A qualitative approach to examining information transfer via social networks among homeless populations

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Abstract:
Traditionally, social network analysis has utilized mathematical models and graphical constructs to examine information exchange and diffusion. This paper will suggest the use of a qualitative approach as a complimentary method that allows for the collection of rich data, leading to a better understanding of the context in which information exchange and diffusion occur. The qualitative approach is then discussed as it is used in a recent study, which examined information as social capital and as embedded in social support networks of homeless populations in Seattle and North Carolina. In-depth interviews conducted in homeless shelters are combined with the use of an egocentric social network-mapping device to gather rich data that provide insights into the everyday establishment and network of informational support networks. A clearer picture of the information sources, the strength of information sources, the nature of the information exchange and measures of social capital emerged from the qualitative data. The paper concludes with a discussion of the planned future use of the approach to study the diffusion of information on acquired immune deficiency syndrome among the homeless in an international, multi-phased study of rural and urban Western populations in addition to Africa and the Caribbean.

Article:
INTRODUCTION
Traditionally, studies of information diffusion through social net- works are found in the sociology or organizational management   literature rather than in library and information studies (LIS) literature. These social network studies tend to utilize mathematical models based on graph theory with findings displayed as sociograms for data analysis. According to Scott the potential for the use of social network techniques is often:

...seen as unachievable for many researchers, who have found it difficult to come to grips with the highly technical and mathematical language in which most discussions of these techniques have been cast. (1, p. 1) Many studies represent the structure of social networks but lack the contextual details concerning the environment in which the information structure exists. Many of Chatman's works (2) involved aspects of social network theories, alienation theory and information diffusion, etc. but were not traditional social network approaches.

This paper will first examine the traditional methods of approaching social network studies and then suggest an alternative, adapted approach that may be useful in LIS research. An example is given of the application of a qualitative social network approach to a recent study of information as social capital that is found embedded in social support networks. Finally, an integrated approach is discussed for a future study of acquired immune deficiency syndrome (AIDS) information diffusion among culturally different homeless populations.

TRADITIONAL SOCIAL NETWORK APPROACHES
A good introduction to the use of social network analysis (SNA) to study information exchange is provided by Haythornthwaite (3), who notes that SNA can be used to study "information relationships" which consist of

"kinds of information being exchanged between whom, and to what extent". While social network scholars debate whether there is a theory of social networking, Scott maintains that:

...social network analysis is an orientation towards the social world that inheres in a particular set of methods. It is not a specific body of formal or substantive social theory. (1, p. 37)

Social network theory examines social relationships of individuals (egocentric networks) at a micro level and, at the macro level, whole networks of communities or groups are studied.

Attribute data, gathered through questionnaires or surveys, are analysed using variable analysis. Relational data examine the links, ties, contacts and connections, etc. and are part of the structure of the network. Some studies also include ideational data (meanings, motives and definitions, etc.), which can be analysed using typological analysis (1).

Content, direction and tie strength are the three most studied attributes. Content examines the nature of resource exchange. Direction is concerned with the flow of resources and strength usually relates to intensity of relationships (3). Tie strength is a concept based on Granovetter's (4, 5) study of job-seeking information. Strong ties are those in an individual's social network that are emotionally closest. Weak ties are those with whom one has more of an acquaintance relationship. In Granovetter's study, he found that strong tie interactions result in most contacts knowing the same information about job opportunities. Better sources of job-seeking opportunities were weak ties; friends did not know or did not share job information to the same degree that acquaintances did. A discussion of emergent hybrid ties (strong—weak ties) will be addressed in the section of the paper that looks at the application of the qualitative approach.

Other social network components that are frequently studied are centrality of networks, density of networks, cliques, positions, roles and clusters of relationships. All are usually determined quantitatively and then displayed as network diagrams (sociograms), which can be uni-dimensional or multidimensional.

Examples of information diffusion models illustrate the traditional approaches to studying whole networks. K ulkarni and Kumar (6) proposed a model for studying multi-dimensional information diffusion. Infection and epidemic models of diffusion have been adapted to study information diffusion but, whereas one usually recovers from the infection, the models assumed that, in the information arena, once information was spread, the originator no longer retained that information. Also tied to the medical model is the simplistic notion that one either knows information or does not. The researchers note that "multi-valued information can arise both due to its extensiveness (or range) and intensiveness (or depth)" and they developed a non-hierarchical, multi-valued model.

Karmeshu and Pathria (7) developed a non-linear model to allow for a systematic analysis of stochastic processes affecting the time rates and patterns of information diffusion. The time evolution of information diffusion can be of importance when applied to organizational studies.

Jackson (8) developed a model based on cognitive dissonance that examined the diffusion of family planning information in low-income areas. Data collected concerning personal attributes, attitudes and social network contacts were used to construct an information diffusion model. Surveys and questionnaires were used as data collection instruments. Thompson (9) developed a deterministic model for examining the diffusion of information in populations with immigration that focused on the rate of diffusion in relation to the size of the populations. However, no information concerning the immigrants under study is related in the paper, the overall environment in which immigrants or the general population are seeking or exchanging information is not provided, and neither does it seem that such data were gathered in the study at all. This begs the question, who are these people? What is the nature of the information being studied?

In all the previous model formation studies, the context in which information exchange and diffusion occurred is virtually ignored. Such approaches certainly give further understanding into the structure of relational data in terms of information exchange, but the contextual component is absent. The next section advocates an approach that would allow for data to be collected in a way that, when analysed, would provide contextual components for a study that would provide a deeper understanding of the environment in which the social network structure exists.

A QUALITATIVE APPROACH

One of the first researchers in LIS to use a qualitative approach with SNA to examine information-seeking behaviours and information exchange was Pettigrew (10) in her dissertation on how public health nurses served as information resources to senior citizens. Using traditional fieldwork techniques of on-site visits, various interview approaches and the use of a social network-mapping device, Pettigrew was able to study the information needs and information-seeking behaviours of senior citizens in their dyadic interactions with public health nurses. The social network map used is an adaptation of maps that others have used to collect egocentric network data (Curtis, (11)). The basic map is shown in Figure 1.

The basic map includes four basic quadrants: friends, family, others and neighbours. While these are the usual groups represented in typical social

FIG. 1: *Basic network map.*
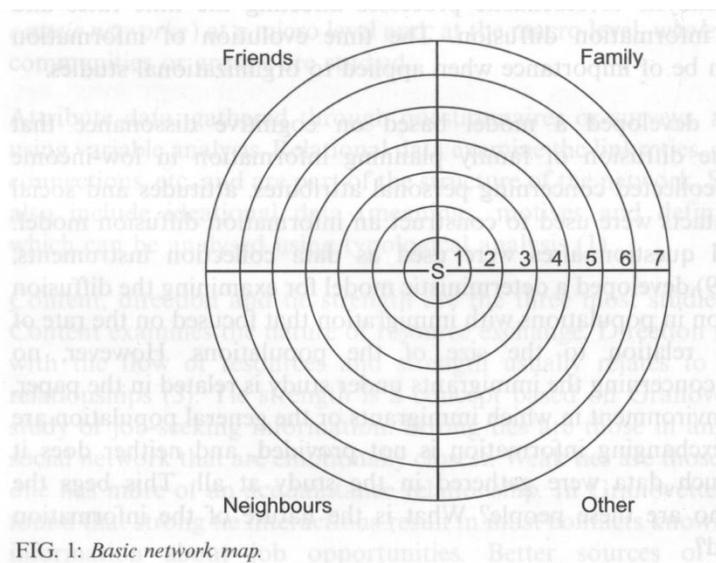
networks, it can be adapted as needed. For the study discussed in the next section, the homeless do not tend to think in terms of 'neighbours' so the term 'shelter residents' is used in place of neighbours. Informants are instructed by the researcher to place data points on the map depending on the operationalized terms of each study. Pettigrew used the map as part of a post-observation interview study where seniors were asked to identify those who helped them with problems.

The informant then places initials identifying those who either help the most, or on whom they could most depend, in the concentric circles nearest the centre marked 'S' for self. When the data points are in place, the informant is then requested to draw lines between those persons on their map who know each other, or who are 'connected' to each other. Pettigrew used the data to analyse the tie strength of each senior's connectivity and the extent to which each tie provided instrumental assistance.

In her conclusion, Pettigrew stated that:

Despite repeated calls in the literature, few researchers have chosen to study social networks using qualitative methods. This research demonstrates that qualitative methods can be a powerful means for discerning themes in the social network data that may not emerge through using quantitative methods of data collection and analysis. (10, p. 234)

Pettigrew notes that the advantages of using the social network-mapping tool include the visual representation of an individual's egocentric network, especially in portraying positions and roles held by support providers. The density or connectivity of the individual's network is also easily interpreted. Finally, due to the simple design of the map, senior citizens were able to grasp the process of filling in the map points.

Pettigrew notes some methodological concerns involving the use of the map. One problem is the confusion of distinctions needed, for instance, between neighbours and friends. However, the map does allow for informants to place a data point on the line between 'neighbours' and `friends' which would solve this problem. However, 'others' would not be able to also connect to 'friends', and the implications of this are discussed in the next section. Friends and family tend to be stronger ties while neighbours and others are weaker ties, and the informant can differentiate closeness within these categories by using the concentric circles.

The addition of the social network map to traditional qualitative methods of field site visits, observation and in-depth interviews combines to provide a systematic method for studying information exchange and transfer in context. When used in conjunction with theoretical concepts, such as tie strength, density, direction and context, etc., from social network theory, the result can be a much deeper understanding of the information networks of individuals that could lead to better service from information providers.

The next section discusses an adaptation of the qualitative approach to study the flow of information among a targeted information population.

APPLICATION OF THE APPROACH

In a recent study, Hersberger and Pettigrew (12, 13) adapted the previous approach to examine the concept of information as social capital and how the homeless conceptualize, accrue and use this information capital. Lin (14) frames social capital in classic economic terms, such as investing in social relationships with an expected return on one's investment for the purpose of enhancing instrumental (gaining new or added resources) or expressive (maintaining possessed resources) actions. The concomitant aspects of obligations, 'credit slips, or some other form of quid pro quo are implied. Information exists as an embedded resource in social support networks and, when accessed, could result in improved physical being, improved mental health or improved life satisfaction.

Six research questions were posed:

1. What forms of social capital exist within the social support networks of homeless parents (structurally embedded information)?
2. How is social capital embedded in the social relations of homeless parents (information opportunity)?
3. For which situations do homeless parents utilize their social support networks to access different forms of social capital (action-oriented information use)?
4. What forms of social support, particularly informational, are needed, sought, obtained and used by homeless parents?
5. What catalysts exist which motivate homeless parents to attempt to gain or gather informational social support?
6. What impediments or barriers exist that discourage homeless parents in this process?

Twenty-one homeless parents living in family emergency homeless shelters in Seattle (Washington state) and Greensboro (North Carolina) were interviewed at length at the shelters. The semi-structured interview guide allowed for the researchers to insert probes as warranted to gain rich data concerning the environment in which

these parents were framing information needs and then describing information-seeking behaviour and subsequent information sharing or information use. Interviews were audiotaped to enhance the data analysis process with the exception of one interview where the informant requested not to be taped.

Upon completion of the interview, each informant was asked to fill in the social network map, noting those people who helped them, those who would help them if asked and those whom they had helped either recently or on a regular basis. The nature of the support and/or information exchanged was noted by the informant on the map and by the researcher in notes and was recorded on the audiotape. The relationships between the homeless parents and the people on their maps were then discussed at length. Figure 2 is an example of a low-density, unconnected network.

Intensive data analysis is still ongoing, but some preliminary results have been established. Forms of social capital are primarily embedded in relations with social service staff, and focus primarily on access to
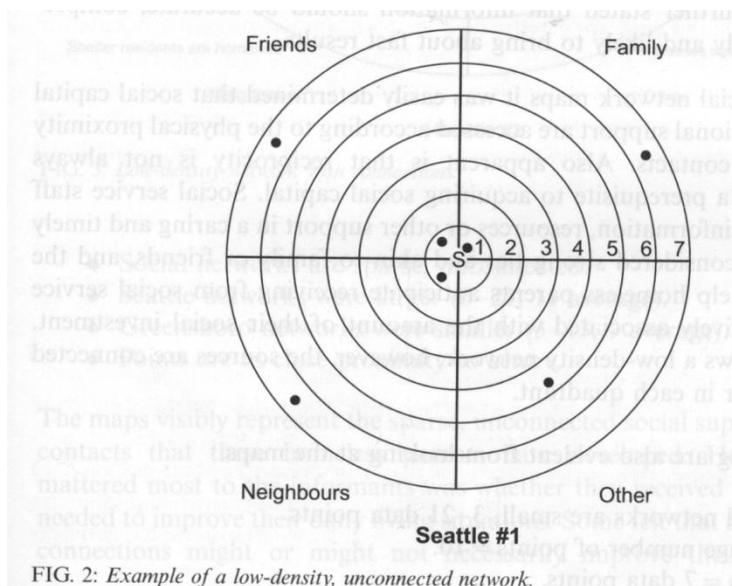

FIG. 2: *Example of a low-density, unconnected network.*

information, tangible resources and emotional support that can improve current conditions of living for these homeless families. Individuals with whom homeless parents invest in social relations primarily comprise shelter staff, Department of Social Services staff, physicians, church support staff, other shelter residents and bail bondsmen. The study also found that situations for which homeless parents utilize their networks and social capital include:

- finding permanent, stable housing;
- helping children (health and education, etc.);
- finding a job;
- repairing bad credit histories;
- dealing with substance abuse and domestic violence.

In the interviews, informants consistently considered information as critical and essential in improving one's conditions of daily living. From the interviews, it is also apparent that homeless parents prefer one-on-one, in-person interaction when seeking information, and then want a written record of what they were told. Interestingly, telephone communication was the least preferred method of communication as informants stated they were often put on hold, felt the person on the other end was not paying attention to them and could not assess non-verbal communication cues. Informants further stated that information should be accurate, comprehensive, timely and likely to bring about fast results.

From the social network maps it was easily determined that social capital and informational support are accessed according to the physical proximity of network contacts. Also apparent is that reciprocity is not always perceived as a prerequisite to acquiring social capital. Social service staff who provide information, resources or other support in a caring and timely manner are considered strong ties and akin to family or friends, and the amount of help homeless parents anticipate receiving from social service staff is positively associated with the amount of their social investment. Figure 3 shows a low-density network; however, the sources are connected to each other in each quadrant.

The following are also evident from looking at the maps.
- Social networks are small, 3-21 data points.
- Average number of points = 10.
- Mean = 7 data points.

FIG. 3: *Low-density network with connections.*
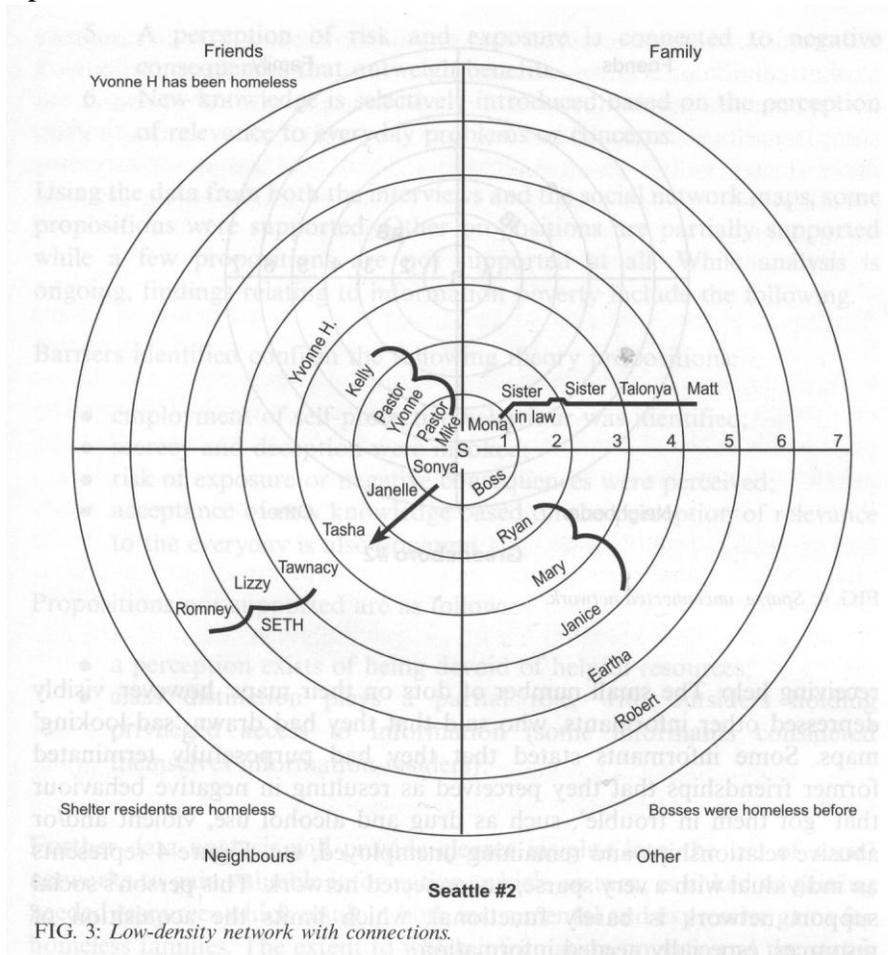
- Social networks are sparse, unconnected.
- Seattle networks were larger (6-21, 11 average).
- Greensboro networks were smaller (3-13, 9 average).
- Points are in close proximity to centre.

The maps visibly represent the sparse, unconnected social support network contacts that these homeless parents have developed. However, what mattered most to the informants was whether they received the resources needed to improve their daily living situations. Some felt that more network connections might or might not necessarily improve their chances of

FIG. 4: *Sparse, unconnected network.*
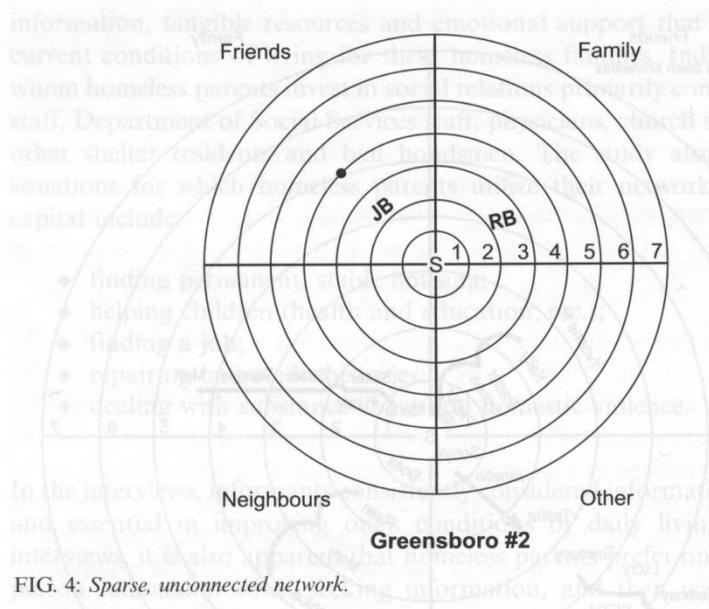
receiving help. The small number of dots on their maps, however, visibly depressed other informants, who said that they had drawn 'sad-looking' maps. Some informants stated that they had purposefully terminated former friendships that they perceived as resulting in negative behaviour that 'got them in trouble', such as drug and alcohol use, violent and/or abusive relationships and remaining unemployed, etc. Figure 4 represents an individual with a very sparse, unconnected network. This person's social support network is barely functional, which limits the acquisition of resources, especially needed information.

Another analytical framework that is proving useful for assessing the data is to overlie Chatman's theory of information poverty (15). Six propositions are stated.

1. A perception exists of being devoid of helpful resources.
2. Class distinction plays a partial role. Outsiders withhold privileged access to information.
3. Self-protective behaviour is used in response to social norms.
4. Secrecy and deception are self-protecting mechanisms related to mistrust regarding the interest or ability of others to provide useful information.
5. A perception of risk and exposure is connected to negative consequences that outweigh benefits.
6. New knowledge is selectively introduced based on the perception of relevance to everyday problems or concerns.

Using the data from both the interviews and the social network maps, some propositions were supported. Other propositions are partially supported while a few propositions are not supported at all. While analysis is ongoing, findings relating to information poverty include the following.

Barriers identified confirm the following theory propositions:

-   employment of self-protective behaviour was identified;
-   secrecy and deception were invoked;
-   risk of exposure or negative consequences were perceived;
-   acceptance of new knowledge based on the perception of relevance to the everyday is also apparent.

Propositions not supported are as follows:
-   a perception exists of being devoid of helpful resources;

- class distinction plays a partial role, with outsiders holding privileged access to information (some informants considered themselves information insiders).

Further data analysis will provide clearer insights into the use of social networks to gain valuable information, which, in turn, is linked to gaining needed resources which result in both instrumental and expressive gains for homeless families. The extent to which information poverty and the status of information insider or outsider roles play a part in information seeking will become more apparent with a more detailed analysis.

An interesting finding which the researchers intend to pursue involves the perception of hybrid ties, rather than the normal strong or weak tie designations. Homeless parents consistently placed shelter, social service staff and others who provide needed information, and especially information linked to valuable resources, in the 'friends' quadrant of the map. Generally, such network linkages are not normally operationalized by scholars as strong ties but the homeless in this study did designate them in this way.. The provision of support seems to be perceived as 'caring' and, thus, social service staff are viewed as friends rather than service providers.

There exists a perception that these ties will continue to provide assistance in the manner usually associated with strong ties. Another preliminary finding that has implications for the use of the social network map is the pattern that is emerging where the homeless tend to focus on ties that are current, close and in physical proximity. These contacts are perceived as holding access to useful resources but informants did not regard network members who are unavailable due to geographical distance as being informational or resource supports.

A clear picture is emerging of the sparse information networks of the homeless, and their perception of the value of information and information through the use of qualitative methods of in-depth interviewing and the use of a simple social network map, sources and whether information poverty plays a role in the efforts of this population to activate resources that will aid them in improving everyday living conditions.

AN INTEGRATED APPROACH
Whole network studies often lack contextual details useful for understanding the environment in which information exchange and transfer occur. Egocentric network approaches often lack the 'big picture' of how the individual and his or her contacts are connected to larger groups of others.

Thus, it seems that conducting a study using an integrated design could be an advantageous approach. Combining an egocentric model with the use of the more traditional surveys or questionnaires would seem to be more complementary than conflicting. Such an approach would certainly increase the research workload but, by including multiple researchers, the workload would be lessened and the use of diverse research skills should improve the final product. The work of Wellman (16) with information networks on the Web and other studies might be useful to examine. As a founding member of the International Network of Social Network Analysis, Wellman is on the cutting edge of SNA and publishes in many fields, including LIS.

Currently, a study is being designed which would examine the diffusion of AIDS information throughout homeless populations. The study is international and multi-phased in scope. A pilot study is planned to study AIDS information diffusion via social networks among the rural homeless and the rural poor to test combining methods. The second phase of the project would then involve replicating the study, with methodological improvements, in large urban cities in Canada and the USA. The third phase of the study would replicate both the rural and urban approaches to study the flow of AIDS information via social networks in Africa and the Caribbean. It is anticipated that some of the mathematical models of information diffusion, based on epidemic or contagion models discussed earlier, might prove useful when studying the whole network structures of AIDS information diffusion.

Our expectation is that such a research strategy will result in having a clear understanding not only of the structure of information networks of the homeless, but also of the environment in which information diffusion occurs.

CONCLUSION

In conclusion, while traditional social network methods utilize surveys and questionnaires to gather quantitative data to study social relations, this paper has attempted to establish the utility of using qualitative methods effectively with egocentric networks. Whole network studies may be best served by using a mathematical approach, especially when working with very large data sets, but the possibility of using qualitative methods to construct whole network displays might yet be developed.

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16. See Wellman,s Web site for electronic copies of a number of his publications on network analysis, available at http://www.chass.utoronto.ca/ wellman/publications/index.html [accessed 29 July 2003].