The Focused Organization of Social Ties

Scott L. Feld

The American Journal of Sociology, Vol. 86, No. 5 (Mar., 1981), 1015-1035.

The Focused Organization of Social Ties[1]

Scott L. Feld
State University of New York at Stony Brook

Sociologists since Simmel have been interested in social circles as essential features of friendship networks. Although network analysis has been increasingly used to uncover patterns among social relationships, theoretical explanations of these patterns have been inadequate. This paper presents a theory of the social organization of friendship ties. The approach is based upon Homans's concepts of activities, interactions, and sentiments and upon the concept of extra-network foci organizing social activities and interaction. The theory is contrasted with Heider's balance theory. Implications for transitivity, network bridges, and density of personal networks are discussed and presented as propositions. The focus theory is shown to help explain patterns of friendships in the 1965–66 Detroit Area Study. This paper is intended as a step toward the development of integrated theory to explain interrelationships between networks and other aspects of social structure. Implications for data analysis are discussed.

Sociologists have long recognized the importance of patterns in networks of relations that connect individuals with each other. Simmel (1955) described modern society as consisting of loosely connected social circles of relationships. Granovetter (1973) has indicated the general significance of these social circles for communication, community organization, and social conflict. Various studies have supported this picture of the essential patterns in social networks, including Moreno's sociometry (1953), Milgram's "small world" experiments (1967), and Kadushin's observations (1966).

Unfortunately, the study of social networks has often been carried out without concern for the origins in the larger social context. Most network analysis ends with description and labeling of patterns; and when explanations of patterns are offered, they frequently rely upon inherent tendencies within networks to become consistent, balanced, or transitive. As a consequence of such atheoretical and/or self-contained network theoretical approaches, data are collected and data analysis techniques are devised for

social ties alone, without taking into account individual characteristics or other social structures.

Recent studies have taken the important step of beginning to investigate the extra-network sociological bases for friendship ties (e.g., Fischer et al. 1977; Verbrugge 1977). However, in order to explain patterns in social networks, we need not look at all causes of friendship but should concentrate our attention on those aspects of the extra-network social structure that systematically produce patterns in a social network. My purpose in this paper is to present the basic structure of a theory that can begin to explain the origins of the ubiquitous loosely connected social circles.

The theory is based upon the idea that the relevant aspects of the social environment can be seen as foci around which individuals organize their social relations. A focus is defined as a social, psychological, legal, or physical entity around which joint activities are organized (e.g., workplaces, voluntary organizations, hangouts, families, etc.). As a consequence of interaction associated with their joint activities, individuals whose activities are organized around the same focus will tend to become interpersonally tied and form a cluster. The task of the network analyst is the investigation of those social structural characteristics that serve to organize the activities underlying the social ties of a network. Such analysis requires information about each individual's relations to extra-network foci. Without such contextual information, conclusions about networks and their consequences are likely to be incomplete and even misleading.

In this paper, I will explicate the theory and demonstrate how it may be applied. The paper is organized as follows: (1) the present theoretical approach will be described and contrasted with balance theory; (2) the nature of foci will be considered; (3) the process by which loosely connected clusters of ties arise from focused social interaction will be discussed; (4) focus theory implications for transitivity, local bridges, and density of personal networks will be described; (5) formal definitions, assumptions, and propositions will be specified; (6) focus theory predictions will be examined using the analysis of the 1966–67 Detroit Area Study data presented by Fischer et al. (1977); and (7) a focus theory approach to network data analysis will be presented.

THE SOCIOLOGICAL PROCESS OF FOCUSING SOCIAL NETWORKS

In the focus theory approach, a social context can be seen as consisting of a number of different foci and individuals, where each individual is related to some foci and not to others. A group's activities are organized by a particular focus to the extent that two individuals who share that focus are more likely to share joint activities with each other than two individuals who do not have that focus in common.

The present theory is built upon Homans's (1950) social elements of activity, interaction, and sentiments. Activities are organized around foci and, consequently, so are interactions and sentiments. It is not new to suggest that ties are organized around extra-network characteristics (e.g., Laumann 1973; Kadushin 1966). However, there has been no general consideration of the nature of foci and the processes through which relations to these foci become patterns in networks.

Davis (1963) recognized that interpersonal attraction theorists, exchange theorists, and others shared a basic abstract notion of the social organization of ties that implies clustering at the level of group structure. He suggested that balance theory could be used as a single approach to integrate propositions derived from these diverse sources. In some ways, the present theory is similar to Heider's (1946) original formulation of balance theory, which emphasized that sentiments among individuals tend to become consistent with the relations that the individuals have to other objects. However, balance theory and the present theory are based upon different conceptions of the underlying process. Balance theory is essentially psychological: the process takes place within the heads of the actors. The present theory is essentially sociological: the process depends upon the behaviors and interactions of individuals in a social context.

Two specific comparisons should be emphasized. (1) Although Heider himself intended balance theory to include a broad range of types of relationships to "objects" (including similarity, proximity, and membership), Newcomb (1961), Davis (1963), and most subsequent balance theory researchers have emphasized only the affective relations, that is, relations in which two individuals are jointly favorable or unfavorable toward an object, where the object is specifically an attitude or another person. My concept of focus is similar to Heider's original formulation of relations to a social object which could include "working in a place," "belonging to a group," etc. The nature of these relations to objects vary; yet they are abstractly similar in that they may be considered relations to generally defined foci; and they therefore have similar implications for group structure. (2) Heider and subsequent balance theorists have suggested that changes in sentiments are the direct result of cognitive pressures toward making sentiments consistent with relations to objects. Relying upon Homans's (1961) behaviorism in the context of the social structures of foci, I am suggesting that shared relations to foci create positive sentiments indirectly through the generation of positively valued interaction (i.e., shared relations to foci bring people together in a mutually rewarding situation which encourages the development of positive sentiments). The focus theory's structural/behavioral process does not require that the participants have any understanding whatsoever of the underlying focusing structures and processes.

The psychological approach of balance theory has sometimes led researchers to erroneous conclusions. They have tried to explain the extent of clustering in a network as a consequence of the strength of pressures toward cognitive consistency (e.g., Leinhardt 1972; Hallinan 1974). I suggest that clustering will most often be a result of the tendency of the foci to organize exclusive social interaction. Accordingly, in order to understand the patterns that are found in a social network, it is necessary to investigate: (1) the sociological nature of the foci, (2) the distribution of the individual relations to the foci, and (3) the degree to which the foci organize valued social interaction among the individuals. For example, in an elementary school class where reading groups organize activities, one would need to determine the number of members of each reading group and the extent to which these groups organize activities.

THE NATURE OF FOCI

It is important to emphasize that foci tend to produce patterns of ties, but all ties do not arise from foci. A relationship between two individuals does not necessarily arise from activities that are organized around a focus. People may meet "by chance" or as a result of adjacency along some continuum; neither of these situations includes a focus. The central point of the focus theory is that no matter what proportion of ties arise from foci, the focused organization has structural significance.

Foci may be many different things, including persons, places, social positions, activities, and groups. They may actively bring people together or passively constrain them to interact. In Homans's (1950) original formulation, similarity brings individuals together in interaction and sentiments; but similarity is not sufficient to account for the clustered arrangement of ties that we are trying to explain. This can be seen by considering that if individuals are distributed along a continuum, then similarity leads to a chain of interaction in which each individual interacts with those adjacent on either side. If there are foci, on the other hand, then all those related to a particular focus tend to form a separate cluster. So the present theory is dependent upon the existence of such discrete entities to explain the clusters that are found. (As discussed later, the loose connections between clusters may be based upon less constraining foci, or not based upon foci at all.)

In this respect, the present theory bears some resemblance to the discussions of Lazarsfeld and Merton (1964) in their consideration of friendship formation, and Blau (1978) in his theory of social structure; these discussions stress the importance of the similarity of discrete categories of attitudes, attributes, and social positions in the formation of social ties. Certainly, where frequency of interaction is uniform, such similarities may

lead to the selective development of ties. However, the point of the current paper is that interaction is typically focused rather than uniform, and unless the similarities of attitudes, attributes, and social positions are translated into the structuring of focused interaction, their selective effects on tie formation will be overwhelmed by structural features that do focus the interaction. Similarities need not lead to focused interaction, and focused interaction can exist apart from similarities of individual characteristics. The present theory stresses the focused organization of the social context rather than similarities of individual characteristics.

Variations among Foci

By the definition of a focus, it is always the case that two individuals who share a focus are more likely to share joint activities than two random people. However, all individuals who share a focus do not necessarily interact with each other very much or very often. For foci where everyone is forced to interact much and often (e.g., families), all of the individuals associated with that focus will be tied to each other; but for foci that are less constraining on interaction (e.g., city neighborhoods), only a slightly higher proportion of individuals will be tied than would be tied in the general population. In general, the more constraining a focus, the greater is the likelihood that two individuals associated with that focus will be tied. A focus may involve very little constraint, but where there is no constraint at all, there is no focus.

Although all foci organize the activities of a limited number of people, they vary in size. Small foci organize the activities of very few people, while large foci organize the activities of many people. In general, larger foci will be less constraining, because it is difficult to arrange for many people to have frequent joint activities. However, there may be small foci that involve little constraint and large ones that involve much.

The structure of a network is dependent upon the constraint and size of the underlying foci. Highly constraining foci will create close-knit clusters of various sizes depending upon the size of the foci.

Developing New Foci

In order to understand network structure fully, it is important to remember that the formation of social networks and the relations to foci are interdependent. Once there is a tie between two individuals, these individuals will tend to find and develop new foci around which to organize their joint activity. The structural approach underlying the focus theory suggests that the more severe the restrictions on time, effort, and emotion, the more individuals will experience pressures to combine their interactions with vari-

ous members of their network by finding and developing new foci around which to bring more of them together. This will be facilitated if the foci upon which the original ties are based are more "compatible," that is, involve similar types of activities and social interactions (e.g., neighborhood and family are typically more compatible than workplace and childhood neighborhood). The more compatible the foci, the more likely it is that the individual can find or invent some focus that can organize joint activities.

Where there are reasonably compatible foci underlying ties among many individuals, such loose-knit sets of people will tend to develop new foci that organize activities among themselves. Thus, ceteris paribus, the more ties within a set of individuals, the more likely it is that a common focus will be developed, and, consequently, previously untied pairs within the set will become tied.

Balance theorists offer a cognitive explanation of the tendency for indirect ties to lead to the development of direct ones. They suggest that psychological tendencies toward consistency lead individuals to bring members of their network together. Balance theory thus implies that the factors determining whether direct ties will develop are psychological characteristics of the individuals. The focus theory suggests that the factors determining whether direct ties will develop are characteristics of the social situation and the compatibility of the foci underlying the indirect connections.

THE FOCUSED ORGANIZATION AND LOOSELY CONNECTED CLUSTERS

There can be a range of complexity in the focused organization of social ties, and I will begin with consideration of the simplest. A "simply focused" situation is an ideal type in which there are multiple foci, but each individual is related to a single focus. In this type of situation, interactions and sentiments tend to be within clusters organized around each focus. Any interactions and sentiments between individuals associated with different foci are not based upon foci and provide "random" links between the clusters.

Sociometric studies of relatively small groups frequently show clustered arrangements of ties that suggest the simple focus model. Some of these situations can provide clear examples of types of foci. Consider the finding of Festinger, Schachter, and Back (1950) that friendships were largely confined to spatially segregated courts in a housing project, leading to the clustered arrangement of the simple focus model. In this case, the architects designed the courts to be the foci of activity and interaction. However, even if places of residence are continuously arranged, neighborhoods are often foci separated by large streets, railroad tracks, etc.; and barriers may be solidified through legal divisions separating school districts, water districts, and other jurisdictions (Logan 1978).

Most situations are more complex than simply focused situations, because each individual's activities and interactions are organized around a number of different foci simultaneously. The interpenetration of clusters can have important consequences for conflict and cooperation (Coleman 1957), and the patterns of interpenetration may be the direct result of the complex, focused organization of ties. The particular purpose of this paper is to explain the loose connections typically found between clusters. Any focus is likely to include individuals who are associated with other foci, and thus ties associated with one focus may serve as links in a chain between individuals associated with other foci. The number of alternative paths between these other foci will depend upon the nature of the linking focus. The larger and more constraining the linking focus, the more alternative paths there will be. Therefore, "loose" connections between clusters (i.e., few alternative paths) are expected wherever a connecting focus is relatively small and/or weakly constraining. In the extreme case, where a tie is not based upon any focus, it is most likely to be the unique path between separate clusters.

The situation may be represented using a variation of Ptolemy's circle-upon-circle model of planetary motion: here each circle contains all of the individuals associated with a particular focus. Each individual alternates between participation in multiple orbits, and so each individual is the intersection of orbits. As shown in figure 1, a social path from one individual to any other may be traced by following one of the orbits of the first person (A) to another person (B), and then following another orbit to another individual (C), etc., until the target individual (E) is reached. (Note that fig. 1 represents a simple situation. For many situations more dimensions and oddly shaped orbits may be required to show both that three or more orbits may intersect at one individual and that two orbits may intersect at three or more different individuals.) Milgram (1967) suggests that for
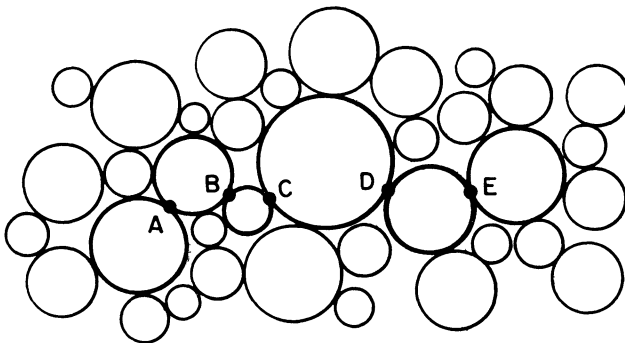

FIG. 1.—A schematic representation of social circles with individuals as the intersections.

any initiator and target in the United States, an average of only about five such orbits would need to be followed.

The following discussion considers the implications of the focused organization of social ties from three perspectives: (1) The extent of clustering is equivalent to the extent of "transitivity" of mutual relationships (Davis 1967; Holland and Leinhardt 1971). (2) Local bridges are the extreme form of critically important connections between clusters (Granovetter 1973). (3) The density of personal networks indicates the extent to which individuals are contained within clusters or are intersections between clusters. The network position of individuals can have important implications for each person (e.g., Bott 1957).

FOCUS THEORY IMPLICATIONS

Transitivity

Researchers have documented the tendency for two individuals who are both tied to a third to also be tied to each other. This is called a tendency toward transitivity. Transitivity has sometimes been more broadly defined as a constraint upon asymmetric as well as symmetric ties (Holland and Leinhardt 1971), but the present discussion concerns mutual relationships, and Davis (1967) has shown that the condition of transitivity of symmetric ties is identical to the structure of clusters (i.e., where all clusters are completely connected, and no clusters are connected with each other).

The focus theory suggests the conditions under which transitivity should be expected, and thereby the conditions under which clusters are formed. The theory suggests that two individuals who are both tied to a third may share a focus with the third; and if they share the same focus with the third person, then they share that with each other and are likely to be tied to each other. The more foci that they share with the person, and consequently with each other, the more likely it is that they will be tied with each other. The more constraining are the foci that they share with the person, and consequently with each other, the more likely it is that they will be tied with each other. Thus, the focus theory implies that the main causes of transitivity are the number and types of preexisting foci underlying the relationships.

In general, each individual who is related to two or more foci can expect that many of his or her ties will be to others who are not tied to one another. As discussed in an earlier section of the paper, when an individual is confronted with the typical situation of ties to disconnected others, he or she may seek to change this situation by creating and/or finding a new focus around which to organize his or her joint activities with the others. In this way, individuals create transitivity over and above the transitivity

induced by focused sources of ties. Individuals are most likely to engage in such creative network manipulation in situations where relationships involve a high proportion of their time, effort, and emotion, and where the relationships are based upon compatible foci.

Previously, transitivity has been studied as a consequence of balance theory, whereby researchers have suggested that tendencies toward transitivity were the result of individuals seeking to make their ties cognitively consistent. The main focus theory prediction is that transitivity will be present specifically where ties are based upon highly constraining shared foci and/or where structural pressures lead actors to create additional transitivity.

Local Bridges

Granovetter (1973) has explained how ties which connect two individuals who do not share ties to other individuals are important for communication and community organization; such ties are called local bridges. Where there is perfect transitivity, there can be no local bridges, because transitivity requires that every two individuals who are tied to each other must also be tied to all of the same others. Local bridges will be likely where transitivity is unlikely.

By definition, the more others to whom two people share ties, the less bridging is a tie between them. Ties based upon foci are less bridging than other ties, because the two people are likely to share ties to others associated with that focus. If a tie is based upon a focus, then the larger the focus, the more ties to others will be shared. If a focus of a given size underlies the tie, then the more constraining the focus, the more others will be tied to both of the individuals. The more foci the two individuals share, the more other people are likely to be tied to both of them. In summary, the fewer, less constraining, and smaller the foci underlying a tie, the more bridging is the tie; and ties not based upon foci are most bridging. Over time, a tie may lose its structural significance as a bridge if one or both of the individuals find or develop a focus that organizes their joint activities with others, and so leads the two individuals to share ties to others. A tie is most likely to remain bridging if it involves little time, effort, and emotion (so the individuals will feel little pressure toward combining their activities with others), and if the underlying focus is incompatible with other foci (e.g., a married man will be unlikely to introduce his friend from a singles bar to his family or to his work associates).

Granovetter describes the counterintuitive finding that highly significant bridging ties tend to be "weak" ties. He offers a number of definitions of strength/weakness based alternatively upon emotional content, interaction, and functions of a tie. To the extent that Granovetter offers any expla-

nation of his finding, he suggests that it is the nature of a strong tie, involving much emotional interaction, that tends to bring both partners in the tie into joint contact with others. The focus theory also implies that ties involving high degrees of interaction and emotion are likely to be those that encourage the finding and development of new foci. However, the focus theory emphasizes that many ties are based upon preexisting foci. The more constraining is an underlying focus, the stronger a tie is likely to be by any of the available definitions. As discussed above, the more constraining is an underlying focus, the less bridging is a tie. It follows that those weak ties that are based upon less constraining foci or upon no foci will be found to be bridging. Thus, the focus theory provides theoretical explanations of the "bridgingness" of weak ties in terms of their focused origins. The theory allows prediction of which weak ties will be most bridging, based upon the underlying foci.

Density of Personal Networks

The density of personal networks is the extent to which the associates of a particular individual are tied to one another. If there is perfect transitivity, then all of an individual's associates know one another, and the personal network is completely dense. On the other hand, if every tie to an associate is a local bridge, then none of the individual's associates know one another, and the density is zero. If an individual has a completely dense network, then the individual is contained in a cluster of individuals; but if the network has low density, then the individual provides a link between others who are otherwise disconnected and so is an intersection of otherwise disconnected social circles. Bott's (1957) research finding that the density of personal networks affects conjugal roles has stimulated interest in this area (e.g., Cubitt 1973; Kapferer 1973). Nevertheless, the causes of the density of personal networks are not well understood. The focus theory provides some clear guides to particular types of factors that make it likely that personal networks will be dense. If individuals associate with many different foci, then it is unlikely that their networks will be dense, because the individuals drawn from different foci will be unlikely to know one another. Boissevain (1968) has described the focused organization of personal networks in terms of each individual having his or her networks segmented according to "activity fields." Cubitt (1973) has empirically investigated some bases of these sectors. The focus theory explicates this basic idea.

If associates are drawn from the same focus, then the more constraining the focus, the greater will be the density of the individual's personal network. If an individual shares many foci with each associate, then it is likely that those associates will share at least some foci with each other and conse-

quently be tied to each other. The number of foci that two people share is sometimes referred to as the "multiplexity" of a relationship. However, some researchers use the word "multiplexity" to indicate the multifaceted nature of the exchange relationships between two people (see Verbrugge 1979). A pair of individuals who share many foci are also likely to have multifaceted exchange relationships, but an analytical distinction should be maintained. The focus theory suggests that the primary aspect of multi-plexity affecting density is the sharing of foci of activity and interaction, rather than merely having multifaceted exchange relationships.

However, multifaceted exchange relationships may involve a large amount of time, effort, and emotion. The focus theory implies that where relationships involve a high proportion of an individual's time, effort, and emotion, that individual will try to develop foci that bring his or her asso-ciates together in a dense personal network. The individual will be most successful in developing such foci where the original foci are compatible with one another.

FORMAL DEFINITIONS, ASSUMPTIONS, AND PROPOSITIONS OF THE FOCUS MODEL

The focus model not only accounts for the frequently observed patterns of clustering in networks, but also specifies a process through which the pat-terns arise and are maintained.

In order to clarify the assumptions and implications of the theory, it may be helpful to express them more formally. It is impossible to capture the full implications of a theory in a short list of propositions; so the following list is intended only to indicate the nature of a formal presentation of the theory with a few examples of applications.

First, I will provide definitions and assumptions, and then a list of deri-vations from the theory. Some of these will overlap, and others will contra-dict derivations from other theories.

Definition 1.—A "focus" is any social, psychological, or physical entity around which joint activities of individuals are organized.

Definition 2.—A focus is "constraining" to the extent that it leads each pair of individuals to devote time and energy to participating in joint ac-tivities associated with that focus.

Definition 3.—Two foci are "compatible" with each other to the extent that the types of activities and interactions that they involve are similar.

Definition 4.—A focus is "smaller" (larger), the smaller (larger) the number of people who share it.

Assumption 1.—There exist foci in the social world.

Assumption 2.—(Borrowed from Homans) The more frequently indi-

viduals have valued social interaction with each other, the more likely it is that they will develop positive sentiments toward each other.

Assumption 3.—Individuals can find or invent a focus around which to combine activities of various others with whom they are tied. A schematic representation of the dynamic process described by the theory is presented in figure 2.

I will list five basic focus theory propositions, predictions of the likelihood of ties between dyads based upon the number and types of foci that they share. Then the same five propositions will be adapted to make predictions concerning transitivity, bridging, and density of personal networks. These propositions have been informally discussed and explained in the preceding sections and are formally stated here to avoid theoretical ambiguity and to allow for empirical testing.

Basic Propositions

Proposition 1.—Two individuals who are related to the same focus are more likely to be tied than two people not so related.

Proposition 2.—If two individuals are related to the same focus, the more constraining the focus, the more likely it is that they will be tied.

Proposition 3.—The more different foci that two individuals share, the more likely it is that they will be tied.
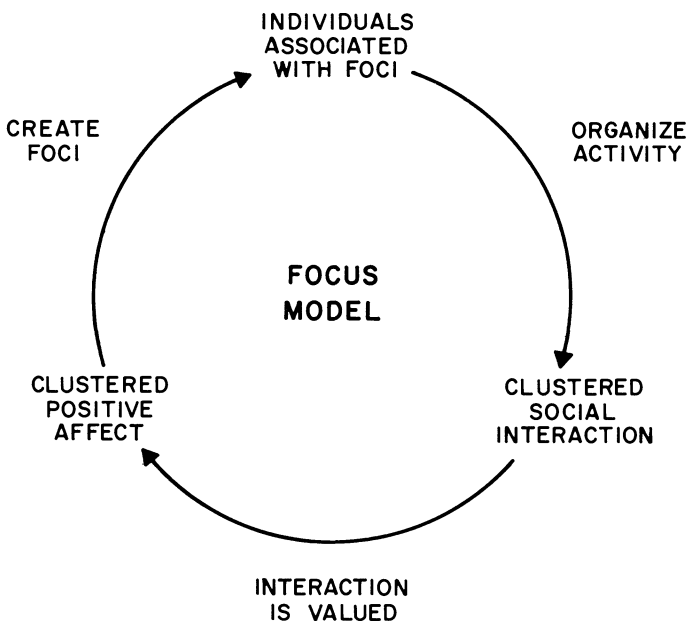

Fig. 2.—The dynamics of the focus model

Proposition 4.—Where two individuals are each tied to a third, based upon a different focus, the more compatible are these foci, the more likely it is that the two individuals will be tied to each other.

Proposition 5.—Where two individuals are each tied to a third, based upon a different focus, the more time, energy, and emotion that these ties involve, the more likely it is that the two individuals will be tied to each other.

Transitivity Propositions

Definition 5.—If *A* and *B* are tied, and *B* and *C* are tied, then the triad consisting of *A, B,* and *C* is transitive if *A* and *C* are tied.

Proposition 1T.—If *A* and *B* are tied, and *B* and *C* are tied, then transitivity is more likely if *AB* and *BC* are based upon the same focus.

Proposition 2T.—If *A* and *B* are tied, and *B* and *C* are tied, based upon the same focus, then transitivity is more likely the more constraining the focus.

Proposition 3T.—If *A* and *B* are tied, and *B* and *C* are tied, then transitivity is more likely the more foci that *B* shares with both *A* and *C*.

Proposition 4T.—If *A* and *B* are tied, and *B* and *C* are tied, based upon different foci, then transitivity is more likely the more compatible the two different foci.

Proposition 5T.—If *A* and *B* are tied, and *B* and *C* are tied, based upon different foci, transitivity is more likely the greater the proportion of time, energy, and emotion that these ties involve for *B*.

Bridging Propositions

Definition 6.—The smaller the number of others with whom *A* and *B* share ties, the more bridging is a tie between *A* and *B*.

Proposition 1B.—Ties based upon foci are less bridging than other ties.

Proposition 2B.—Ties based upon foci are more bridging the less constraining and the smaller the foci underlying the ties.

Proposition 3B.—Ties based upon foci are more bridging the fewer foci underlying the ties.

Proposition 4B.—Ties based upon foci are more bridging the less the underlying foci are compatible with any other foci.

Proposition 5B.—Ties are more bridging the smaller the proportion of the individuals' time, effort, and emotion that they involve.

Personal Network Density Propositions

Definition 7.—The density of an individual's personal network is the proportion of pairs of the individual's associates who are tied to one another.

Proposition 1D.—The fewer foci from which an individual draws associates, the denser will be the personal network.

Proposition 2D.—The more constraining are the foci from which associates are drawn, the denser will be the personal network.

Proposition 3D.—The more foci that the individual shares with each associate, the denser will be the personal network.

Proposition 4D.—The more compatible with one another are the various foci from which an individual draws associates, the denser will be the personal network.

Proposition 5D.—The greater the proportion of the individual's time, effort, and emotion that the ties involve, the denser will be the personal network.

EMPIRICAL SUPPORT FOR THE FOCUS THEORY

The purpose of this section is not to provide critical tests of specific propositions of the focus theory, but to use a set of data to illustrate that the focus theory can provide accurate predictions concerning the density of personal networks.

Because researchers are usually interested in either the structure of networks or the origins of ties, but not both, data that are appropriate for testing predictions from the focus theory are rare. Fortunately, data from the 1965–66 Detroit Area Study contain information on the origin of ties and the structure of networks. However, these data have other shortcomings. First of all, they were collected on separate networks of individuals by taking all of the information about origins and structure from one individual without any corroboration from the others. Second, each individual reported "three best friends," while most networks contain many more friends as well as many other types of ties to others. Third, each individual was asked to report which of the best friends knew each other well, which is only an indicator of the existence of a tie between the others. Nevertheless, these data provide some preliminary results in support of the focus theory. Laumann (1973) analyzed these data originally, and Fischer et al. (1977) did extensive reanalysis. I will rely upon Fischer et al.'s published analysis.

Specifically, I will examine the structure of personal networks and show that the focus theory provides accurate predictions about this structure. The data, consisting of information on the three best friends of each respondent, include the predominate source of the ties (i.e., family, neighborhood, work, voluntary organizations, etc.) and the number of different sources from which an individual draws the friends (from one to three). The set of ties is also characterized by the average intimacy and the average frequency of contact with the individual. Finally, the data also include

the number of interrelations among the three friends—the "density" of the individual's network. As Laumann reports, there are four possible patterns of interrelations, which are shown and labeled in figure 3. The propositions concerning density of personal networks will be examined in order.

Proposition 1D.—The fewer foci from which an individual draws associates, the denser will be the personal network. In these data, Fischer determined the number of different sources from which each individual's three best friends were drawn and found that this was related to density as expected (gamma = −.48). In addition, he reported some of the information from the cross-tabulation, as shown in table 1. Single-source networks were much more likely to be fully dense (57%) than three-source networks (17%). Fischer also reported that whether the three friends "get together as a group" was highly related to the density of the network, as would be intuitively expected and specifically predicted by the focus theory. Since "sources" are causally prior to density, the relationship between number of sources and density provides strong evidence that the focused organization of the personal network is a determinant of the density of the network. The relationship between getting together as a group and density could arise from two complementary causal processes: sharing of foci leading to
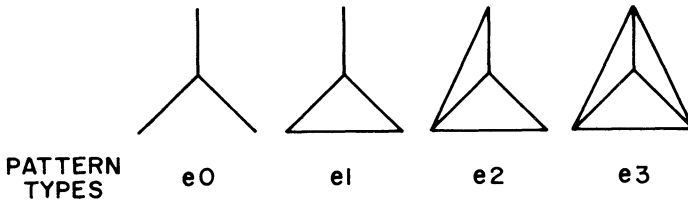

| PATTERN TYPES | e 0 | e 1 | e 2 | e 3 |

FIG. 3.—Patterns in personal networks

TABLE 1

DENSITY OF PERSONAL NETWORKS
RELATED TO NUMBER OF
DIFFERENT SOURCES

NETWORK TYPE	N DIFFERENT SOURCES (%)	
	1	3
e_0, e_1, or e_2	43	83
e_3*	57	17

NOTE.—Gamma = −.48 for the uncollapsed table. Percentages total 100; this is as complete as it is possible to reconstruct from the statistics reported in Claude S. Fischer, R. M. Jackson, C. A. Stueve, K. Gerson, and L. M. Jones, *Networks and Places: Social Relations in the Urban Setting* (New York: Free Press, 1977).
* Fully dense.

density, and density leading to sharing of foci. These findings provide strong support for the central proposition of the focus theory and could not have been predicted on the basis of balance theory or the strength of weak ties.

Proposition 2D.—The more constraining are the foci from which associates are drawn, the denser will be the personal network. Unfortunately, there are no independent measures of the constraint involved with each type of focus. However, it is reasonable to suggest that family and work involve frequent joint activities for most people, and so these two would generally be highly constraining foci. Wherever two of the three best friends were drawn from the same focus, Fischer characterized the personal network by its "primary source." Table 2 shows that personal networks with family and work as primary sources were more often fully dense than personal networks with other primary sources. It is interesting to note that this finding could not be anticipated merely on the basis of frequency of contact with the individual; in these data, neighbors and childhood friends had the greatest frequency of contact with the individual, and yet networks with these primary sources did not have as high density as family and work networks.

Proposition 3D.—The more foci that the individual shares with each associate, the denser will be the personal network. Although Fischer measured the multiplexity of ties according to the number of foci that the tie involved, there are no reported associations between density and multiplexity.

Proposition 4D.—The more compatible with one another are the various foci from which an individual draws associates, the denser will be the personal network. One could obtain some tentative support for this proposition by speculating about the compatibilities of foci (e.g., family and childhood would be more compatible than family and work), but Fischer did not analyze the data in such a way that densities of personal networks with various mixes of foci were presented. Consequently, not even an approximate

TABLE 2

DENSITY OF PERSONAL NETWORKS
WITH EACH DOMINANT SOURCE

Dominant Source	Type e_3 (%)*
Family...............	44 (23)
Work..............	39 (211)
Childhood...........	34 (167)
Association......	34 (41)
Neighborhood........	29 (212)

SOURCE.—Claude S. Fischer, R. M. Jackson, C. A. Stueve, K. Gerson, and L. M. Jones, *Networks and Places: Social Relations in the Urban Setting* (New York: Free Press, 1977).
NOTE.—Figures in parentheses = N.
* Fully dense.

test is available. To test this proposition properly would require independent measures of compatibility of pairs of foci, which can be used to predict the densities of personal networks containing each pair of foci.

Proposition 5D.—The greater the proportion of the individual's time, effort, and emotion that the ties involve, the denser will be the personal network. Density was related to average intimacy (gamma = .13) and to average frequency of contact (gamma = .24) for the personal networks in these data; this provides direct support for the prediction that individuals tend to bring together friends with whom they relate intimately and frequently. As Fischer points out, it is also possible that when friends know one another, it is easier for the individual to relate closely and frequently with each of them. I have no doubt that the process operates in both causal directions. Certainly, if friends' knowing one another facilitates close and frequent contact, then an individual who is or wants to be close to two friends is more likely to introduce them to each other.

Thus, the data provide both strong evidence for the central focus theory proposition and suggestive evidence for two other propositions. Further analysis could be made to examine the two remaining propositions.

APPROACHES TO DATA ANALYSIS

The focused organization of social ties implies that a researcher should understand and measure relations to foci in order to understand the structure of a network. The patterns of relations to foci are likely to be crucial for explaining clusters and interrelations among clusters in a network, and ignoring these extra-network structural bases of ties may lead one to misinterpret (e.g., in terms of cognitive pressures toward consistency) patterns that are found among ties.

Taking foci into account requires collection of appropriate data and application of appropriate methods for analysis. Although a complete discussion of methodology would be inappropriate here, I will suggest the basic structure of data collection and analysis.

The focus theory directs the researcher to look for the particular foci that organize the activities and interactions of individuals in a situation. In order to find them, the researcher will ordinarily need to understand the major activities that organize the interactions of the individuals. If one were studying the children of a community, one would probably expect to find that schools were the major centers of activity and interaction. The boundaries for each school district circumscribe the residences of the children associated with that focus. If we wanted to understand better, we should look to specific classes as foci. In addition, there may be physical barriers (e.g., major roads dividing an area into focal places), and there may be religious centers which serve as foci.

Every situation is unique, and the particular foci must be determined. The researcher should ascertain which individuals are associated with which foci and investigate the constraint, size, and compatibility of the important foci. Constraint of a focus may be indicated by the amount of time that pairs of individuals typically spend in activities associated with that focus. Once the boundaries of a focus have been specified, it is relatively easy to measure its size (e.g., the membership of a church or the population of a neighborhood). To determine the compatibility of pairs of foci, one can list the activities that are associated with each focus and ask objective judges to estimate the similarity of the lists. On the basis of all this information, the researcher can project a hypothesized model of the network of the community. It will not be possible to predict exactly which individuals will be tied to which others, but it should be possible to predict the major patterns in the social network.

To determine whether foci can account for the patterns, the analysis requires a definition of the relevant "patterns." Qualitatively, one can draw a picture of the pattern of ties that would be expected to arise from a specified set of foci and see whether the network data can be organized in a sociogram with predicted clusters and connections among clusters.

For researchers who conceive of social structure in terms of clusters in a cluster analysis or "blocks" in a blockmodel analysis (White, Boorman, and Breiger 1976), a confirmatory type of factor analysis can be used to decide how well a structure based upon specified foci "fits" the data.

An alternative method of structural analysis is to define the extent of the social structure as the size of a relationship that exists between variables. The "focus variable" is then introduced to determine how much of the relationship is "explained." In particular, one may treat a pair of individuals as the unit of analysis. Pairs are characterized by two variables: (1) being tied to each other or not and (2) the number of others to whom both are tied. In any situation, some pairs will be tied, and some will share many ties to others. If the situation is unstructured, the pairs that are tied will share no more ties to others than do other pairs. However, wherever there is a clustered structure, there will be a tendency for tied pairs to share many more ties than other pairs. The association between the two variables can be measured, and the strength of the association taken to indicate the amount of focused structure (clustering). Pairs may be characterized by a third variable indicating whether a pair shares any of a set of specified foci (or how many foci are shared). Using elaboration or partial correlation methods, one can determine the extent to which this third variable "explains" the association between the first two variables. The extent to which the focus variable can explain the association can be said to be the extent to which the specified foci explain the structure.

This methodology can illustrate how it is possible for a set of foci to

account for important aspects of social structure while explaining only a relatively small proportion of the variance in social ties. Consider the possibility that the original correlation between being tied and number of others to whom both are tied is .35. Also assume that the correlation between sharing a focus and being tied is .5, and the correlation between sharing a focus and number of others to whom both are tied is .7. Based upon the correlation between sharing a focus and being tied, the focus variable explains only $(.5 \times .5)$ .25 of the variance in ties. However, using approximate methods of partial correlation, it can be seen that the focus variable can completely explain the relationship between being tied and number of others to whom both are tied $(.5 \times .7 = .35)$. Consequently, the foci may be said to explain the clustered structure completely, while explaining only a small proportion of the variance in ties. Thus, although other factors may explain more of the variation in ties than foci do, foci may nevertheless explain the major structures of relationships in a group.

CONCLUSIONS

The purpose of this paper has been to explain the patterns found in social networks, particularly patterns of clusters and connections among clusters, by determining the underlying foci and individual relations to those foci that cause the relations among the individuals. I have argued that the focused organization of social ties is important under practically all circumstances, and that the nature of the foci will vary in important ways depending upon the values and activities of the group. The theory explains the presence of most transitivity in networks as a function of the organization around foci rather than as an inherent tendency or as a function of the cognitive needs of individuals.

As a structural rather than a cognitive theory, the focus theory may be applicable to the social organization of ties among entities that do not have the ability or inclination to "think" like individual persons. For example, social networks have been studied in science, corporations, and international relations.

In science, authors of articles have been considered tied if their articles are jointly cited in subsequent articles (Cole 1975). These ties may be focused by subject matter, school of thought, university affiliation, etc. The structures of disciplines may be essentially different as the result of different types of foci. These foci create personal and professional interactions among authors.

A tie between corporations has been defined to exist wherever two corporations share a director (Mintz and Schwartz 1979). Such interlocks may be focused by location (e.g., northeastern corporations are more often interlocked), common ownership (e.g., major holdings by families), or de-

pendence upon particular financial institutions. The nature of these foci may reflect the underlying structure of capitalist enterprise in a country.

Finally, ties of alliance among nations may be focused by location, membership in formal group alliances (NATO, the Warsaw Pact), common resources (OPEC), ethnic identity (black Africa and the Moslem world), form of economy or government (socialism, communism, free market capitalism, fascism, etc.), or relations to the superpowers (those under U.S. vs. USSR domination). The patterns change over time to reflect changing political, economic, and social realities.

In all three examples, once one understands the focused organization, one can predict that transitivities will occur around the foci, and bridges will be ties based upon weakly constraining foci or not based upon foci at all. For example, authors may be tied on the basis of a maverick article of an unaffiliated author; or an interlock may be based upon the common use of the eminence of a particular former cabinet member on boards; or ties between nations can be based upon nothing more than immediate convenience (e.g., the peculiar short-lived alliance between Israel and Uganda).

The focus theory will not be applicable under all circumstances. There may be situations where there are no foci, and there may be situations where other processes (e.g., based upon similarities or upon deliberate manipulations by the actors) override the effects of foci. However, where the focus theory does apply, it should provide a step toward understanding the relationship between the structure of social networks and other aspects of social structure.

In this paper, I have emphasized causes of patterns of networks. It is equally important to understand the consequences of such patterns. Through further development of integrated theory and of data analytic techniques that can simultaneously analyze network and other structural data, it should be possible to develop a better understanding of social structure as a whole.

REFERENCES

Blau, Peter M. 1978. "A Macrosociological Theory of Social Structure." *American Journal of Sociology* 83:26–54.
Boissevain, Jeremy. 1968. "The Place of Non-Groups in the Social Sciences." *Man* 3:542–56.
Bott, Elizabeth. 1957. *Family and Social Network.* London: Tavistock.
Cole, Stephen. 1975. "The Growth of Scientific Knowledge: Theories of Deviance as a Case Study." Pp. 175–220 in *The Idea of Social Structure: Papers in Honor of Robert K. Merton,* edited by Lewis A. Coser. New York: Harcourt Brace Jovanovich.
Coleman, James S. 1957. *Community Conflict.* New York: Free Press.
Cubitt, Tessa. 1973. "Network Density among Urban Families." Pp. 67–82 in *Network Analysis: Studies in Human Interaction,* edited by Jeremy Boissevain and J. Clyde Mitchell. The Hague: Mouton.

Davis, James A. 1963. "Structural Balance, Mechanical Solidarity, and Interpersonal Relations." *American Journal of Sociology* 68:444–62.

———. 1967. "Clustering and Structural Balance in Graphs." *Human Relations* 20: 181–87.

Festinger, Leon, S. Schachter, and K. Back. 1950. *Social Pressures in Informal Groups.* Stanford, Calif.: Stanford University Press.

Fischer, Claude S., R. M. Jackson, C. A. Stueve, K. Gerson, and L. M. Jones. 1977. *Networks and Places: Social Relations in the Urban Setting.* New York: Free Press.

Granovetter, Mark S. 1973. "The Strength of Weak Ties." *American Journal of Sociology* 78:1360–80.

Hallinan, Maureen T. 1974. *The Structure of Positive Sentiment.* New York: Elsevier.

Heider, Fritz. 1946. "Attitudes and Cognitive Organization." *Journal of Psychology* 21:107–12.

Holland, Paul W., and Samuel Leinhardt. 1970. "A Method for Detecting Structure in Sociometric Data." *American Journal of Sociology* 76:492–513.

———. 1971. "Transitivity in Structural Models of Small Groups." *Comparative Group Studies* 2:107–24.

Homans, George C. 1950. *The Human Group.* New York: Harcourt, Brace & World.

———. 1961. *Social Behavior: Its Elementary Forms.* New York: Harcourt Brace & Co.

Kadushin, Charles. 1966. "The Friends and Supporters of Psychotherapy: On Social Circles in Urban Life." *American Sociological Review* 31:786–802.

Kapferer, Bruce. 1973. "Social Network and Conjugal Role in Urban Zambia: Towards a Reformulation of the Bott Hypothesis." Pp. 83–110 in *Network Analysis: Studies in Human Interaction,* edited by Jeremy Boissevain and J. Clyde Mitchell. The Hague: Mouton.

Laumann, Edward O. 1973. *Bonds of Pluralism: The Form and Substance of Urban Social Networks.* New York: Wiley.

Lazarsfeld, Paul F., and Robert K. Merton. 1964. "Friendship as Social Process: A Substantive and Methodological Analysis." Pp. 18–66 in *Freedom and Control in Modern Society,* edited by Monroe Berger, T. Abel, and C. H. Page. New York: Octagon Books.

Leinhardt, Samuel. 1972. "Developmental Change in the Sentiment Structure of Children's Groups." *American Sociological Review* 37:202–12.

Logan, John R. 1978. "Growth, Politics, and the Stratification of Places." *American Journal of Sociology* 84:404–16.

Milgram, Stanley. 1967. "The Small World Problem." *Psychology Today* 1:60–67.

Mintz, Beth, and Michael Schwartz. 1979. "The Power Structure of Business." Unpublished manuscript, State University of New York at Stony Brook, Department of Sociology.

Moreno, J. L. 1953. *Who Shall Survive.* Boston: Beacon.

Simmel, Georg. 1955. *Conflict and the Web of Group Affiliations.* Glencoe, Ill.: Free Press.

Verbrugge, Lois M. 1977. "The Structure of Adult Friendship Choices." *Social Forces* 56:576–97.

———. 1979. "Multiplexity in Adult Friendships." *Social Forces* 57:1286–1309.

White, Harrison C., Scott A. Boorman, and Ronald L. Breiger. 1976. "Social Structure from Multiple Networks. I. Blockmodels of Roles and Positions." *American Journal of Sociology* 81:730–80.