Part A

Theory and Setting

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Social Structure and Social Control

Abstract. Elucidating mechanisms by which actors in differentiated social positions come to be coordinated remains a key theoretical problem for structural analysis. The strength of structural analysis has been its success in describing complex patterns of social differentiation; its weakness has been that it is not wedded to a structural social psychology that elucidates how interpersonal agreements are formed in a complexly differentiated group. Hence, interpreting the revealed social structures has been difficult, especially with regard to their implications for social control.

Analysis of social structure has been advanced by the idea that social differentiation is defined by networks of social relations. Prior to the network approach to social structure, analysts relied on nominal classifications of actors (based on gender, race, ethnicity, religion, or occupation among other variables) to describe the social differentiation of groups, communities, and organizations. In the network approach to social structure, the positions of actors are revealed by their patterns of relations with other actors, and a differentiated social structure is defined by the existence of actors who occupy different positions in networks of social relations.[1] The approach has been widely applied. For instance, it has been used to describe the social structure of elite families in Florence circa 1430, monks in a present-day monastery, major corporate actors in national markets and policy communities, and researchers in scientific specialties.

I build on this line of structural analysis. Social differentiation is my *start point*. I focus on the consequences of social structure for patterns of interpersonal influence and agreement among actors in different social positions. In the present chapter I describe the theoretical concerns of

1 A social network exists in a population of actors whenever we can say that "actor i is related to actor j" or that "actor i is not related to actor j" for each ordered pair of actors. Thus, networks of kinship, friendship, advice seeking, and discussion (among other relations) may be defined. Wasserman and Faust (1994), a useful reference book on social networks, contains a thorough review of the methods that have been developed in this field to describe social positions.

the inquiry. First, I describe the network approach to mapping differentiated social structures. Second, I describe pertinent theoretical work on the importance of informal social processes versus institutionalized features of social structure in elucidating a population's opinions and actions. Third, I describe the bearing of structural analysis on the classical problem of social control – the development of interpersonal agreement and coordinated action in complexly differentiated social structures.

I argue that a structural analysis which is restricted to a description of social differentiation does not address the problem of social control, and that the social influence process which links the occupants of different social positions must be taken into account to address this problem. If social control refers to the occurrence and effectiveness of ongoing efforts in a group to formulate, agree upon, and implement coordinated lines of action, then the process of interpersonal influence is a key foundation of social control. This viewpoint on social control stems from George Herbert Mead (1925), who argued that social control depends on "the degree to which individuals in society are able to assume attitudes of others who are involved with them in common endeavors." Interpersonal influence affects actors' attitudes and opinions and is, therefore, a foundation of actors' socialization, identity, and decisions. Interpersonal influence also is a foundation of actors' efforts to control their social environment by modifying the attitudes and opinions of significant others with whom they interact. In groups, communities, and organizations, this influence process can produce agreements that define the culture of the group and that frame the collective activities of its members.

Interpersonal influence typically occurs in a larger network of influences wherein the attitudes and opinions of actors reflect those of their significant others, whose attitudes and opinions reflect those of their significant others, and so forth. Because of this concatenation of reflections (based on the flows of interpersonal influence among actors), there is not always a simple relationship between the particular social position that is occupied by an actor and his or her attitudes and opinions. Structural analysis has not attended to this concatenation of reflections and has focused only on the proximate conditions of actors for an explanation of their attitudes and opinions. However, a characteristic feature of interpersonal influence is that actors' attitudes and opinions may reflect the preferences of others who occupy *different* social positions than their own (hence, children may reflect the attitudes of their parents and ancestors, adolescents may reflect the attitudes of friends and friends-of-friends who have a different socioeconomic status than their own, and workers may reflect the attitudes of supervisors and owners). Hence,

unless we take into account the process of interpersonal influence that connects the occupants of different social positions, we are not likely to understand the opinions and attitudes that are expressed by the occupants of particular social positions. By the same token, we are not likely to understand how agreements and shared understandings come to be formed that include occupants of different social positions and that reduce their conflicts and coordinate their collective activities. Such agreements either emerge directly from the social influence process or are the result of social choice mechanisms that are supported by agreements that have emerged from this influence process.

In this argument, which I elaborate in the present chapter, I reject the brand of structuralism advocated by Robert Merton (1957) and others in which the individual's response to conflicting interpersonal influences does not appear as a key theoretical issue. Instead, I propose a structural social psychology in which the individual is the key site at which the integration of conflicting influences occurs, because it is this *ongoing repetitive integration by individuals* that sets in motion the flows of influence that, in turn, can result in interpersonal agreement and coordinated action in complexly differentiated social structures. Social structural constraints do not disappear in this approach. They are present in the social differentiation which is the origin of the different attitudes and opinions upon which the social influence process operates, and they are present in the network of interpersonal influence which is the context for the social influence process.

1.1 Social Differentiation

In the seminal work on a network approach to describing social structures, the definition of social positions went hand in hand with the definition of a *framework of relations among social positions* (Breiger, Boorman, and Arabie 1975; White, Boorman, and Breiger 1976; Boorman and White 1976; Arabie, Boorman, and Levitt 1978). I will consider this seminal work in some detail, because the theoretical problems that are my main concern spring from a close analysis of it.

Most investigators who work with a network definition of social positions describe positions in terms of the similarity of actors' relations to other actors (or types of actors) in one or more concrete social networks; however, this was not precisely the approach taken by Harrison White and his colleagues. Their approach – blockmodeling – is based on an

analysis of contrasting densities of interpersonal ties among and between subsets of actors.[2] There are three steps involved in the analysis.

First, a partitioning of a population is sought that reveals *zeroblocks* or low-density submatrices in one or more social networks. The goal is to find a blockmodel (i.e., a partitioning of the population) that reveals a contrast between submatrices of low and high density. An example of a blockmodel for two hypothetical social relations is:

$$\mathbf{P} = \begin{array}{c} \begin{matrix} 1 & 4 & 5 & 7 & 2 & 3 & 6 \end{matrix} \\ \left[\begin{array}{cccc|ccc} 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & 0 \end{array}\right] \end{array} \qquad \mathbf{N} = \begin{array}{c} \begin{matrix} 1 & 4 & 5 & 7 & 2 & 3 & 6 \end{matrix} \\ \left[\begin{array}{cccc|ccc} 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ \hline 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 0 & 0 \end{array}\right] \end{array}$$

where **P** indicates friendship and **N** indicates antagonism. The population has been partitioned into two subgroups; and the resulting blocks are submatrices that describe friendly or antagonistic ties from the members of one subgroup to the members of the same or different subgroup.

In the blockmodel approach, unlike previous cluster-detection approaches, the target is not a partition that maximizes the density of ties in the blocks on the main diagonal (i.e., within-group ties); instead, the target is a more general "block checkerboard" pattern that is based on a search for zeroblocks. Hence, "the blockmodel is given structure by the *absence* of ties in certain blocks instead of by the high density of blocks containing ties" (Arabie, Boorman, and Levitt 1978, p. 34). In a "block checkerboard" pattern, high-density blocks may appear off the main diagonal, and zeroblocks may appear on the main diagonal.

Actors are said to be *structurally equivalent* if they occupy the same block in the blockmodel. In comparison with more recent approaches to social positions, this blockmodel approach entails a subtle but enormously important difference of conceptualization: Actors are not located in the same block because they are structurally equivalent in their pattern of concrete relations with other actors; instead, they are structurally equivalent because they have been located in the same block as a consequence of a search for zeroblocks.[3] The CONCOR algorithm, which has

2 Network density is the proportion of ties that are present in a specified set of pairs of actors. For example, the density of a network $\mathbf{R}_{N\times N} = [\mathbf{r}_{ij}]$, where $\mathbf{r}_{ij} = 1$ if $i \to j$ and $r_{ij} = 0$ otherwise, is $(\sum_i \sum_j \mathbf{r}_{ij})/(N^2 - N)$ for $i \neq j$; similarly, the density of a submatrix (block) of **R** is obtained by dividing the number of ties in the submatrix by the number of possible ties.

3 This distinction disappears in the special case of a blockmodel composed of blocks that are either completely or vacuously dense.

been employed frequently in the construction of blockmodels, was not perceived originally as a method for isolating subsets of actors who are structurally equivalent in their networks of social ties; instead, the value of the algorithm was seen to rest on its empirically demonstrated ability to locate zeroblocks:

> The following empirical fact makes CONCOR a procedure which has been highly effective in the search for blockmodels: When a sufficiently sparse data matrix $\mathbf{M}_0$ is permuted to conform to CONCOR-derived blocks, the permutation will generally reveal zeroblocks or near-zeroblocks in the data. (Arabie, Boorman, and Levitt 1978, p. 36)

Thus, the social structure of a group is defined by the pattern of zeroblocks in the group.

Second, given a blockmodel of the group, an *image* of the macro-structure of the group is obtained. In this image, the social units are positions, and two positions are related if and only if the block that describes the ties between the two positions is not a zeroblock. The relations in the image matrix are described as *bonds*. For example, in the blockmodel illustrated earlier the image matrices are:

$$\hat{\mathbf{P}} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \quad \hat{\mathbf{N}} = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$$

When strict zeroblocks do not arise, a generalization of this approach is employed: A bond is defined if the density of ties in the underlying block is above a threshold value. For a suitable threshold value, Arabie, Boorman, and Levitt (1978) suggest the density of ties in the population. It is the pattern of bonds that defines the structure of the blockmodel, and actors are said to be structurally equivalent with respect to these bonds, rather than with respect to the concrete (raw) social networks from which these bonds are derived.

Third, a further description of the macro-structure is obtained in terms of algebraic identities among compound relations, where a compound relation is based on Boolean multiplication of image matrices. A simple example of such an identification is $\hat{\mathbf{P}} \otimes \hat{\mathbf{P}} = \hat{\mathbf{P}}$, which states that "a friend of a friend is a friend." Another example is $\hat{\mathbf{N}} \otimes \hat{\mathbf{P}} = \hat{\mathbf{N}}$, which states that "an antagonist of a friend is an antagonist." The set of all such identifications describes the internal logic of the social structure and (with further formulation) also allows a comparison of social structures.

This blockmodel approach to macro-structure has the virtue of offering a coherent and elegant scheme for the description of social differentiation. It not only provides a description of the array of social positions

in a population, but also provides a description of the macro-structure in which these positions are embedded.

The theoretical weakness of the blockmodel approach is the absence of a clear rationale for basing the description of social differentiation on an analysis of the density of social relations: The description of social structure (in terms of positions and bonds) stems from the pattern of "holes" (zeroblocks) in the underlying raw social networks. It is unclear why "holes" should be treated as decisive in the definition of social structure and override possibly marked variations in the densities within and among blocks. Obviously, "holes" define social structure when the areas of social structure that are not "holes" have a uniform density, just as a melody can result from playing a single note that is interrupted by silences of various lengths. However, the result of such an approach is a poor model for social structure (as it is for a symphony), which is based on highly variegated patterns of relations. To be sure, a blockmodel provides a summary description of the pattern of social ties in a population; but the social control implications of the revealed structure are unclear.[4]

Recent work on social positions has departed from the blockmodel approach in favor of grounding the definition of social position on a *direct analysis* of the profile similarity of actors in their concrete social networks. As part of this departure from the blockmodel approach, the heuristic value of CONCOR is reconceptualized: The product-moment correlations (upon which CONCOR is based) now appear as a plausible measure of profile similarity (among many possible alternative measures of such similarity), and the CONCOR algorithm itself now appears as one method (among alternative methods) for pursuing a cluster analysis of these profile similarities.[5]

However, the current direct approaches to social positions do no better than the blockmodel approach in elucidating the implications of the revealed social structures. These direct approaches obtain social positions from a hierarchical clustering or multidimensional scaling of profile similarities. It is expected, as in the blockmodel approach, that actors in the same or proximate social positions have more homogeneous status characteristics and predispositions, with respect to behavior and opinion,

4 It should also be noted that compound relations can be examined directly without the "smoothing" and loss of information that is entailed by image matrices (Pattison 1993). These compound identifications are statements about how concrete social relations hang together and, therefore, can be studied directly to assess the degree of fit of the hypothesized identification. Identifications based on image matrices do not reliably indicate the strength of the identification in the concrete networks.

5 CONCOR has been abandoned by its originators because of a lack of formal foundations for the partitions that the algorithm produces (Phipps Arabie, personal communication).

than actors in different or distant social positions. But can anything more be asserted about the implications of the revealed social structure, apart from this coupling of an actor's characteristics, predispositions, and social position? It is at this point, i.e., the analysis of the revealed social differentiation, that structural analysis runs into difficulty.

The definition of social positions does not describe the behavior of the system of social positions. Social positions entail conditions that have effects on opinions and behaviors, but the opinions and behaviors of actors that reflect their social positions may be modified by interpersonal influences. Actors in proximate (nonidentical) positions may be influenced by different subsets of actors who polarize the opinions of the actors; conversely, actors in distant social positions may come to an agreement as a consequence of interpersonal influences. Thus, without additional theory, there is no basis for concluding that the actors in proximate (nonidentical) social positions will have similar opinions and coordinated behaviors in the equilibrium state of the social influence process, or that actors who occupy certain markedly different social positions will have dissimilar equilibrium opinions or uncoordinated behaviors. A coordinative social structure that serves to maintain or form agreements between actors in different positions, including consensus, may or may not be present.

Structural analysis has sought to address the implications of social structure in three ways. (a) Qualitative analysis has been employed to describe the activities of actors who occupy particular positions in the social structure, and the collective outcomes of these activities. (b) Network analysis has been employed to describe the pattern of interpersonal ties within and between social positions.[6] (c) Statistical analysis of the distribution of status characteristics, opinions, and behaviors among and within social positions has been employed to describe any cleavages that may exist in the population. The studies of Edward Laumann and his colleagues show how these supplementary analyses may be combined in sophisticated ways to interpret a revealed social structure (Laumann and Pappi 1976; Heinz and Laumann 1982; Laumann and Knoke 1987; Heinz, Laumann, Nelson, and Salisbury 1993).

It is evident that structural analysis lacks a formal theory that predicts the consequences of the *system of social positions* for agreements and interpersonal influences; we do not have a theory that, building directly on the description of social positions, provides an analysis of the *sys-*

6 In these network analyses, heavy reliance is placed on tables that report network densities within and between distinguishable social positions (Marsden 1989). Obviously, such density tables raise the same theoretical issue that creates an interpretation problem in the original blockmodel approach; viz., why should network density be privileged with respect to the indication of linkages among social positions?

temic implications of the revealed set of positions, or the degree to which the opinions and behaviors of the actors who occupy different positions are coordinated. The closest approximation to such theory was achieved by the blockmodel approach in which social positions and the bonds between them are *simultaneously* generated by the pattern of zeroblocks. In contrast, the direct approach to social positions, when it severs the definition of a social structure from the pattern of zeroblocks, loses a grasp on the *structural basis of bonds between positions* that is the main virtue of the blockmodel approach.

A key aim of the present work is to place the analysis of interpositional connections on a more secure and formal footing. I will take a direct approach to describing social positions in multidimensional social space. I replace the inferences based on network density with inferences based on a formal model of social influence, and I show how the pattern of interpersonal influences among social positions affects the development of interpersonal agreements and dominant social positions.

1.2 Social Process and Institutions

Influence processes among social positions must be described in detail in order to elucidate the social control implications of a pattern of differentiation. This assertion may and should be questioned. I contrast two extreme viewpoints on the effects of social structure. According to one viewpoint, interpersonal influences simply reflect institutionalized elements of social organization and, therefore, the outcomes of such processes are obvious once the institutionalized features of the social structure are laid bare. According to the other viewpoint, institutionalized features of social structure weakly constrain outcomes, and the opinions and behaviors of actors can be understood only by taking into account the informal network of interpersonal influences that connects actors who occupy different social positions.

1.2.1 Strongly Constraining Structures

In a strongly constraining social structure the opinions and behaviors of actors are determined mainly by institutionalized status characteristics and power structures. The important agreements and disagreements among actors in different social positions are shaped by a population's history, culture, and governance structures and are affected mainly by macro-processes and events such as wars and revolutions, economic growth and decline, information and persuasion from mass media, social

and political movements, and demographic trends. In a strongly constraining social structure, there is a clear set of material exigencies and normative expectations, and therefore little ambiguity or confusion about the appropriate opinions and actions in a domain of issues and situations. Interpersonal influences (based on coercion, authority, expertise, identification, or rewards) reflect and support institutionalized features of the social structure and, therefore, may be ignored in the explanation of the opinions and behavior of actors. It is the institutionalized situation that is important.

The prototypical strongly constrained social structure is a bureaucratic organization, in which many of the actions of the officeholders are entirely determined by formal regulations and authorities. To be sure, bureaucracies vary in the degree of constraint they exert on the behavior of actors; moreover, strongly constraining social structures are not found exclusively in bureaucracies. Two conditions appear especially important for the maintenance of a strongly constraining social structure, and they have been repeatedly emphasized in the literature.

First, there is a clear demarcation between the individual and positional (organizational) personality, so that a circumscribed domain of behavior and opinion is constrained. So-called greedy institutions and sects are special cases in which the whole individual is the object of constraint. Typically, however, there is segmentation of the actor so that only certain behaviors and attitudes are relevant. For example, the authority of a lieutenant over a sergeant should not depend on their relative ages, although broader societal norms – deference to age and experience – might encourage a respectful attitude of lieutenants toward those older and more experienced sergeants who are under their command. Socialization and selection serve to support the segmentation of actors by attenuating the importance of certain sources of variation in actors' behavior and opinions. In short, when social positions and interpersonal influences strongly constrain opinions and behavior, they usually do so within highly restricted domains of opinion and behavior, and it is likely that such restriction is a precondition of strong constraint.

Second, in strongly constraining social structures, agreements between occupants of different social positions arise either from unambiguous standards that specify appropriate behavior and opinions, from institutionalized channels of interpersonal influence (traditional or legal lines of authority) in which a consistent set of influential expectations are conveyed to the actors in different social positions, or from social choice mechanisms. Behavior may be coordinated either because the actors in each position independently adhere to norms and programs of activity that foster such coordination, or because they conform to the consistent dictates of higher authorities. Their opinions on issues may agree either