another helpful analogy which I believe makes the first *major* advance in the language of sociology since *role* is that of "network" ' (Original italics).

and is very different from the notion of a social network as a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved. When Radcliffe-Brown, for example, defined social structure as 'a network of actually existing social relationships' (1952: 190), he was using 'network' in a metaphorical and not an analytical sense. His use of the word evoked an image of the interconnections of social relationships but he did not go on to specify the properties of these interconnections which could be used to interpret social actions except at the abstract level of 'structure'. Perhaps more often than not the word 'network' when used in sociological contexts is used in this metaphorical way.[1]

The danger in representing persons as nodes in a network, and the complex relationships between them as lines, had led Firth (1954: 4–5) to caution against taking a metaphor to be more than it is. Reader points out that as a metaphor the notion of 'network' subsumes, and therefore obscures, several different aspects of social relationships such as connectedness, intensity and status and role (1964: 22). But the metaphorical use of the word, however common it is, should not prevent us from appreciating that it is possible to expand the metaphor into an analogy, as Reader would say, and use the concept in more specific and defined ways.

One of the ways in which a metaphor may be transformed into an analytical concept is to identify the characteristics on which its heuristic usefulness rests, and then to define these characteristics in terms of general theory. Insofar as the idea of social networks is concerned it has been used in sociological writings in a variety of different ways ranging from the purely metaphorical, as we have already seen, to the precise and restricted way required in mathematical graph theory.

In graph theory a finite set of points linked, or partly linked, by a set of lines (called arcs) is called a *net*, there being no restriction on the number of lines linking any pair of points or on the direction of those lines. A *relation* is a restricted sort of net in which there can only be one line linking one point to another in the same

[1] In the same way that MacIver uses 'web' in the definition of society as the web of social relations (MacIver and Page, 1962: 5). A recent example of the non-specific use of the notion of network is in a paper by Adams (1967).

direction, i.e. there are no parallel arcs. A *digraph* is a relation in which there are no loops, that is there are no lines which link a point back to itself directly without passing through some other point. A *network* in graph theory is a relation in which the lines connecting the points have values ascribed to them, which may or may not be numerical.

In sociological writings the word 'network' may be applied indiscriminately to any of these somewhat different structures distinguished in graph theory. When Beshers and Laumann (1967) talk of 'a network approach to the study of social distance' in a recent paper for example, they are concerned with mobility as the passage of individuals through paths leading from an initial occupational category through intermediate steps to some terminal category. They use the transition probability of moving from one category to another, to represent a measure of the gap between the occupations. This is in accord with the graph theory definition of a network.

The notion of the social network that Barnes (1954) introduced in his study of a Norwegian island parish approximated to that of a digraph in that the connections between the persons were thought of in terms of single links (i.e. there were no parallel arcs) and loops were plainly inapplicable but there was no limit to the number of persons involved. Mathematical graph theory is not restricted to finite nets but in sociology, as we shall argue later, it is usually necessary for pragmatic reasons to work with an identifiable set of persons and the relationships that exist among them. The notion of network used by Bott (1957), Phillip Mayer (1961), Epstein (1961), Pauw (1963) and Adrian Mayer (1966) is closer to the idea of a digraph since they restrict the persons in a given network to a finite number and they do not take particular account of the multiplexity of links of the persons in the network. The contributors in the book accept the finite nature of the network and also pay special attention to the multiplexity of links. For them, a social network is a net in which there are no loops but in which the arcs may be given values. In other words it is thought of as being finite, but there may be several links in either direction between the persons in the network and these links may be accorded different qualities or values.[1]

[1] F. E. Katz (1966: 203) defines networks as 'the set of persons who can get in touch with each other' and contacts as 'the individuals who comprise a network'

The interest in these studies focuses not on the attributes of the people in the network but rather on the characteristics of the linkages in their relationship to one another, as a means of explaining the behaviour of the people involved in them. This concept of a social network is similar to that of a sociogram as used by Moreno and his followers. Studies of sociograms developed mainly by social psychologists took such phenomena as clique formation, leadership, or task performance as their main problems (Festinger, Schachter and Back (1950); Cartwright and Zander (1960)). In these analyses they related the structure of friendship choices in a group to leadership or the performance of tasks. Out of these studies developed the identification of particular patterns of linkages—for example, the star, the wheel, the chain, the isolate, which could be used in the explanation of how test subjects performed the tasks they were set.

The application of sociometric methods to sociological field studies has been developed particularly by Loomis and his colleagues in the study of rural social systems (1953, 1967). There, is however, a difference between these studies which were based primarily on formal questionnaires and the studies which used the network concept as developed by Barnes and which have been based predominantly upon participant observation.

Another aspect of network studies developed by the social psychologists has been that of communication. Here the interest has been in the way in which rumours, ideas or information in general diffuse among a set of people. The chains of linkage along which the information can flow here have central importance. An example of the application of these techniques to a field problem is the study by Coleman, Katz and Menzel (1957) of the diffusion of knowledge of new drugs among a set of physicians in an American city.

The use of groups of subjects in experimental settings together with questionnaire methods to obtain data has led to the quest for methods of rigorous mathematical analysis of the characteristics of the linkages among the subjects.[1] These concerns, particularly

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they are the members of the network set. It seems more in keeping with the common use of the word 'network' to refer to a network as the set of *linkages* among persons and contacts as the set of persons connected by these linkages.

[1] Procedures for analysing sociomatrices are discussed, for example in Zeleny (1941), Bavelas (1948), Luce and Perry (1949), Festinger (1949), Kephart

in respect of the flow of communication among a set of people who may know each other, have influenced the way in which sociological graph theory has developed. Witness, for example, the concern in digraph theory with directedness, connectedness, reachability, transmitters, relayers and receivers, strengthening, neutral and weakening points (Harary, Norman and Cartwright (1965)).

Barnes (1954), however, introduced the idea of a social network to describe an order of social relationships which he felt was important in understanding the social behaviour of the parishioners in Bremnes and which was not subsumed by structural concepts such as groups based on territorial location or on occupational activities. He later used the concept to draw the distinction between the type of social network which would characterize a community like that of Bremnes and the type which would be characteristic of a classical tribal society. The interest here is in the morphological features of the network itself and their implications for social behaviour rather than in the flow of communications through the network, though communication-flow is not excluded by Barnes's approach. This step whereby the relationship of the linkages in a network to one another is taken to be a salient factor in interpreting social action is one of the steps whereby the metaphor of a social network is expanded into an analogy and made analytically useful.[1]

This was demonstrated particularly in Bott's study of conjugal roles in London families (1955, 1956, 1957). In this study she correlated the morphological characteristics of the networks of

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(1950), Luce (1950), Beum and Brundage (1950), Harary and Ross (1937), Coleman and MacRae (1960), Beaton (1966) and particularly Harary, Norman and Cartwright (1965).

[1] The significant point here is that in using the idea of 'networks' to interpret the social behaviour of any particular individual the behaviour of other people with whom he is not directly in contact must be taken into account. Nadel (1957: 16) when discussing the idea of 'network' expresses the notion thus: 'Let me stress that I am using the term . . . in a technical sense. For I do not merely wish to indicate the "links" between persons; this is adequately done by the word relationship. Rather, I wish to indicate the further linkage of the links themselves and the important consequence that, what happens so-to-speak between one pair of "knots", must affect what happens between other adjacent ones.' I personally would modify the 'must' to 'may' in his statement to avoid the implication of necessary functional integration.

the families she was studying with the allocation of conjugal roles within the family. The attractive feature of Bott's study was that her dependent variable (conjugal roles) was not patently connected with her independent variable ('closed' or 'open' networks of the couples). The elucidation of this unexpected relationship led to a set of illuminating hypotheses about conjugal role behaviour which have stimulated several subsequent enquiries (Udry and Hall (1965), Nelson (1966), Aldous and Straus (1966), Turner (1967)).

It is unfortunate, however, that this striking and stimulating study should have had the effect of associating the notion of social networks almost exclusively with conjugal roles. Where network ideas have been used specifically, they have been used to test Bott's original finding instead of to extend their application to other types of sociological problem to which, perhaps, their relevance appeared to be more obvious.[1] Several British social anthropologists, however, were able to see the significance of the ideas suggested by Barnes and developed by Bott, and have applied them to somewhat different problems.

Phillip Mayer (1961, 1962, 1964) and his colleague Pauw (1963), for example, specifically used the idea of social network to elucidate the behaviour of different types of migrants and of settled townsmen in the South African town of East London. They have concentrated on the important point made by Bott, that the behaviour of people who are members of a 'close knit' group of friends is likely to be considerably influenced by the wishes and expectations of these friends as a whole, while those whose acquaintances do not know one another may behave inconsistently from time to time without involving themselves in embarrassment.

Epstein (1961)[2] on the basis of an examination of the social contacts of one of his African research assistants over a few days, suggested that Bott's division of social networks into 'closed' and 'open' types could be applied to different parts of a single personal network, the relatively 'closed' parts forming an effective network and the relatively 'open' part an extended network. He used this idea to explain how the norms and values of the local élites in a town percolated into the ranks of the non-élites with whom the

[1] Williams (1963) is an exception for although he deals mainly with kinship he clearly recognizes the importance of other types of networks in the rural community he studied.

[2] Reprinted at p. 77 below.