

# Sociometric Applications in Criminology and Other Settings: A Reexamination of a Traditional Method

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*Sociometric strategies have a long history grounded in the research of their founder, J.L. Moreno. In the 1940s and 1950s, sociologists and organizational researchers made extensive use of these strategies in their studies of youth gangs, groups, and institutions. During the past 30 years, however, sociometric strategies have not been popular among most sociologists and have not expanded into criminological research. Instead sociometry has found a place in educational and psychological studies. Sociometric strategies have been used largely to examine concepts of self and attitudes about others in the social world of children. This paper describes some basic elements of sociometry and suggests their methodological utility in criminological research.*

Sociometry has been used extensively in educational, social psychological, and social network research (Asher and Hymel 1981; Hampson 1984; Hartup 1976; Newcomb and Bukowski 1983). It has been employed to assess the social skills among preschoolers, and increasingly to categorize children with difficulties in peer relations (Hymel and Rubin 1985; Rubin 1982). During the past 40 years or so, however, fewer and fewer sociologists and criminologists have recognized the utility of sociometry. One reason may be the attempt by some users to make sociometry more mathematical (see, for example, Arabie 1984; Schwartz and Sprinzen 1984; Skvoretz 1985; Wilson 1982). By "mathematizing" sociometry, users have tried to claim a precision akin to that of more sophisticated statistical measures of association. Were this merely a dramaturgic attempt to play the part of scientist—the pretense of positivism to obtain federal funding or gain greater acceptance in the publication arena—one might understand it (Glassner 1990; Lidz and Ricci 1990). Unfortunately, however, the mathematizing of sociometric techniques is a genuine attempt to convert a strategy once rich with grounded theoretical orientations into little more than another analytic formula stripped of its connections to social reality.

Sociometry can be described as a means of assessing group relational structures such as hierarchies, friendship networks, and cliques. Sociometry also can indicate a group's social dynamics and its influence structure. This field was established by J.L. Moreno in *Who Shall Survive* (1934), which was published after Moreno and other social psychologists and sociologists had used various sociometric strategies in elementary schools for many years. During the early years of development and refinement, sociometry rapidly expanded its scope and application areas. Social scientists began to incorporate sociometric techniques in their efforts to research corporate organizational structures, the military, and various other research populations and settings. In 1952 Moreno observed that in spite of a rapid assimilation of sociometry's

techniques, operations, and methods, there was a parallel ignorance and resistance regarding its theories (Moreno 1952, p. 148).

It is both sad and ironic that sociometric techniques such as the sociogram (a pictorial representation of a group's structure), the sociometric test (a descriptive statistical application indicating a group's structure), small-group analysis, role-playing, and psychodrama and sociodrama<sup>1</sup> have become taken for granted while their theoretical backgrounds have been taken lightly and virtually forgotten. This problem is serious for several reasons. First, the techniques used in sociometric strategies were not developed in a vacuum. Rather, they are related intricately to empirical evidence established as a result of the testing of various theories and concepts. These empirical tests bear directly on the validity and reliability of each technique. Second, understanding the theoretical origins of sociometry, as well as necessary elements such as the actor in situ, the alter and the auxiliary ego, spontaneity training, the social atom, social dynamics, and the like, is an important prerequisite for the proper use of sociometric tests and for understanding sociograms effectively.

During the past 58 years it appears that researchers have used sociometric techniques, but have separated these techniques from their meanings and theories. Hence many of the strategies are used mechanically and as ends in themselves. Consequently, sociometric tests and sociograms have been produced in a sociological void in which people are asked in gamelike fashion whom they like and dislike. Then lines of connection are drawn to represent their answers and to describe the group's structure. In addition, as sociometric strategies moved away from their traditional meanings and theories, the differences between these and general observational practices became blurred. Sociometric strategies certainly may be used during the course of observational research. They are not, however, synonymous with the strategies usually associated with observational field research.

Among the original advantages of sociometric techniques was their ability to call attention to what is certainly the heart of social process, namely the intimate rapport between individuals primarily as human beings, and only secondarily as occupants of particular roles (e.g., worker, student, soldier, police officer). In observational research, attempts customarily are made to avoid reactivity to the presence of the research by fitting in or "becoming invisible" (Berg 1989; Denzin 1978). Sociometrically, however, an investigator may actively engage the participants of a study. One might ask participants to answer direct questions, to role play, to reenact a past situation, to identify friends or foes, or to perform various other actions.

In its traditional sense, sociometry is a means for measuring social distance between group members. More directly, it is concerned with assessing attractions and repulsions between individuals in a group and with the group structure as defined by these feelings. Helen Jennings describes this method as follows:

Stated briefly, sociometry may be described as a means of presenting simply and graphically the entire structure of relations existing at a given time among members of a group. The major line of communication, or the pattern of attraction and rejection in its full scope, are [sic] made comprehensive at a glance (1948, p. 11).

Jennings also states, however, that the sociometric test and sociograms are not the end point of research, but only the beginning. She says:

It should, of course, be said at once that the sociometric test and diagram do not suffice to explain the motives underlying the choices made . . . As a starting point, however, the chief significance of a sociogram lies in its comprehensive revelation of the group structure and its clear direction toward the next steps for study or investigation (1948, p. 11).

Social structure has long been a central focus of researchers in sociology and criminology. It has been examined in research such as Albert Cohen's (1955) study of delinquent boys, Edwin Sutherland's (1939) work on "differential association," Gresham Sykes's (1958) examination of correctional officers, James Coleman's (1961) consideration of adolescent culture, and even Geoffrey Alpert and Roger Dunham's (1988) more recent study of community policing strategies. In any social structure one finds positions held by incumbents which form systematic patterns of social relations between other positions and incumbents in the group. Even in the study of social networks, where individuals may have fairly loose connections to the network, social pressure may be exerted to divert network members away from violation of social norms. Conversely, social pressure may be exerted to support and encourage norm violations by social network members (Schwartz and Sprinzen 1984). Thus identification of one's relative social position in a group through sociometric tests can assist a researcher in identifying key elements of the social structure. In addition, sociometry provides a means for

field researchers to identify "key individuals," those people who can serve as guides or informants for the researcher. Finally, this technique identifies "stars," or persons able to wield considerable influence over others in the group.

Sociometric techniques have been applied in such widely diversified situations as informal groups, gangs, school classes, prisons, Air Force jet fighter pilots, and industry. These techniques allow considerable latitude in application, and are flexible in their use in research settings.

For example, consider a large city's public defender's office plagued with internal complaints, low morale, and conflict among personnel. One could examine the problems in this agency in a number of ways. One might begin with a sociometric test (explained below) and from this test might identify the person or persons who have the greatest influence over others in the organization. Once identified, these "sociometric stars" could be approached and interviewed, observed more carefully in interaction with others, or even surveyed about their concerns.

Perhaps the most widely known application of sociometric techniques was made by William Foote Whyte (1955) in *Street Corner Society*. Whyte studied "Doc and his boys," a group of men in their teens and twenties who hung around together in an Italian-American slum neighborhood in Boston during the 1930s. At that time, Whyte was on a fellowship at Harvard University. As an outsider to this neighborhood and this group, he needed a "guide" to help him gain access and acquire insight into the group.

In his examination of "Doc's Boys, the Nortons," Whyte was able to create a diagram that detailed the relative social status and influence relationships in this group. This diagram, or *sociogram*, allowed Whyte to demonstrate that the usual expectations about personal and social relationships may not always operate rationally and predictably. For example, bowling was one of the activities in which the Nortons participated regularly. The group members frequently held matches among themselves and competed on teams on Saturdays. Whyte observed that a member's bowling score did not reflect his athletic abilities. On the basis of sheer athletic ability Frank, who had played semiprofessional baseball, should have been the best bowler, but he was not. In fact, Frank was not a very good performer even when he played sandlot baseball with his friends.

Alec, another member of the Nortons, excelled at bowling when the group played just for fun on weekdays. When the Boys met to compete in teams on Saturday evenings, however, Alec could not seem to bowl a decent game. Yet Doc and another member, Danny, who were only average bowlers during the week, defeated the other teams game after game on Saturdays.

Whyte eventually learned that a member's bowling ability did not reflect his athletic ability. Rather, his bowling scores reflected his social status in the group—the very status Whyte had identified in his sociogram.

## How Sociometry Works

A sociometric test typically includes three basic characteristics:

A specific number of choices is used, which varies with the size of the group;

A specific number of choices is allowed, which varies according to the functions and/or activities of the group(s) tested;

Different levels of preference are assigned to each choice.

*Positive-peer-nominations.* The early users of sociometric tests typically employed a "peer nomination" version of this test. In this procedure the group members were asked to name three or more peers whom they liked most or whom they liked best to work with, or who were their best friends (depending on the kind of group). A group member's score then was computed as the number of nominations that he or she received from other members of the group. This version of the sociometric test is called "positive peer nominations." As users of sociometric tests refined the use of these procedures, adaptations naturally arose.

*Negative peer nominations.* One such adaptation to peer nominations was introduced initially by Dunnington (1957) and again by Moore and Updergraff (1964). This adaptation involved a request for "negative nominations": in addition to asking for three especially liked peers, the researcher requested that members identify the three peers least liked or least desirable to work with. This strategy was used to identify two groups of peers, namely a *popular group* (high frequency of positive nominations) and a *disliked or rejected group* (high frequency of negative nominations). Subsequent research on juveniles' positions as members of these groups showed that rejected children often are more aggressive and more likely to engage in various antisocial behaviors (Dodge, Coie, and Brakke 1982; Hartup, Glazer, and Charlesworth 1967). These findings suggest significant utility for those interested in studying delinquents, youth movements, and gang structures.

*Peer rating procedures.* Another adaptation that has come into common use is the peer rating procedure. As a sociometric test, it is similar in many ways to the nomination procedure. In peer rating, group members respond to the usual sociometric questions ("Whom do you like to work with? be with?") for every other member of the group. To accomplish this task, each group member is given a list containing the names of all group members and is asked to rate every other member using a five-point Likert-type scale. The scale for these five points is typically a graduated series of statements ranging from expressions of favor to expressions of disfavor toward members of the group. (For an example, see Figure 1.) As in traditional Likert scales, one assesses the mean rating score for each person. A mean rating in the low range indicates that the group member is not well liked by others in

the group. A mean rating in the high range indicates that the group member is well liked. As Jennings (1948) warned, however, identification of this sociometric pattern is not the completion of the research, but only the beginning.

After one has identified the existing social relations and structures, one still must examine the incumbents of positions in this structure. With the aid of sociometric information, one is better equipped to locate appropriate guides, informants, and gatekeepers to the group (Berg 1989). Thus one might begin an investigation with a sociometric survey and pursue the research through various other ethnographic field techniques.

## Applications of Sociometric Techniques

Even the cursory description of sociometric tests offered here should demonstrate the utility of this strategy in criminological research. One should imagine easily how a study of police officers might be enhanced by considering the officers' social structure, particularly because not all police officers occupy the same positions in the group. Police agencies are composed of persons in positions such as dispatchers, line officer, sergeant, lieutenant, and detective. There is no way to presuppose any particular pattern of affective relations between occupants of these different positions.

For example, most line officers' performances are monitored and supervised by a sergeant, not by other line officers. Although some officers may have a special relationship with the sergeant that allows idle conversation or joking, many others will not. Thus line officers may interact with one another very differently than with their supervisors. Certain types of relations, then, are viewed as appropriate only between specific structural positions in this group. In short, sociometric tests could assist an investigator who is attempting to study police organizations by identifying different types of relations between officers.

As another example of the utility of sociometry in field research, Austin and Bates (1974) studied the hierarchical social structure of inmates in a Georgia prison bullpen. They observed the inmates at work and at leisure, and noticed that in the evenings the men clustered around a single television set. Austin and Bates also established that an inmate's proximity to direct line of sight of the television was based on his social position in the group's hierarchy. The bunks of inmates with the highest status were virtually in front of the screen. Bunks of those with lower status were farther away and not in direct line with the screen. Inmates with little status were entirely out of good viewing position. Austin and Bates (1974) suggested that various aggressive acts between inmates served to maintain this hierarchical arrangement.

George Strauss (1952) used direct observations and sociometric strategies to conduct a study on union members. He maintained, however, that his efforts were quasi-sociometric because he did not use a written sociometric test

**Figure 1.****A Sample Sociometric Assessment****[QUESTION/CHOICES]**

*Directions:* On a separate sheet write the name of everyone in your group [or organization]. Read the following paragraphs, and place their corresponding numbers in front of every name for which they apply. You may use the numbers only once, and please place only a single number of each name. By your own name, please place a zero.

*"My Very Best Friend"*

1. I would like to have this person as one of my very best friends. I would like to spend a great deal of time with this person. I think I could tell some of my problems and concerns to this person with his/her problems and concerns. I will give a number 1 to my very best friend.

*"My Good Friend"*

2. I would enjoy working and doing things with this person. I would invite this person to a party in my home, and I would enjoy going places with this person and our other friends. I would like to talk and do a variety of things with this person, and to be with this person often. I want this person to be one of my friends. I will give a number 2 to every person who is my friend.

*"I Do Not Know Them"*

3. I do not know this person very well. Maybe I would like this person if I got to know him/her, maybe I would not. I do not know whether I would like to spend time or work with this person. I will place a number 3 in front of the name of every person I do not know very well.

*"I Do Not Care For Them"*

4. I will greet this person when I see them around school or in a store, but I do not enjoy being around this person. I might spend some time with this person—if I had nothing to do, or I had a social obligation to attend where this person also was in attendance. I do not care for this person very much. I will place a number 4 in front of the name of every person I do not care for very much.

*"I Dislike This Person"*

5. I speak to this person only when it is necessary. I do not like to work or spend time with this person. I avoid serving on the same groups or committees with this person. I will place a number 5 in front of the name of every person I do not like.

(a rating questionnaire). Instead he employed what he called "observer sociograms" and interviews with participants to create his sociometric descriptions.

Strauss noted that seating arrangements, as detailed in drawings that he maintained, suggested considerable stability over time:

The most striking thing shown by these maps of seating arrangements was their stability. Members developed a strong habit of sitting in the same part of the hall from one meeting to the next. Although charts drawn six months apart were considerably different, little change could be observed from one month to another. Significantly, these changes in sitting location were corrected with more

profound changes in the political life of the local. Seating arrangements mirrored part alignment (1952, p. 142).

In the studies by Austin and Bates (1974) and by Strauss (1952), the use of more abstract mathematical sociometric techniques and rating questionnaires would have been far less effective than methods of direct observation. As in any good piece of research, the setting and the research questions should direct the data collection and analytic strategies used by the researcher.

Sociometric techniques also are useful for assessing patterns within and among gangs. During the recent past, considerable attention has been drawn to the activities of youth gangs, and a number of researchers have sought to investigate delinquent

## Conclusion

As with other types of data-collecting strategies, sociometric data is strengthened by using multiple methods. Thus the existence of social distance or social acceptability identified through sociometric techniques can be accepted as valid only insofar as these findings remain constant when observed (measured) by other approaches. Once a group's sociometric structure is identified, for example, informal interviews with members to "checkout" various relationships would increase validity.

During the last several years, criminal justice agencies have turned to more qualitative techniques of interviewing, archival research, and direct observational studies when conducting program evaluations. Recently, in fact, police agencies have begun to use a standard social scientific style of interviewing during interrogations, which they call "cognitive interviewing." Several years ago, polygraph technicians began to use a modified version of textual context analysis of written statements to confirm their findings. In view of the increased receptivity to qualitative methods among agencies, a return to traditional sociometric strategies would seem to be a natural next step.

## Footnote

1. Sociodrama and psychodrama, as techniques, frequently are credited to J.L. Moreno (1952, 1977). These concepts, however, owe their origins to the more general theoretical base of symbolic interaction (Cooley 1926; Mead 1934) and to the more theatrical base of dramaturgy (Burke 1966; Goffman 1959).

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gang behavior. Sociometric techniques offer a conceptual or analytic tool that provides a framework for examining social relations both between gang members and between different gangs. Several theories about gangs suggest that friendship patterns and social cohesion relate to delinquent behavior (Giordano, Cernkovich, and Pugh 1986; Hansell and Wiatrowski 1981; Hirschi 1969; Yablonsky 1966).

A simple application of a sociometric test might be to ask members of a gang to name other members with whom they are friendly. In some cases we will find that friendship choices are reciprocated; in others, they are not. It can be reasoned that reciprocal friendships indicate greater cohesion than one-sided or unreciprocated relationships. Thus gangs that contain overlapping or numerous reciprocal relationships can be described as densely cohesive. Conversely, gangs with few reciprocal relationships can be viewed as compartmentalized, perhaps even disorganized.

Application of similar sociometric techniques also might allow one to assess the leadership patterns in a gang and to determine whether the gang represents a social, a delinquent, or a violent group of youths (Yablonsky 1966).

## Mapping and the Creation of Sociograms

Another way to create sociograms is to do so in the field. In such a case, one uses direct observations of individuals and objects as they are arranged in the setting. Essentially this approach involves creating social/environmental maps and developing sociograms from these maps.

Sociometric mapping depends on a fairly stable setting, and thus it is not always applicable. Mapping is used often in social psychological applications of organizational research. For example, one may map how executives place themselves around a board-meeting table and may delineate various power and informal influence structures. With this information a researcher (or executive) can interrupt or weaken the influence emanating from certain members. For instance, by placing himself or herself or a nonmember of some informal influence clique between several members, an individual can affect their ability to wield influence and authority during a board meeting.

This applied sociometric strategy frequently begins with a mapping of the setting. Such mapping is also useful in various other types of institutional investigations—for example, in studying how inmates use environmental space in a prison, or examining the effect of environmental design on inmates. Alternatively, it might prove fruitful in an examination of police patrols or police station operations. It might even be useful in a study of a game arcade located in a mall.

To describe how one might develop such sociometric maps, let us assume that an investigator wishes to study a group of youths in a particular neighborhood. One way to begin this task is to create a drawing or map of the setting, which would contain all of the physical elements observed in the setting: access ways, trees and shrubs, buildings, stores, street lamps,

public telephones, and so forth. Next, this map would be duplicated a number of times so that the researcher could bring a fresh map whenever he or she entered the field.

While in the field, the researcher could add symbols to represent individual gang members, dyads (groups of two), triads (groups of three), gender, leadership roles, and so forth. Over time, and by assessing the various successive annotated maps and actual field notes, the researcher will be able to identify the Star and any Satellite cliques that constitute the group(s) under study. Stars are the individuals who demonstrate considerable influence over the largest number of other members. Typically one finds only one or two Stars in a given group. One of these Stars frequently shows signs of being influenced by the other. *Satellite cliques* sometimes are viewed mistakenly as representing a star and his or her followers. In fact, Satellite cliques usually contain several members influenced by what appears to be a single individual. This individual, however, frequently is influenced by a more centralized Star.

Sociometric maps also can assist the investigator in understanding how a group uses its environmental space and maintains territorial control over areas, in finding the locus of control in various power and influence arrangements, and in determining the social space (proximity) maintained between different members and nonmembers of the group(s).

In addition, sociometric maps are useful in teaching inexperienced qualitative researchers how to observe social settings. The senior author of this article regularly assigns students in his applied qualitative research courses to conduct brief observational studies in public places (e.g., shopping malls, street corners). The first several weeks of observation are limited to "watching and listening." Often he suggests the creation of a sociometric map as an aid to observations and detailed field notes. By glancing at the map and at cryptic notes made in the field, one can recreate in the mind's eye—and in the full field notes—the events that were observed.

Videotaping technology also might be used to create a sociometric map. Moreno recognized the utility of film and audio recording in the 1940s. Today's advances in compact video recording devices allow one to recreate the setting and the relationship structures. The use of videotape, however, presents several serious ethical problems. Because everything captured on tape constitutes an exact and valid record, the question of subject's consent arises. Is taping a public setting such as a park or street corner a violation of voluntary consent? News reporters frequently capture on tape the activities of people in various settings. Even when the behaviors are potentially embarrassing or incriminating, reporters are protected by First and Fourteenth Amendment rights of free speech and free press. It is not clear whether social scientists are protected similarly.

It is likely that ethical dilemmas revolving around video sociometric techniques will work themselves out in a manner similar to ethical dilemmas confronting field researchers in general. In short, researchers must decide individually what risks and what ethical stances they are willing to take.