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Conclusion

Social mobility, or movement between groups of differing status, can have profound effects on people's well-being. Moreover, it is very much a social-psychological issue in that it raises fundamental questions about when and how members of a low-status group engage in upward mobility and, alternatively, when and how they come to accept their disadvantage. These questions are likely to elicit theoretical and empirical attention for many years to come.

Donald M. Taylor

See also Collective Movements and Protest; Social Dominance Theory; Social Identity Theory; System Justification Theory

Further Readings

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SOCIAL NETWORKS

Social networks is a field of study that focuses on the pattern, or structure, of relations among a set of actors. For example, while traditional explanations of career success often focus on a person's training or education, a social network perspective would emphasize his or her connections to others within an organization. Similarly, while leadership is often thought of as a set of personal abilities and skills, a social network analysis would focus on the leader's relations with others—for example, the relations between the leader and his or her followers or the bridging role the leader provides to outside groups—both of which might enhance or inhibit the leader's effectiveness.

To understand how social network analysis is different from other perspectives on social phenomena, it is useful to understand the distinction between *units* of analysis and *levels* of analysis. The unit of analysis refers to the aggregation of people into units of interest as primary actors in a system. For example, the field of social networks is sufficiently interdisciplinary that one can find studies of networks of all kinds of units, including people, organizations, industries, and even nations. For present purposes, however, this entry focuses on social networks in which people are the unit of analysis.

The *level* of analysis, in contrast, is more complex because it refers to different aggregations of the structural or relational features of interest, and it may be best described by example. Consider a network made up of N friends. We can identify the levels of analysis of this network on a log scale from 0 to 3 as follows: Level 0 refers to the network structure as a whole, Level 1 refers to properties of the N actors in the network, Level 2 refers to properties of the individual dyadic relations between all pairs of actors in the network, and Level 3 refers to the perceptions that each of the N actors has of the dyadic relationships in the network. Each level of analysis sheds light on a different aspect of the social relations that characterize the network. The different insights that can be gained from the levels of analysis are illustrated in Figures 1 and 2 (both adapted from real examples of work teams).

Level 0: Structure as a Whole

The first level of analysis, Level 0, yields one observation of interest in a given network of N actors. It addresses several questions: What is the overall shape of the network, how is this shape characterized, and what effect does this shape have on the performance and behavior of the group as a whole? Different shapes have different implications for
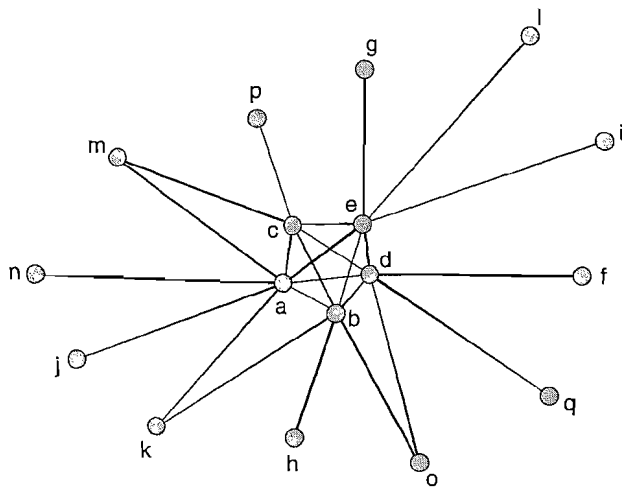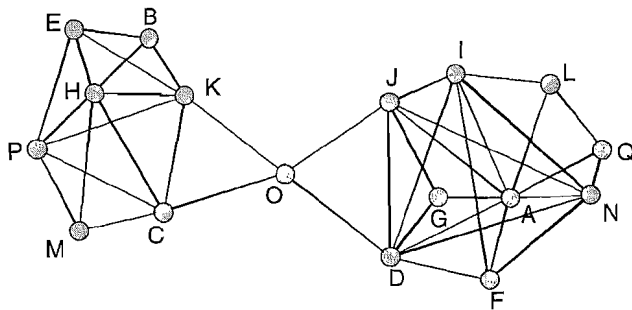
Figure I Core–Periphery Structure

Figure 2 Bow Tie Structure

what people see, how they think, and how the group or system behaves. In Figures 1 and 2, both networks are about the same size, and they have approximately the same number of overall ties, but their shapes are quite different. Figure 1 is a classic *core–periphery* structure, made up of a small group of people (the *core*) who are well connected to each other and who have ties to those on the periphery. (If there is just one person in the core, the structure is called a *star*.) Those on the periphery have ties to the core but relatively few ties to each other. This structure represents highly centralized work groups, which often have efficient group processes when the task they face is relatively simple and routine. But this structure can also evolve toward a hierarchical power distribution, in which the core coordinates to reinforce its power advantages and the periphery becomes disenchanted with this inequity. This leads to negative group dynamics that can undercut the efficiency of this structure.

The structure in Figure 2 has a very different shape, a classic bow tie, showing two relatively densely connected subgroups connected by one (or sometimes a few) bridging individuals. The integrity of the overall structure is quite fragile because keeping it connected is heavily dependent on one person (O), without whom the subgroups would be totally separated. Not only is this structure fragile, but the coherence within the subgroups and the relative lack of connection between the subgroups tends to devolve into two local subgroup identities (we–they attitudes). If the group's purpose is to perform an overall integrated task, then this structure can interfere with necessary subgroup cooperation and coordination.

These two examples only scratch the surface of the range of structural wholes that can be described in a Level-0 analysis. Most groups are not as classic, or prototypical, in their structure as those in Figures 1 and 2. Usually, structures are complex and messy, and the question is not what type of structure they are but rather how close, or similar, they are to particular ideal types. Measures of such closeness abound and carry with them different implications for group processes and outcomes. For example, the *E–I index* measures the extent to which a structure is characterized by a preponderance of external ties (that bridge across group boundaries) versus internal ties (that connect people within the group). Having a high E–I index score, indicating predominantly bridging ties, has been found to facilitate a group's ability to deal with or survive crises.

A secondary question is, What leads to different structural shapes? Since most network structures are emergent (i.e., not preplanned but rather evolving through a set of recurring, sometimes random, interactions), the question becomes, What governs which shape will predominate? Although there is much work to be done to answer this question, it has been argued that the structures illustrated in Figures 1 and 2 occur frequently. For example, Michels's *iron law of oligarchy* argues for the inevitable evolution of social systems toward a core–periphery structure (Figure 1), with a small group of leaders coordinating to dominate the whole structure. On the other hand, Watts's work on "small worlds" suggests that, in large-scale networks, clustering such as that in Figure 2 is rather common.

Level 1: The Individual Actor

Individuals bring with them to the social situation a set of attributes (e.g., age, education, experience, attitudes, beliefs). The network analyst adds to this list an assessment of the advantages a person has because of his or her position within the network. A Level-1 analysis addresses the following question: What is the consequence to the individual who occupies a certain position in the network?

The most prominent concept used in asking Level-1 questions is *centrality*. There are three basic types of centrality: degree, closeness, and betweenness (although extensions and varieties of each exist). *Degree centrality* is simply the count of the number of ties a person has in the network. In Figure 2, Person A has the highest degree centrality (8 ties), whereas person B has the lowest (3 ties). People with high degree centrality are often identified as the informal leaders of the group.

Efficient communication and information transfer within a group are critical to its proper functioning. The social network provides a road map of how this communication flows within and between groups. The more steps it takes (equivalent to the number of intermediaries who must be traversed) to reach someone in another part of the network, the more remote that target is. A critical issue, then, is how quickly one can reach others through the network. This ability is often assessed by *closeness centrality*, which measures the average number of steps it takes for an individual to reach everyone else in the network. A person with high closeness centrality can reach others in relatively few steps; a person with low closeness centrality has to go through many intermediaries in order to reach everyone in the network. Those high in closeness centrality, therefore, are more likely to be able to disseminate information quickly through the network. Another advantage is that they are more likely to pick up rumors or other bits of information that percolate through the network. When such information transfer is critical to the group, closeness centrality becomes a valuable asset to the individual who holds it.

While both degree and closeness centrality are useful guides to understanding an individual's advantages and contributions to the group processes, it is *betweenness centrality* and related measures that are most important to success in a social network. Betweenness centrality captures the extent to which an individual is on critical paths between others in the network. Returning to Figure 2 (the bow tie), we see that Person A has the most ties (highest degree centrality). But we also see that most of the people A is tied to are also tied to each other. Thus, none of the people A is tied to are dependent on A to get a message to any of the others; they can easily go around A to reach their targets. Despite A's popularity, he or she has low betweenness centrality in this network.

In contrast, whereas Person O has only 4 ties, these ties are critically situated so that individuals in the left side of the graph are highly dependent on O to reach those on the right side (and vice versa). O is critically located between many other pairs of individuals in the network and thus has high betweenness centrality. Because of the dependency that others have on those with high betweenness centrality, this index is often predictive of the power and influence an individual has in the group or organization.

A close relative of betweenness centrality is Ronald Burt's concept of *structural holes*. Recall that A had low betweenness because most of the people A is tied to are already tied to each other and thus they can easily go around A. The people O is tied to, in contrast, have far fewer options. It is this lack of ties, called *holes*, that gives rise to O's betweenness and power advantages. Measures of structural holes and betweenness are conceptually linked and empirically correlated, but the research on structural holes has focused more on the performance consequences of the group's members. Those individuals surrounded by structural holes have been shown to be more productive, to develop more creative ideas, and to get promoted more quickly in organizations. There are costs, though, in that being the bridge between different groups (as O is in Figure 2) can lead to role conflict and stress.

Level 2: The Dyad

Since position within the network has such a powerful effect on participants' opportunities and constraints, researchers have explored a deeper question, namely, how do these (almost $N \times N$) dyadic network ties form? Why do we choose particular others to be our friends? Several factors can help us answer these questions.

First, there is the general principle of *homophily*. People prefer to interact with others who are similar to themselves. People of similar demographic characteristics (e.g., race, sex, age, education) tend to associate with each other. People will also tend to associate with others who share similar beliefs and attitudes.

Another prominent factor that influences the formation and retention of network ties is *propinquity*. Whether two people communicate or form a relationship is heavily influenced by the physical distance between them. For example, two people with offices beside each other will tend to communicate more often than will two people with offices on separate floors.

A third factor is *affect*. People have a tendency to interact with others whom they like. This may seem obvious, but the extent to which affect dominates people's choices is sometimes surprising. For example, suppose you need technical help on a task. Suppose further that you have a choice to seek help from either a *competent jerk* (someone you view as technically able to address your question but whom you do not care for personally) or a *lovable fool* (someone you like but who is relatively incompetent). It turns out that most people will choose the lovable fool over the competent jerk in work settings.

Level 3: Cognitive Social Structures

Beyond actual dyadic interactions, there are also people's perceptions of networks. That is, while the network can have structural effects on individuals, if a participant in the network believes the network is different from what it really is, that perception may influence his or her perceived options and subsequent behavior. For example, the person who is the manager of the workgroup in Figure 2 might want to introduce changes in the role assignments of his or her work crew. A cursory examination of this network is likely to lead the manager to see that he or she should take into consideration the fact that these two distinct subgroups might view any changes with suspicion if the changes favor members of one subgroup over the other. Moreover, in seeking to implement the new assignments, the manager could take advantage of O's unique role as a bridge between the two subgroups. In contrast, if the manager believes

that the network is one large, undifferentiated group with network ties densely distributed across the board, then he or she may not take these group dynamics into account in trying to implement the new role assignments.

Each of the N participants in the network has his or her own perception of what the network is like. Taken together, these N perceptions are called the *cognitive social structure* of the network. Since each participant has a view of who is tied to whom, this amounts to approximately N^3 assessments of the structure (N perceptions of almost $N \times N$ dyads).

Research in this area has produced several interesting findings. First, participants' perceptions of the network have direct consequences for their behavior, as illustrated by the above example about the group in Figure 2. Moreover, *accuracy* of network perception facilitates a participant's ability to accomplish his or her goals in the group. In particular, an individual's accuracy leads to power, over and above the power emanating from his or her formal position or the power attributable to his or her centrality in the network.

Research has explored predictors of network perceptions and their associated biases. These perceptions are influenced by many factors, some of which lead to substantial misperceptions and inaccuracy. For example, there is a tendency to see more solid groupings and clusters of ties than actually exist. This bias is strongest for those people who are closest to the perceiver (we prefer that our friends be friends with each other). We also have relatively little insight about those parts of the network that are distant from us as perceivers. This results in an accelerated rate of inaccurate perceptions as a function of distance, simply because of lack of information. In combination, these two sources of bias result in the most accurate assessments of dyadic ties for those who are at an intermediate distance from perceivers.

Conclusion

The field of social networks provides a perspective on social phenomena that focuses on relationships among individual actors as the core building block of group and individual behavior. Different levels of analysis emerge from this perspective, ranging from the micro (Level 3) to the macro (Level 0). Each of

these provides insights into how individuals operate in groups and how groups interact. Moreover, levels of analysis can inform each other: Perceptions can lead to ties, strategic ties can lead to central network positions, and stratification of these positions can lead to systemic behavior. By examining these network relationships, we gain a unique understanding of complex social situations.

David Krackhardt

See also Cliques; Communication Networks; Dyads; Group Composition; Homophily; Levels of Analysis; Social Relations Model; Status

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SOCIAL RELATIONS MODEL

The *social relations model* (SRM), developed by David Kenny and Lawrence LaVoie, offers both a conceptualization scheme and a set of analytical tools for studying interdependent perceptions and behaviors related to group processes and outcomes at multiple levels of analysis. The model assesses the degree of similarity of perceptions or behaviors within groups (e.g., whether everyone in the group thinks that a given member is credible or whether members direct their comments to a particular person) and whether that similarity holds at the individual, dyadic, and group levels of analysis. The SRM decomposes ratings members make about or behaviors directed to other members into three basic components, each of which is used to answer a set of specific questions regarding group and interpersonal processes.

A typical SRM study of small groups employs a round-robin design, in which each member rates every other member on some measure (although some studies use a block design, in which a subset of members rates another subset), so round-robin designs are assumed in the remainder of this entry. Self-ratings are possible, although not necessary. Excluding them, however, precludes several interesting analyses. Depending on the research questions and purposes of the study, ratings can be obtained before, during, or after interaction, and, in some cases, ratings are obtained at *zero-acquaintance*, before members get to know one another. The result is that in a group of size N, each member rates and is rated by the $N - 1$ other members on the variable or measure of interest.

According to the SRM, three main components of perception (as derived from the ratings) are the perceiver, target, and relationship effects. The *perceiver effect* describes the tendency to view or rate a set of targets similarly. For example, a given member might be predisposed to rate all his or her colleagues high on credibility. The perceiver effect indexes *assimilation*, which is the extent to which a person provides similar ratings of the other group members. The *target effect* describes the set of judgments a set of perceivers makes about a target. For example, some members may be perceived uniformly as having high credibility, perhaps because of their behavior or institutional position. The term *consensus* is attached to the target effect. Finally, the *relationship effect* is the unique perceptions a perceiver has of a target relative to other targets. *Uniqueness* is the extent to which one's perception of the target cannot be explained by consensus and assimilation. From these three components, one is able to ask several questions, including those related to *assumed similarity*, which is the correspondence between self-perceptions and one's perceptions of others, and *self–other agreement* (i.e., the correlation of self-perceptions and others' perceptions).