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Measuring Meaning Structures

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ABSTRACT

The recent cultural turn in American sociology has inspired a number of more scientifically oriented scholars to study the meanings that are embedded within institutions, practices, and cultural artifacts. I focus here on research that (*a*) emphasizes institutional (rather than individual) meanings, (*b*) uses a structural approach to interpretation, and (*c*) employs formal algorithms or quantitative procedures for reducing the complexity of meanings to simpler structural principles. I discuss two core methodological issues—the assessment of similarities and differences between items in a cultural system and the process by which structure-preserving simplifications are found in the data. I also highlight the importance of two-mode analytic procedures and I review some of the perceived benefits and criticisms of this style of research.

INTRODUCTION

The cultural turn that has recently swept through much of American sociology has meant that sociologists are ever more frequently focusing on the role of symbols, meanings, texts, cultural frames, and cognitive schemas in their theorizations of social processes and institutions. Although this resurgence of interest in cultural phenomena is often associated with the shift towards more humanistic and interpretative methodologies, an increasing number of quantitatively oriented scholars have also begun to turn their attention to the study of cultural meanings. In the process a new body of research has begun to emerge in which social practices, classificatory distinctions, and cultural artifacts of various sorts are being formally analyzed in order to reveal underlying structures of meaning.

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This work is scattered across many substantive areas of research. It has no coherent center or easily definable boundaries. There is, as yet, no clearly articulated core methodology or statement of theoretical intent. As a consequence, I adopt a somewhat idiosyncratic set of inclusion rules for the material covered in this review. My focus emphasizes studies that measure institutional (or cultural) rather than individual meanings. I pay special attention to those projects that have (if only implicitly) adopted some variant of a structuralist approach to interpretation. And I devote particular attention to describing the ways in which formal analytic methodologies are being employed to reduce complex collections of cultural data to simpler, more easily intelligible structures of meaning.

I begin with a short discussion of how the measurement of meaning developed in American sociology up to and including recent attempts to study institutional processes through the formal analysis of meaning structures. I then highlight the main elements of a structural approach to meaning and describe two methodological issues that are involved in conducting this type of research—the measurement of similarities and differences, and the reduction of complexity through various types of formal analyses. I focus next on one particularly promising class of analytical methods that seems to me to hold out the greatest promise for future progress. I end with a brief discussion of some of the advantages and disadvantages of formal approaches to interpreting meanings.

MEANING AND MEASUREMENT IN CONTEXT

Formal analysis of meaning structures is not new to the social sciences. Much important research has been done by scholars in other disciplines, including the pioneering work on semantic differential techniques by the psychologist Charles Osgood and his colleagues (Snider & Osgood 1969). Cognitive psychologists have carried this trajectory forward in a myriad of ways. Applications and extensions of this work have been pursued by linguists, political scientists, market researchers, and anthropologists. The latter group in particular, and especially cognitive anthropologists such as Roy D'Andrade (D'Andrade 1995), have been especially instrumental in developing the theory and method of meaning analysis as a formal endeavor.

Formal analysis of meaning has also had a long-standing home in at least two areas of American sociology. Meaning measurement has been a central concern of sociologists who use survey methods to study opinions, attitudes, and beliefs (Sudman et al 1996). Content analysis of meanings in textual data is a second area that has been systematically developed since the early work of Bernard Berelson (Berelson 1952). However, with the exception of a few subfields such as political sociology, where opinion research continues to be im-

portant, both of these methodological projects have become isolated from the core research traditions of sociological work. This is partly because the data sources (opinion surveys and coded texts) have been difficult to acquire and are generally limited to specialized areas of investigation. Many quantitative sociologists also seem to believe that the dynamics of social structure (formal organizations, social movements, processes of social mobility and status attainment, and the like) can be measured, but that the more ephemeral aspects of cultural meanings cannot. Thus, the meaningful character of social action (and of institutional life more generally) has appeared as part of the broader theoretical context which frames these research programs rather than as something that is measured directly.

Recent work has begun to bridge the divide between culture and social structure. The flourishing of symbolic interactionism and ethnomethodology during the sixties contributed to an enduring and widespread appreciation of the socially constructed character of the social world (Berger & Luckman 1967). Subsequent theoretical statements almost universally emphasized the dialectical or dualistic relationship between cultural meanings and social structures (Bauman 1973, Sahlins 1976, Bourdieu 1977, Giddens 1984, Swidler 1986, Sewell 1992). Slowly, these insights have come to be incorporated into the empirical projects that characterize core regions of the discipline. Culture was first linked to the logic of the production process in popular culture industries (Peterson & Berger 1975, Peterson 1976). It was shown to be an important and measurable factor in the prediction of status attainment outcomes (DiMaggio 1982, DiMaggio & Mohr 1985, Mohr & DiMaggio 1995). Institutionalists demonstrated the significance of symbols and cultural processes in the study of organizations and their environments (Meyer & Rowan 1977, DiMaggio & Powell 1991). Social movement theorists showed the importance of cognitive frames (Snow et al 1986, Eyerman & Jamison 1991) and cultural processes of identity formation (Darnovsky et al 1995). Many other examples could be pointed to.

However, the study of cultural phenomena is not the same as the analysis of meaning. As Wendy Griswold has persistently complained, most of the research continues to sidestep the problem of meaning analysis altogether. The distribution of genres has been mapped, elements of cultural production have been counted, levels of cultural knowledge have been measured, increases of organizational homogeneity have been demonstrated, but the meanings that are constitutive of these cultural phenomena have largely been left aside. Griswold has sought to develop methodological approaches that incorporate sociology's empirical rigor and sophisticated understanding of social structure while also taking the meanings embedded within literary and other cultural texts as a critical element of the analysis (Griswold 1987a,b, 1992, 1993). While she has been instrumental in focusing attention on this problem, Gris-

wold's own work has largely been directed toward the study of literature and, although she is rigorously empirical, the formal measurement of meaning has not been her goal.

ACTORS, ACTIONS, AND OBJECTS OF ACTION: A NEWER INSTITUTIONALISM

In this essay, I review many examples of sociological work that seeks to directly measure cultural meanings. My focus will be largely methodological in that I will organize the discussion around the question of how this type of research is conducted. But I begin with three recent examples that demonstrate the potential contributions of meaning measurement for the empirical investigation of core sociological questions. What sets this work apart is the folding together of cultural meanings and social structures as primary elements within the same research design. Such an approach much more faithfully reflects theorists' contention that social structures and cultural structures are mutually constitutive. Thus, in the following examples, meanings are measured in order to show how social structures are created. All three examples concern historical changes in institutional forms, a reflectioin of the fact that historical sociology has been an especially fertile terrain for this style of research because researchers are constrained, by necessity, to analyzing meanings embedded within texts (Franzosi & Mohr 1997).

Charles Tilly has been a long-standing leader in this style of research. His recent work is especially instructive. Tilly (1997) seeks to explain the parliamentarization of British politics, that is, how the structure of political influence shifted from the local to the national level while the nature of collective claim-making was transformed from a reliance on spontaneous acts of (often violent) protest toward the more formalized grievance mechanisms of political parties and organized social movements. Though this might be viewed as a problem of organizational change or of the formal transformation of political structure, Tilly sees this as an occasion for cultural analysis. He emphasizes the need to understand how the popular meaning of politics changed during these years, and especially how conceptions of social rights shifted along with ideas about how to make a collective claim in defense of one's rights. His analysis relies on textual data, especially verbatim summaries of contemporary newspaper articles reporting on some 8,000 "contentious gatherings" that occurred between 1758 and 1834.

Tilly argues that shifting relations between claim-makers and claimants defines the character of political institutions. For his analysis, Tilly divides 12,000 or so different contentious groups into 64 social categories (farmers, friendly societies, workers, masters, constables, militia, parishioners, gentlemen, local officials, and so on). He then looks for claim-making relationships

among these groups by analyzing his data on contentious gatherings to see what actors made what kinds of claims (attacking, donkeying, petitioning, arresting, applauding, addressing, and other similar efforts) against what other actors. A blockmodel analysis, divided by time periods, shows how the meaning and structure of political action changed dramatically during these years.

DiMaggio & Mullen (1993) provide a second example. Their study concerns how American communities went about celebrating National Music Week in 1924. Like Tilly, DiMaggio & Mullen are interested in the way power and influence are organized and, also like Tilly, they see the social structure of community politics as being built up out of shifting systems of meaning. The events studied here are not contentious gatherings, however, but formally organized community rituals. They collected data on 833 events occurring in 419 different communities, focusing on the actors, actions, and objects of action in each event. In this case, the actors were the event participants (clubs, churches, ethnic associations, employee groups, and the like). The catalogue of actions included the various types of musical events that were planned—those that tended to reinforce status group boundaries (e.g. religious or classical music concerts) and those that had a more inclusive focus (band and patriotic music, group sings, and so forth). The objects of action were the types of audiences that were encouraged to participate: Were they general admission events or events that were staged in such a way as to assemble people who were defined as members of specific associations, congregations, or as residents of particular institutions?

Once again, it is the relations between these three sets of elements—participants, performances, and audiences—that DiMaggio & Mullen use to construct a measure of the shifting institutional logics of community political structure. What they discover are four relatively distinct modes of organizing community rituals that they then link to the foundations of political authority in each community. They identify these as (*a*) "rituals of ratification" that tend to reaffirm traditional arrangements of the social order; (*b*) "rituals of communitas" that constitute community members as individuals who are unmediated by private associations but, nonetheless, members of a collective unity; (*c*) "rituals of civic unity" that constitute people as individual consumers and participants in a local economy that all have a vested interest in supporting; and (*d*) "rituals of incorporation" that identify community members as workers, members of ethnic groups, and other diverse collectivities that must be somehow integrated into a whole.

The third example is a study by Mohr & Guerra-Pearson (1998) of community social welfare agencies in New York City during the Progressive Era. Here the question is how particular kinds of organizational forms come to be institutionalized. Like much work in the organizational ecology tradition, Mohr & Guerra-Pearson focus on the ways in which different types of organi-

zations compete for resource niches by making jurisdictional claims over specific regions of institutional space. Unlike work in this tradition, however, the focus is explicitly shifted to the interpretations that organizational actors propose about the meaning of institutional activities. As before, three sorts of foundational elements are studied. Using written descriptions of organizational activities for some 600 organizations, Mohr & Guerra-Pearson collected information at four different times about status categories that were used to describe relief recipients (men, women, boys, girls, children, sailors, travelers, the working, able-bodied, and so on); classes of social problems (criminality, delinquency, disability, immorality, and the like); and technologies of organizational action (such as general relief, employment assistance, vocational training, and character-building).

In this study, it is the structure of the organizational environment that is mapped. Relations between organizations are measured according to the similarities of their claims about the region of institutional space in which they seek to operate. Similarity among claims is defined by the extent to which organizations apply the same technologies to the same status identities, afflicted by the same types of social problems. Differences of interpretation arise when alternative combinations are invoked (as when different technologies are purported to be effective for treating the same classes of problems). Multidimensional scaling enables the organizations' niche locations to be mapped out on the basis of the claims that were made about how poverty problems should be interpreted and addressed. Using this approach, Mohr & Guerra-Pearson demonstrate how settlement houses waged a (losing) battle with social work bureaucracies and other more rationalized organizational forms in their bid to become the primary institution for delivering community social welfare services during these years.

I have begun with these examples for several reasons. First, all three employ structural methods for measuring meanings. In Tilly's case, the meanings concern collective actors' sense of public rights and their conceptions about the appropriate means for securing those rights. DiMaggio & Mullen study the meanings of community and sets of emergent norms about how to symbolically consecrate the social order. Mohr & Guerra-Pearson analyze organizational interpretations of community social problems and contesting claims about appropriate solutions to those problems. In each case, the relevant systems of meanings are studied empirically through an analysis of the relationships that actors impose on various primitive institutional elements (actors, actions and objects of action). Finally, all of these studies make explicit linkages between the systems of meanings that are investigated and the social structures in which they are embedded. Indeed, the point of each project is to demonstrate the ways in which enduring social institutions are explicitly constructed out of a complex process of negotiation and contestation over cultural meanings.

THE STRUCTURAL APPROACH TO INTERPRETATION

The key methodological maneuver in these projects can be traced to the structural method of interpretation, generally associated with the semiotic, structuralist, and poststructuralist intellectual projects that thrived in Europe beginning in the 1960s. Although diverse in both methods and goals, most of this work is either in the tradition of or in response to the work of the French linguist, Ferdinand de Saussure [(1916) 1959]. Structuralism (in this Saussurian tradition) was founded on the argument that meaning was constituted through the systematic distinctions that differentiate words (or sounds, or signs) from one another. A number of analytic principles follow from this. Content is seen as being fundamentally arbitrary. Patterns of differences within a broader system of cultural objects become the focus of analysis. The interpretation of meaning is seen to be connected to the analysis of the system of relations that link cultural objects. As developed most famously in the writings of the anthropologist Claude Lévi-Strauss (1963), much of the work of interpretation comes to be directed toward the identification of underlying (deep) structural principles that serve to organize the larger complexity of relational patterns.

There is an enormous literature that discusses, evaluates, and critiques these intellectual projects. Useful introductions are provided by Hawkes (1977), Pettit (1977), Kurzweil (1980), Wuthnow (1987), and Caws (1988). Moreover, as the discussion in Caws (1988), D'Andrade (1995), and Emirbayer (1998) make clear, the developments of the Saussurian structural tradition paralleled a broad variety of other intellectual movements that were also shifting toward a relational mode of analysis during the same period. The research that I review here is (for the most part) only loosely coupled to these literatures and I will not spend the time to develop these connections in any detail. I will simply point out that most of the work that I discuss in this review adopts (if only implicitly) some type of structural approach to the problem of interpreting meaning.

As an example of this mode of analysis, consider Karen Cerulo's (1988, 1995) research on national anthems. Cerulo shows that national anthems can be analyzed as cultural meaning systems and that the structures that are identified in the process can be used for comparative analysis. She accomplishes this by treating music as a series of symbolic codes: "melodic codes, phrase codes, harmonic codes, form codes, dynamic codes, rhythmic codes, and orchestral codes." Musical notes are the elements that, when combined, generate these code systems. Hence, it is the pattern of relations between the notes that is relevant; the musical notes themselves lack any specific intrinsic value, rather they "derive their meaning according to their placement within a larger system" (1988, p. 319). Through a complex and ingenious series of measurements devoted to assessing the relational patterns of the notes, Cerulo maps out the musical structure of over 150 national anthems. The "meaning" of the music is

thus represented by these structural mappings which, as Cerulo demonstrates, closely correspond to the sorts of genre distinctions (e.g. between a march and a hymn) that musicologists employ to differentiate these styles of music. See Timothy Dowd (1992) for a similar approach to analyzing American popular songs.

Cerulo (1995) proceeds to show that several basic social processes very effectively predict the type of musical composition that a specific country is likely to adopt. In particular, she shows that position within the world political economic system, relationship to neighboring countries, to a specific colonial power, and to a cohort of other nations, all influence the character of the musical composition that is chosen for a national anthem. She uses a similar type of analysis to map out the basic structural characteristics of national flags (by looking at how color, pattern, and images are arrayed relationally within the flag). Her analysis demonstrates that the same factors influenced the selection of these sorts of national symbols as well.

Cerulo's work illustrates the core principles of the type of structural analysis that is the focus of this review: (*a*) basic elements within a cultural system are identified, (*b*) the pattern of relations between these elements is recorded, (*c*) a structural organization is identified by applying a pattern-preserving set of reductive principles to the system of relations, and (*d*) the resulting structure (which now can be used as a representation for the meaning embedded in the cultural system) is reconnected to the institutional context that is being investigated. To begin such an analysis, three problems need to be solved. First, basic elements of the cultural system have to be identified. Second, a relevant system of relations must be identified. Third, the pattern of relations must be recorded. These are not trivial tasks.

Initial decisions regarding what will count as the cultural elements whose relational arrangement will be analyzed is critical to determining the significance of the meaning structures that can be uncovered. Because Cerulo was interested in identifying aesthetic structures, she turned to expert literatures in graphic design and music theory for guidance in selecting relevant elements for inclusion. This illustration is generalizable. Every structural analysis must begin with the identification of a relevant set of cultural items, and these items are never simply available in an immediate fashion. An informed cultural or institutional theory is necessary to enable us to notice and to be able to make relevant distinctions between the constituent elements.

The same cautionary note applies to the selection of relational measures. Elements of a cultural system can be similar or different in any number of ways; the trick is to identify those relations that matter. Some of the most important criticisms of the French structuralists were that they frequently got lost in their own overly formalistic models of structure. This is what Philip Pettit described as the dangers of mere "pattern-picking" (Pettit 1977, p. 41). When

one reads, for example, Clifford Geertz's (1973) criticisms of Lévi-Strauss, it is hard not to be persuaded by his complaints that the structuralists were wrong to focus solely on the cultural phenomena in isolation from what we might describe as the institutional contexts of culture. This was manifested in their tendency to treat cultural codes as closed systems. For the structuralists, the logic of culture was all too often presumed to lie within the cultural system itself (or, as in the case of Lévi-Strauss, within some intrinsic ordering properties of the human mind).

There is a solution to this dilemma, however; relations of elements within a cultural system should be determined on the basis of how the elements are linked to the practical demands of the institutional system of which they are a part. This is an argument that goes under the general heading of practice theory. Classic statements of this perspective include Bourdieu (1977), Geertz (1973), and Giddens (1984). Useful summaries and commentaries can be found in Ortner (1994) and Friedland & Alford (1991). The argument is that any cultural system is structured as an embodiment of the range of activities, social conflicts, and moral dilemmas that individuals are compelled to engage with as they go about negotiating the sorts of everyday events that confront them in their lives. This insight has direct implications for the measuring of meaning structures. It suggests that when we think about identifying a set of cultural items, asking how they are related to one another, and assessing the type of structural model that might be relevant, it is important to begin with the question of what type of practical utility such a cultural system plays within a concrete institutional setting. Ideally, relations between the cultural elements should be assessed by looking at how actors, organizations, or institutions make practical use of the cultural distinctions being investigated.

MEASURING RELATIONS

Once the relevant elements and relational contexts of a cultural system have been identified, measurement can begin. The first task is to compare each element in the cultural system with every other element in terms of the identified relationship. Four types of measurement strategies can be distinguished. Similarities and differences among cultural items can be assessed according to (*a*) subjective judgements, (*b*) common attributes, (*c*) relations to others, and (*d*) structural-functional profiles.

Subjective Similarity

Two cultural items can be said to be similar to one another to the extent that individuals make a cognitive judgement that they are of "the same sort." Because they often are faced with the need of collecting data in different language situations or from nonliterate respondents, cognitive anthropologists have

been especially innovative in devising a great many alternative methods for collecting these kinds of data (see Hays 1976, Weller & Romney 1988, D'Andrade 1995). For example, respondents are asked to judge the similarity of pairs of cultural items directly, or they are asked to select which two out of three items are most similar to one another. A third method is to ask the respondent to sort cards referring to cultural items into piles of things that "go together." Scores can then be aggregated across a number of respondents to derive a set of average measures of inter-item similarities. Richard Shweder used these techniques to investigate how individuals in different cultures understand the concept of the person (Shweder & Bourne 1991). For example, he used pile sort techniques to assess how individuals in India organize their understanding of 81 different personality traits. Included here were terms translated as "crooked," "lazy," "obstinate," "brutally frank," "loyal," "harmless," "fickle," "contemplative," and so on. The resulting 81 x 81 matrix was used by Shweder & Bourne to demonstrate that the respondents' cultural understanding of these terms was structured around generalized dimensions of power and social desirability.

Attribute Similarity

Items within a cultural system can also be compared on the basis of the sets of selected attributes that they share. This type of technique can also be used in collecting interview data. Csikszentmihalyi & Rochberg-Halton (1981) employed this strategy in their study of the meaning of household possessions among Chicago families. A list of items was first elicited by asking respondents "What are the things in your home that are special for you?" Interviewers then asked about the meanings that were attached to each of these items. This resulted in a listing of 1694 objects (collapsed for analysis into 41 types). The respondent's meaningful associations were classified into 37 categories of value, such as, the object is special because it is a memento, or because it is part of a collection, or because it belonged to a specific relative, or because it reflects a specific achievement, etc. The 41 types of cultural items were then compared to one another in terms of the types of valuations associated with each. The same general method was used by Mohr & Guerra-Pearson (1998) to assess the discursive similarity of community social welfare organizations in the article discussed earlier. In this case organizations were compared to one another on the basis of the similarity of the claims that they made about the types of solution technologies that were seen to be appropriate for classes of persons and types of problems.

Relational Similarity

Similarity among items within a cultural system can also be assessed by looking for the presence or absence of various types of social relationships that link cultural objects together. Thomas Schweizer (1993) also studied household

possessions (in an urban neighborhood in French Polynesia, a group of hunter-gatherers in Zaire, and a peasant community in Java). In Schweizer's study, however, categories of possessions were seen to be similar or different from one another depending upon which individuals in the community possessed the same sets of items. So, for example, on the basis of who owned what in Papeete, a refrigerator was more like a radio and a bicycle was more like a kerosene stove. Thus, Schweizer interprets the status meaning of various material possessions by understanding what members of the community possess what types of goods. Also important are measures of similarity based on relationships that directly connect the cultural items (or elements) to one another. Boorman & Levitt (1983) used this method to study how meanings were organized in federal bankruptcy law. They coded the internal citation references of the 55 subsections of Article 9 of the Uniform Commercial Code. Thus, rather than asking individuals to sort cultural items that went together, Boorman & Levitt asked which subsections of legal code were "substitutable" in the sense that they were similarly referenced by other subsections of the legal code. This is the same type of measure that was used by Tilly (1997) in his parliamentarization article to measure similarities among categories of collective actors. Those groups that had similar profiles of relationships to all other groups were linked together in the blockmodel analysis as being structurally equivalent.

Similarity of Structural Function

In some situations the measurement of similarities and differences has to incorporate more complex information. To assess the structural meaning of cultural items embedded within sequences and narratives, it is necessary to preserve more than pairwise information on similarities. It is also necessary to know how items are located within the broader context of the narrative or sequential ordering of events (Abbott 1983, 1990). For example, most contemporary approaches to content analysis require that words be compared on the basis of their syntactic or narrative function within the text. How one should gather this data is very much under debate (see Roberts 1989, Franzosi 1989, 1990, Carley 1993, Carley & Kaufer 1993). In general, however, most strategies call for the preservation of two types of information—the semantic function of a word within a field of meaning (e.g. within a sentence) and the specific relationships that occur within that field to other (functionally defined) words. For example, Roberto Franzosi proposes that similarities of words within a text be recorded in such a way that their functions within a localized semantic grammar are preserved. This is an important extension (and formalization) of Tilly's methods. In his study of contentious gatherings in Italy between 1919 and 1922, Franzosi (1997) coded newspaper stories so that various categories of agents (labor unionists, owners, brownshirts, police, and various

others) are compared to one another according to the extent to which they fulfilled the same institutional function (instigators of violence, recipients of violence, and so on). To get at this kind of information it is necessary to record who does what to whom, and in what sequence.

FINDING STRUCTURE

Having collected information regarding the relations of similarity (or difference) among a set of items within a cultural or institutional system, the next task is to find structure-preserving simplifications that may allow the complexity of the system to be more easily understood. Ideally, one hopes to identify some deeper, simpler, structural logic—that is, a principle or set of principles that account for the arrangement of parts within the cultural system (Ortner 1994). The relations between cultural items are the key to such an investigation. The analytical task is to discover how these relations are related to one another. Structuralist methods are geared toward the identification of transformations that allow the relations among the relations to be reduced to more easily understandable and or visible patterns. I discuss four general classes of methods for accomplishing this: (*a*) multidimensional scaling and clustering, (*b*) network analysis, (*c*) Boolean algebra, and (*d*) sequence analysis. Each of these approaches makes use of the relational information in different ways in order to highlight various qualities of the meaning structure.

Multidimensional Scaling and Clustering

Multidimensional scaling analysis (MDS) is one of the oldest and most widely used methods for mapping out the relational system of differences in the measurement of meanings. Simply stated, an MDS analysis reads in a square matrix of similarities or differences (actually half of a square matrix is usually used because the input data are often symmetrical) and produces a transformation of the data that seeks to locate all of the objects in a common (two- or more dimensional) space in such a way that the similarities in the input matrix are transformed into Euclidean distances. An MDS space would thus represent a series of objects in such a way that (generally speaking) if two items are similar to one another (in the input matrix) then they are located near one another in the space. If they are dissimilar, they are located far apart. When analyzed in two (or three) dimensions, the items can then be easily plotted in such a way as to visually convey the relational structure in which they are embedded.

Clustering methods have also been used for studying cultural meanings. There are a great variety of clustering methods, but all seek to group items together according to some algorithmic principle for deciding which are most alike given the input matrix of item by item similarities. One of the primary differences between clustering methods and MDS is that the latter locates

items in a way that takes into account the totality of all relational similarities in each iteration, whereas clustering methods tend to connect items to clusters that are deemed (by some criteria) to be most similar in a localized (or pairwise) sense. The two methods are often used together (as when the coordinates of an MDS space are submitted to a cluster analysis in order to more clearly designate subregions within the space). The Sage books on these topics are both excellent and still quite useful (Kruskal & Wish 1978, Aldenderfer & Blashfield 1984).

These techniques have been widely used by cognitive anthropologists for studying meaning systems. As D'Andrade (1995) explains, the 1970s were a time when basic theories about culture as knowledge systems were connected to formal methods of analysis. It was during these years that many of the classic applications of these techniques to understanding the structure of cultural meaning systems were pioneered. For example, Burton & Kirk (1977, 1979) used MDS to model gender assumptions in Maasai culture. They asked their respondents to think about the personality characteristics of various social identities differentiated by age and gender (small boy, older boy, warrior, adult male, small girl, older girl, and young adult woman). Using triad tests, they collected information on similarities among 13 personality traits (disobedient, brave, frank, hardworking, socially competent, playful, lazy, respectful, fickle, suspicious, clever, skittish, and stingy).

Their findings showed that small boys were expected to be playful, successful, brave, respectful, clever, and disobedient, but as they aged, they were expected to also become hardworking and to no longer be disobedient. Once they became warriors, however, expectations shifted so that they were expected to be realistic and, once again, disobedient, while stinginess was frowned upon. Burton & Kirk relate these shifts in cultural beliefs to changes in males' roles within the community. For example, as warriors, young men are often on raiding parties away from home where they are expected to use their own initiative and, when appropriate, to disobey the commands that had been given them by the elders in the village. They are also expected to work together as a group, relying on one another for survival, making stinginess a significant liability. The analyses show a very different pattern for women. Young adult women are expected to be lazy and stingy and they are expected not to be successful, clever, or brave. Kirk & Burton note that the shift in normative expectations for men and women that occurs after circumcision is striking. For men, the change marks a time of ascendant authority and autonomy. For women it marks a clear acceleration of negative stereotyping and formal disempowerment. They conclude that a primary function of circumcision rituals in Maasai culture is to dramatize and institutionalize differences in power between men and women. Numerous other examples from this period of anthropological research could be pointed to. Another classic example is the study by Roy D'Andrade and his

colleagues in which they used MDS to model the structure of meanings regarding disease categories among English and Spanish speaking students (D'Andrade et al 1972).

Sociologists have traditionally used MDS techniques to study social networks or social organizational structures, such as in Laumann & Knoke's (1987) study of the structure of policy domains. More recently, sociologists have begun employing MDS analyses to map out cultural meaning structures in a fashion that is more reminiscent of the work of anthropologists. For example, Ennis (1992) and Cappell & Guterbock (1992) used MDS techniques to model the structure of American sociological specialties. Ventresca & Yin (1997) used MDS to analyze the meaning of social categories in a broad historical sample of national census surveys. Mohr (1998) uses MDS techniques to analyze gendered assumptions in the structure of poverty classifications used by Progressive Era social reformers.

Network Analysis

The one subfield within American sociology that has always been thoroughly structuralist (in the relational sense) is social network analysis. Typically in this research tradition, individuals are the nodes, and various types of social relationships that link individuals to one another (friendship, kinship, social exchanges of various sorts) constitute the "ties" out of which a pattern of social organization is constructed. Over the years, network scholars have developed an enormous array of conceptual and methodological tools for thinking about the structural properties of social networks. The methods can be divided into two general types—those emphasizing connectivity and those focusing on structural equivalence (Burt 1978, Wasserman & Faust 1994). The former are largely concerned with how the relationships between individuals in a social network are mediated by the structure of ties that directly connects them. Concepts like network centrality, between-ness, and adjacency are especially important here. The latter approach focuses on ways in which individuals stand in structurally equivalent positions because they share common patterns of relationships to all others in the network. The key concept here is the idea of a structural role (White et al 1976). While most of the empirical work has been directed to understanding the properties of social networks, these methods can also be extremely useful in the study of cultural meaning structures.

Kathleen Carley has been one of the pioneers in applying network methodologies to the study of cultural phenomena, especially in her work on textual analysis (Carley 1986, 1993, Carley & Kaufer 1993). Carley uses network analysis techniques to map out the structure of meanings within narratives. Like Cerulo, Carley then proceeds to use these structural representations of meanings to compare cultural phenomena. For example, Carley (1994) uses these techniques to map the structure of meaning in 30 science-fiction novels

written during different periods of history. She codes information on ways in which the authors describe the features, actions, and other characters' perceptions of robots. By studying the relationships between the features that were attributed to robots by the novels' authors as a network of concepts, Carley is able to represent changes in the meaning structure of how robots were portrayed over time. Prior to 1950 they were described as dangerous nonmetallic humanoids composed of batteries, electron tubes, and human parts that inspired fear, anger, hatred, and pity in others. By the 1980s they were instead being described as clever, loyal, curious, and capable of sarcasm, being embarrassed, making love, programming computers, and dreaming.

A very different example can be found in Hammond's (1972) analysis of the ruins of Mayan architecture. He employed network models of connectivity (between plazas) as a way of studying how public space was used. On the basis of these models, Hammond was able to deduce which plaza served as the central marketplace and to postulate that the Mayan ballcourt game was, initially at least, a sport reserved for an elite audience.

Structural equivalence approaches to network analysis have also be used to understand cultural phenomena. Mohr (1994) uses this method to map the structure of moral discourse within which poverty relief agencies differentiated among various classes of gendered status identities (mothers, soldiers, widows, working men, the blind, and various others) during the Progressive Era. Here, it is the status identities themselves that are the items within the cultural system. Relations among identities were measured by assessing the profile of relief practices that were applied to each (58 different practices were investigated, e.g. some classes of the poor were given money by the state, others were placed in the poorhouse, some were given counseling by the church, others were given job training by private agencies, and so on). A block-model analysis showed that it was possible to identify different role positions within the system of moral discourse that closely corresponded to Theda Skocpol's (1992) arguments about American welfare politics during these years. The discourse role analysis was also shown to be an effective predictor of the likelihood that any given status category would be described with morally coded terms.

Other examples can also be pointed to. Peter Bearman (1993) uses structural equivalence to show how changes in the social organization of elites in 16th-century England led to the emergence of abstract religious and constitutionalist rhetorics. Anheier & Gerhards (1991a) use structural equivalence measures of the role structure of German writers to explain the development of cultural myths about writers—the myth of the writer as a "notorious loner," as "a poor poet," as "the misunderstood genius," and member of a "romantic literary circle" are all shown to correspond to the social organization of German writers. Finally, Patrick Doreian (1987) uses structural equivalence measures to reanalyze Hammond's data on Mayan architecture.

Boolean Algebra

Boolean algebra is an increasingly popular method for formally analyzing qualitative data. Charles Ragin (1987) has been instrumental in bringing these methods to the attention of sociologists in recent years. This approach (also known as qualitative comparative analysis, or QCA) begins with a set number of cases that vary in terms of the presence or absence of some outcome (or product). Cases are grouped according to their profile of features. Boolean algebra is then applied to identify logically irreducible and nonredundant combinations of features that are associated with certain outcomes. As in network methods, the method presumes a finite number of cases within a system (rather than a sample from a population), and the focus is on qualities (presence and absence rather than measured quantities) of the features. Unlike the methods discussed above, the usual goal of a Boolean analysis is to ascertain which features of a set of cases have a causal relationship with some other feature (or outcome) that is being explained. In this sense, QCA is similar to logistic regression analysis, although as Ragin explains (1995), there are variety of reasons why one might prefer using QCA, including the fact that it can be applied with many fewer cases.

Because of the emphasis on hypothesis-testing, QCA has generally not been applied to the analysis of meaning structures in the same manner as MDS or network techniques. There are some exceptions. Degenne & Lebeaux (1996) use Boolean techniques to analyze the structure of belief systems. Using French survey data they show a causal ordering of religious beliefs and practices (respondents who pray regularly also go to church regularly or they "believe in paradise, purgatory, hell," both of which imply that their children will be given a religious education, and so on). More generally, however, applications of Boolean analysis tend to be very much in the spirit of the work described in this review, and to resonate especially well with those works in which meanings are seen to be a constituent element of institutional patterns. For example, John Foran (1997) uses QCA to analyze the role that five factors (dependent development, economic crisis, repressive/personalist state, world system opportunity, and political cultures of resistance) have played in the success, failure, or quiescence of a dozen recent revolutionary situations. Foran demonstrates that all factors must be present for success, and that the last three of these factors, including a particular cultural orientation, are especially salient.

Sequence Analysis

Sequence analysis is another qualitatively oriented methodology that is increasingly being employed by sociologists. These methods are used for finding reduced form patterns in the sequencing of events through time. Andrew Abbott (1988, 1992) has been instrumental in bringing these methods into

mainstream sociology. This is another methodological approach in which elements within a system are compared on the basis of their similarities to one another. These kinds of methods can also be used for identifying certain types of cultural meaning structures.

Abbott & Forrest (1986) used these methods to understand cultural diffusion among communities of English Morris Dancers. By studying the sequencing of dance steps, Abbott & Forrest were able to identify common dance traditions that they used to analyze the diffusion of cultural forms among nineteenth-century rural English communities. Other methods have also been suggested for analyzing narrative structures. Peter Abell's (1987) work emphasizes the comparison of sequences in multiple narratives. David Heise (1988, 1989) has developed Event Structure Analysis (ESA) and a computer program, ETHNO, for its implementation which has been applied by Larry Griffin (1993) to studying the unfolding of historical event logics. Here again, a structural representation is created of a particular institutional (meaning) system that can then be used as a formal basis for comparative analysis.

MEASURING THE DUALITY OF SOCIAL AND CULTURAL STRUCTURES

I started this review by noting that theorists have emphasized the duality of social and cultural structures and I suggested that one important reason for measuring meaning is that doing so allows us to take this theoretical mandate seriously. The three examples of institutional analysis with which I began were selected to illustrate how the measurement of meaning can be used to analyze the cultural construction of social structures. It should be apparent, however, that we also need to attend to the ways in which social structures produce cultural meaning systems. Indeed, my earlier discussion of practice theory would suggest that such an approach is critical for cultural analysis. My focus until now has been to suggest some ways in which meaning structures can be measured. In this section, I discuss several methods that can be employed to focus attention on the duality that inheres between cultural and social structures. These are the class of methods that are described as two-mode data analytic strategies because they simultaneously order both columns and rows of a data matrix. Several methods are available.

Correspondence Analysis

Probably the most familiar example of this kind of approach is correspondence analysis (Weller & Romney 1990). Like MDS, correspondence analysis can be used to represent a set of cultural items in a dimensional space, thereby allowing their underlying structural patterns to be represented visually. At the same time, correspondence analysis enables the relational foundations of the cul-

tural system to be treated as a set of (social-structural) elements that are themselves ordered in terms of their relations to the cultural domain. Thus, this methodology allows both the social and the cultural dimensions to be plotted within the same measurement space.

As an early proponent of practice theory, Pierre Bourdieu was naturally drawn toward this methodology and he has used it extensively in his research. In *Distinction* (1984), Bourdieu uses data on the cultural tastes of different class fractions to identify the class based logic of cultural goods. Thus, Bourdieu shows that taste in music, film, painting, recreational activities, and other cultural domains is organized according to the structure of social classes in France, and using correspondence analysis, he is able to simultaneously plot the various social locations (e.g. the determinants of class structure) according to their relative location within the space of cultural distinctions. These analyses have been central to Bourdieu's theoretical goal of measuring the relationship between social and cultural domains, and he used them to demonstrate that, for example, class locations are ordered according to two salient dimensions—the total volume and relative composition of cultural and economic capital.

Because of its ability to represent the duality of mutually constituted structures, correspondence analysis is beginning to be used more frequently by American sociologists as well (although other approaches have also begun to be developed, such as the proposal of Borgatti & Everett 1997 for using MDS to analyze two-mode data). Ann Mische (1998), for example, uses correspondence analysis to analyze how youth movements in Brazil were structured by the types of political beliefs which they held at the same time that the political discourse itself was structured by the groups who were constituting it.

Lattice Analysis

Galois lattices are another approach that is explicitly oriented toward the representation of the dual ordering of rows and columns. Whereas correspondence analysis can be viewed as a two-mode extension of MDS techniques, lattice analysis provides a dual mapping of rows and columns based on Boolean set theory.

Mohr & Duquenne (1997) use lattices to analyze the changing institutional logics of poverty relief during the Progressive Era. Here the duality between cultural meanings and social practices is operationalized explicitly. Reformers' classifications of the poor (distressed, destitute, fallen, deserving, homeless, indigent, misfortunate, needy, poor, stranger, and worthy) are shown to be embedded within a hierarchically ordered meaning system by the structuring of organizational practices (giving advice, giving food, giving money, paying a person to chop wood, placing a relief applicant in an asylum, and so on).

The use of lattices demonstrates how it was that the cultural and practical logics were mutually constitutive. In other words, the ordering of the poverty classifications is shown to be determined by the ordering of the relief activities and vice versa. By mapping the changes in this dualistic structure through time, Mohr and Duquenne demonstrate how the institutional logic of the nineteenth century poorhouse system was replaced by a far more progressive system founded in the rhetoric and practice of social work professionals.

The paper by Thomas Schweizer (1993) discussed earlier provides another example. Recall that Schweizer analyzes the relationship that inheres between the status logic of material possessions and the social ranking of individuals. He shows that the meaning of possessions can be interpreted by understanding what members of the community possess what types of goods. Simultaneously (and dually), Schweizer assesses the ranking of individual community members in the social order by observing what material goods they possess. The structural duality of these two orders (the individual members of the community and the material possessions that they hold) consists in the fact that the ordering of one is simultaneously dependent upon the ordering of the other. Vincent Duquenne (1995) provides an additional example of the use of lattices to analyze status orders and material wealth.

Hierarchical Classification Models

A final example of two-mode analytic techniques is the hierarchical classification model developed by Paul de Boeck and Seymour Rosenberg, which is implemented in the software program HICLAS (Rosenberg et al 1995). This is an interative algorithm that accomplishes the same goal as a lattice analysis by employing set theoretical principles to cluster items in the rows (objects) and the columns (attributes) of a two-way two-mode binary matrix such that equivalent items are classed together, the classes of objects are hierarchically ordered, the classes of attributes are hierarchically ordered, and the two hierarchical orders are relatd to one another.

This technique has been employed to measure several types of cultural meaning systems. Anheier & Gerhards (1991b) use this method to understand how famous writers (Ernest Hemingway, William Shakespeare, and others) were organized into a field of literary influence by comparing which contemporary German writers cite them as having been inspirational in their own work. The results allow Anheier & Gerhards to describe the dual mapping of blocks of contemporary writers onto a clustering of literary influences in much the same way as Bourdieu's analysis maps social classes and cultural tastes in the same measurement space. Rosenberg (1989) uses HICLAS to analyze meaning structures in Thomas Wolfe's autobiographical novel, *Look Homeward, Angel*. In this case the set structure of various attributes of individuals is dually mapped onto the set structure of characters within the novel. Rosenberg

shows with this method that members of Wolfe's family are organized in clear subsets of attributes (his brother Fred is a subset of his sister Mabel, who is a subset of his mother). Rosenberg also demonstrates that Wolfe's description of his own identity at different ages is hierarchically nested, and that Wolfe's description of his self shifts through life to being more and less like various members of his family.

ADVANTAGES AND DISADVANTAGES OF FORMAL ANALYSIS

Precisely because the measurement of meanings lies at the boundaries of the more scientistic and the more humanistic approaches to analyzing social phenomena, it is guaranteed to create controversy. Norman Denzin (1991), for example, complains that scientifically oriented studies of culture have a tendency to reify and reduce the intrinsic complexities of cultural meanings. There is no doubt that he is right about this. All measurement projects end up reifying reality to some extent. Moreover, it is clear that there are other more hermeneutic and post-structuralist approaches to the problem of interpretation that proceed along very different pathways and have a great deal to offer. It would be a mistake to presume that the type of structuralist models of meaning that have been reviewed here are in any sense exhaustive or even that they should be ceded some sort of empirical primacy.

Measuring meaning structures does have its benefits, however. As Robert Merton (1957) suggested in his classic essay regarding the advantages of empirical research, the use of formal methods brings a pressure for the clarification of one's concepts and may lead to the discovery of anomalous findings that call theoretical assumptions into question. Moreover, as Hage & Harary (1983, p. 9) argued in their attempt to persuade anthropologists of the advantages of graph theory, the shift toward quantitative relational methodologies also has a number of more specific advantages. While my focus in this review has been somewhat different, I think Hage & Harary's list is applicable here as well. In somewhat more generalized form, these advantages are the following:

1. Structural models are iconic. They look like what they represent. Whether one uses MDS techniques to generate a picture of the similarity relationships between cultural items or one employs a lattice to map out the hierarchical duality of cultural items and actions, these techniques allow us to see the patterns of difference out of which meanings are constructed. Once we see these patterns, we can begin to understand them.
2. Structural models provide us with a rich conceptual vocabulary for thinking about meanings. Simplicity, complexity, centrality, duality, permutations, and transformations are ideas that have a natural foundation in structural

models. As we try to grapple with understanding phenomena such as cultural boundaries, cultural identities, cultural differentiation, and cultural narrativity, I suspect that these kinds of structural concepts will be of much use to us.

3. Structural models provide us with the tools for quantifying aspects of meaning structures. As I have tried to indicate here, we can quantify meanings without reducing them to some artificially linear metric. Instead we can build structural models that simply represent relationships of similarity and difference that are embedded within practices. Once we have found a way of measuring these kinds of phenomena, however, we (and others) are in a position to be able to replicate our interpretations and to subject our ideas to various kinds of formal tests to help assess the validity of our interpretation.

CONCLUSION

While I will be pleased if qualitatively oriented scholars are persuaded by the merits of these arguments and the utility of these techniques, my primary goal has been to convince sociologists who already use quantitative methods to embrace the measurement of meaning and to incorporate these measures into a more balanced approach to social research that recognizes the duality of cultural and social structures. In this regard I fully agree with Harrison White when he argues that "interpretive approaches are central to achieving a next level of adequacy in social data" (1997:57–58). I also agree with Jepperson and Swidler's (1994) contention that culture is no more intrinsically difficult to measure than other social phenomena and that the greatest impediments to the formal analysis of culture are conceptual rather than methodological.

I have focused here on one very basic level of conceptualization. I have argued that cultural meanings are built up out of structures of difference and that by attending to the patterns of relations that link items within a cultural system, we can use formal methodologies to measure and analyze meaning structures. I have also suggested that a critical componenet of any such endeavor is determining the linkage between meanings and practices and that relations between the former should be determined by their embeddedness within the latter, and vice versa. Beyond this, I have said very little here about what purposes these measurements should be put to or how cultural analysis should proceed. I have done this quite intentionally because I believe that these are general purpose methods that can be employed to accomplish a great variety of things. This should not be taken to indicate that a theoretical context for their use is unnecessary or undesirable. On the contrary, to use these methods without a theoretical goal in mind is unlikely to yield much that is of sociological interest.

In this review I have provided a sampling of the types of research projects that are beginning to appear in the sociological literature that seek to analyze the structure of institutional meanings. As I suggested earlier, there is as yet no

coherent body of literature or collection of scholars identified with this project. There is, however, tremendous enthusiasm and opportunity for research of this sort. Before closing, it seems appropriate to offer a small list of suggestions for scholars who have an interest in this style of research. In summary form, my advice is to first, get the text, second, find the use, and third, map the meaning.

Get the Text

Meanings are complex things. Any attempt to model them or subject them to formal analysis invariably involves a gross simplification of the cultural material. As a consequence, it behooves us to postpone this simplification process as long as is feasible. If we can wait until the third step—the stage at which we are consciously trying to reduce the data according to some structural principles—we have much greater control over the way in which we simplify the cultural material. In practical terms, this means that we should always try to gather data as unobtrusively as possible. It is best to avoid imposing an arbitrary coding scheme on the data if it can be avoided. Instead, we should try to find a way to get the entire "text" into a computer (or to come as close as possible to this ideal).

In this regard it is probably worth pointing out that we are just now entering what must surely be the golden age of textual analysis. What sets this moment in history apart is the incredible proliferation of on-line and on-disk textual materials. Previously, scholars who were interested in doing some form of content analysis were compelled to spend huge amounts of time readying their texts for analysis. Now one can easily sit at one's desk and more or less instantaneously summon up a fantastic array of cultural texts in electronic form. This includes software editions of many contemporary novels (currently being marketed for use in laptop computers) for about the same price as a hardbound book, newspaper and magazine articles (published on the Internet), annual reports of corporations (available on CD-Rom), full transcripts of free-form conversations and other types of social exchanges (occurring in virtual "chatrooms" and user interest groups on the Internet), to name but a few.

Find the Use

As I argued earlier, the most critical component of the meaning measurement process is the identification of the systems of relations that will be used to generate the assessment of similarities and differences among cultural items. Because there are invariably any number of ways in which these relations might be assessed, it is essential that a theoretically informed metric be applied at this stage of the analysis. The best rule of thumb in this situation is to locate and evaluate the relevant domain of practical activity in which the identified system of cultural meanings is embedded. Differences in practice produce (and are produced by) differences in meaning. Therefore the goal of an empirical

analysis should be to assess how the various cultural elements are differentially implicated in alternative forms of practice.

Map the Meaning

Not all of the examples of cultural interpretation that I've described in this review use structural models as a way of representing cultural meanings. Clearly situations exist wherein this kind of formal approach simply isn't feasible or desirable. Nonetheless, part of what I've tried to suggest here is that the project of finding meaning structures is not really different from the project of measuring meaning structures, or rather, that there is a difference in the degree of formality rather than in the type of endeavor. But, having said that much, I do think that we can profitably make greater use of formal methods and especially the sorts of two-mode modeling techniques that I discussed earlier.

Finally, the techniques that I have referred to are readily available and usually quite simple to use. Scaling and correspondence analysis programs are included in most major statistical packages. Boolean algebras and sequence analysis programs are easily obtainable and geared to run on most microcomputers. Network analysis packages are likewise widely available and, nowadays at least, quite user-friendly and intelligible.

Of course, as anyone who has employed these methods will readily testify, there is nothing simple or determinate about the interpretive work that one must perform after having completed a structural analysis. In a sense, once one has mapped the meaning structure of a given institutional practice, one is in the same position as a scholar who has just emerged from an intensive field study, chock full of ideas and images. Any visual representation of a meaning structure is still largely a Rorschach test upon which one must seek to project an interpretation. But, to the extent that one has carefully thought about the linkage between culture and practice and how it informs one's data selection, measures of differentiation, and structural modeling, so too one should have little difficulty in interpreting the meaning structures that have been identified.

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Literature Cited

Abbott A. 1983. Sequences of social events: concepts and methods for the analysis of order in social processes. *Hist. Methods* 16(4):129–47

Abbott A. 1988. Transcending general linear reality. *Sociol. Theory* 6:169–86

Abbott A. 1990. Primer on sequence methods. *Org. Sci*. 1:373–92

Abbott A. 1992. From causes to events: notes on narrative positivism. *Sociol. Methods Res*. 20(4):428–55

Abbott A, Forrest J. 1986. Optimal matching methods for historical sequences. *J. Interdiscip. Hist*. 26(3):471–94

Abell P. 1987. *The Syntax of Social Life: The Theory and Method of Comparative Narratives*. Oxford: Clarendon

Aldenderfer MS, Blashfield RK. 1984. *Cluster Analysis*. Beverly Hills, CA: Sage

Anheier H, Gerhards J. 1991a. Literary myths and social structure. *Soc. Forces* 69: 811–30

Anheier H, Gerhards J. 1991b. The acknowledgment of literary influence: a structural analysis of a German literary network. *Sociol. Forum* 6(1):137–56

Bauman Z. 1973. *Culture as Praxis*. London: Routledge and Kegan Paul

Bearman P. 1993. *Relations into Rhetorics*. New Brunswick, NJ: Rutgers Univ. Press

Berelson B. 1952. *Content Analysis in Communication Research*. Glencoe, IL: Free Press

Berger PL, Luckmann T. 1967. *The Social Construction of Reality*. New York: Doubleday

Boorman SA, Levitt PR. 1983. Blockmodeling complex statutes: mapping techniques based on combinatorial optimization for analyzing economic legislation and its stress points over time. *Econ. Letters* 13: 1–9

Borgatti SP, Everett MG. 1997. Network analysis of 2-mode data. *Soc. Networks* 19:243–69

Bourdieu P. 1977. *Outline of a Theory of Practice*. Cambridge, UK: Cambridge Univ. Press

Bourdieu P. 1984. *Distinction: A Social Critique of the Judgement of Taste*. Cambridge, MA: Harvard Univ. Press

Burt RS. 1978. Cohesion versus structural equivalence as a basis for network subgroups. *Sociol. Methods Res*. 7:189–212

Burton M, Kirk L. 1979. Sex differences in Maasai cognition of personality and social identity. *Am. Anthro*. 81:841–73

Cappell CL, Guterbock TM. 1992. Visible colleges: the social and conceptual structure of sociology specialties. *Am. Sociol. Rev*. 57:266–73

Carley K. 1986. An approach for relating social structure to cognitive structure. *J. Math. Soc.* 12:137–89

Carley KM. 1994. Extracting culture through textual analysis. *Poetics* 22:291–312

Carley KM. 1993. Coding choices for textual analysis: a comparison of content analysis and map analysis. *Sociol. Methodol*. 23: 75–126

Carley KM, Kaufer DS. 1993. Semantic connectivity: an approach for analyzing symbols in semantic networks. *Comm. Theory* 3:183–213

Caws P. 1988. *Structuralism: The Art of the Intelligible*. Atlantic Highlands, NJ: Humanities Press Int.

Cerulo K. 1988. Analyzing cultural products: a new method of measurement. *Soc. Sci. Res*. 17:317–52

Cerulo K. 1995. *Identity Designs: The Sights and Sounds of a Nation*. New Brunswick, NJ: Rutgers Univ. Press

Csikszentmihalyi M, Rochberg-Halton E. 1981. *The Meaning of Things: Domestic Symbols and the Self*. Cambridge, UK: Cambridge Univ. Press

D'Andrade RG. 1995. *The Development of Cognitive Anthropology*. Cambridge, UK: Cambridge Univ. Press

D'Andrade RG, Quinn N, Nerlove S, Romney AK. 1972. Categories of disease in American-English and Mexican-Spanish. In *Multidimensional Scaling*, Vol. 2, ed. AK Romney, R Shepard, SB Nerlove. New York: Seminar

Darnovsky M, Epstein B, Flacks R. 1995. *Cultural Politics and Social Movements*. Philadelphia: Temple Univ. Press

Degenne A, Lebeaux M-O. 1996. Boolean analysis of questionnaire data. *Soc. Networks* 18:231–45

Denzin NK. 1991. Empiricist cultural studies in America: a deconstructive reading. *Curr. Persp. Social Theory* 11:17–39

de Saussure F. [1916] 1959. *Course in General Linguistics*. New York: McGraw-Hill

DiMaggio PJ. 1992. Cultural capital and school success: the impact of status-culture participation on the grades of U.S. high school students. *Am. Sociol. Rev*. 47: 189–201

DiMaggio PJ, Mohr J. 1985. Cultural capital, educational attainment and marital selection. *Amer. J. Sociol*. 90(6):1231–61

DiMaggio PJ, Mullen A. 1993. *Organizing*

communities: models of collective action in national music week, 1924. Presented at Am. Sociol. Assoc. Meet., 88th, Miami

Doreian P. 1987. Equivalence in a social network. *J. Math. Soc.* 13:243–82

Dowd TJ. 1992. The musical structure and social context of number one songs, 1955 to 1988: an exploratory analysis. In *Vocabularies of Public Life: Empirical Essays in Symbolic Structure,* ed. R Wuthnow. New York. Routledge

Duquenne V. 1995. Models of possessions and lattice analysis. *Soc. Sci. Info.* 34(2): 253–67

Duquenne V, Mohr JW, Le Pape A. 1998. Comparison of dual orderings in time. *Soc. Sci. Info.* 37:(2):227–53

Emirbayer M. 1997. Manifesto for a relational sociology. *Amer. J. Sociol.* 103(2): 281–317

Ennis JG. 1992. The social organization of sociological knowledge: modeling the intersection of specialties. *Am. Sociol. Rev.* 57: 259–65

Eyerman R, Jamison A. 1991. *Social Movements: A Cognitive Approach.* University Park, PA: Penn. State Univ. Press

Foran J. 1997. The future of revolutions at the *fin-de-siècle*. *Third World Q*. 18(5): 791–820.

Franzosi R. 1989. From words to numbers: a generalized and linguistics-based coding procedure for collecting textual data. *Sociol. Methodol.* 19:263–98

Franzosi R. 1990. Computer-assisted coding of textual data. *Sociol. Meth. Res.* 19(2): 225–57

Franzosi R. 1997. Mobilization and countermobilization processes: from the "Red Years" (1919–20) to the "Black Years" (1921–22) in Italy. *Theory Soc.* 26(2-3): 275–304

Franzosi R, Mohr JW. 1997. New directions in formalization and historical analysis. *Theory Soc.* 26(2-3):133–60

Friedland R, Alford RR. 1991. Bringing society back in: symbols, practices and institutional contradictions. In *The New Institutionalism in Organizational Analysis*, ed. WW Powell, P DiMaggio, pp. 232–63. Chicago: Univ. Chicago Press

Geertz C. 1973. *The Interpretation of Cultures*. New York: Basic Books

Giddens A. 1984. *The Constitution of Society: Outline of a Theory of Structuration.* Berkeley: Univ. Calif. Press

Griffin LJ. 1993. Narrative, event-structure analysis, and causal interpretation in historical sociology. *Am. J. Sociol.* 98: 1094–1133

Griswold W. 1987a. A methodological framework for the sociology of culture. *Sociol. Methodol*. 17:1–35

Griswold W. 1987b. The fabrication of meaning: literary interpretation in the United States, Great Britain, and the West Indies. *Am. J. Sociol.* 92(5):1077–1117

Griswold W. 1992. The writing on the mud wall: Nigerian novels and the imaginary village. *Am. Sociol. Rev.* 57:709–24

Griswold W. 1993. Recent moves in the sociology of literature. *Annu. Rev. Sociol.* 19: 455–67

Hage P, Harary F. 1983. *Structural Models in Anthropology.* Cambridge, UK: Cambridge Univ. Press

Hammond NDC. 1972. The planning of a Maya ceremonial center. *Scientific Am.* 226:83–91

Hawkes T. 1977. *Structuralism and Semiotics.* Berkeley, CA: Univ. Calif. Press

Hays TE. 1976. An empirical method for the identification of covert categories in ethnobiology. *Am. Ethnol.* 3(3)489–507

Heise D. 1988. Computer analysis of cultural structures. *Soc. Sci. Computer Rev.* 6: 183–96

Heise D. 1989. Modeling event structures. *J. Math. Soc.* 14:139–69

Kirk L, Burton M. 1977. Meaning and context: a study of contextual shifts in meaning of Maasai personality descriptors. *Am. Ethnol.* 4:734–61

Kruskal JB, Wish M. 1978. *Multidimensional Scaling*. Beverly Hills, CA: Sage

Kurzweil E. 1980. *The Age of Structuralism: Lévi-Strauss to Foucault.* New York: Columbia Univ. Press

Laumann EO, Knoke D. 1987. *Organization State: Social Change in National Policy Domains.* Madison: Univ. Wisc. Press

Lévi-Strauss C. 1963. *Structural Anthropology.* New York: Basic Books

Merton RK, ed. 1957. The bearing of empirical research on sociological theory. In *Social Theory and Social Structure.* Glencoe, IL: Free Press

Meyer J, Rowan B. 1977. Institutionalized organizations: formal structure as myth and ceremony. *Amer. J. Sociol.* 83:340–63

Mische A. 1998. *Projects, identities. and social networks: Brazilian youth mobilization and the making of civic culture*. Presented at Am. Sociol. Assoc. Meet., 93, San Francisco

Mohr JW. 1994. Soldiers, mothers, tramps and others: discourse roles in the 1907 New York City Charity Directory. *Poetics* 22: 327–57

Mohr JW. 1998. The classificatory logics of state welfare systems: towards a formal analysis. In *Public Rights, Public Rules:*

Constituting Citizens in the World Polity and National Policy, ed. C McNeely. NY: Garland. In press
Mohr JW, DiMaggio P. 1995. The intergenerational transmission of cultural capital. *Res. Soc. Strat. Mob.* 14:169–200
Mohr JW, Duquenne V. 1997. The duality of culture and practice: poverty relief in New York City, 1888–1917. *Theory Soc*. 26(2-3):305–56
Mohr JW, Guerra-Pearson F. 1998. The differentiation of institutional space: organizational forms in the New York social welfare sector, 1888–1917. In *Bending the Bars of the Iron Cage,* ed. W Powell, D Jones. Chicago: Univ. Chicago Press. In press
Ortner S. 1994. Theory in anthropology since the sixties. In *Culture/Power/History: A Reader in Contemporary Social Theory*, ed. NB Dirks, G Eley, SB Ortner, pp. 372–411. Princeton, NJ: Princeton Univ. Press
Peterson RA. 1976. The production of culture. *Am. Behav. Sci.* 19:669–83
Peterson RA, Berger DG. 1975. Cycles in symbol production: the case of popular music. *Am. Sociol. Rev.* 40:158–73
Pettit P. 1977. *The Concept of Structuralism: A Critical Analysis.* Berkeley: Univ. Calif. Press
Powell WW, DiMaggio PJ. 1991. *The New Institutionalism in Organizational Analysis*. Chicago: Univ. Chicago Press
Ragin C. 1987. *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies.* Berkeley: Univ. Calif. Press
Ragin C. 1995. Using qualitative comparative analysis to study configurations. In *Computer-Aided Qualitative Data Analysis*, ed. U Kelle, pp. 177–89. Thousand Oaks, CA: Sage
Roberts CW. 1989. Other than counting words: a linguistic approach to content analysis. *Soc. Forces* 68(1):147–77
Rosenberg S. 1989. A study of personality in literary autobiography: an analysis of Thomas Wolfe's *Look Homeward Angel*. *J. Pers. Soc. Psy.* 56:416–30
Rosenberg S, Mechelen I, De Boeck P. 1995. A hierarchical classes model: theory and method with applications in psychology and psychopathology. In *Clustering and Classification*, ed. P Arabie, L Hubert, G DeSoete. Teaneck, NJ: World Scientific
Sahlins M. 1976. *Culture and Practical Reason*. Chicago: Univ. Chicago Press
Schweizer T. 1993. The dual ordering of people and possessions. *Curr. Anthro.* 34: 469–83
Sewell WH Jr. 1992. A theory of structure: duality, agency and transformation. *Amer. J. Sociol.* 98 (Jul):1–29
Shweder RA, Bourne EJ. 1991. Does the concept of the person vary cross-culturally? In *Thinking Through Cultures: Expeditions in Cultural Psychology*, ed. RA Shweder, pp. 113–55. Cambridge, MA: Harvard Univ. Press
Skocpol T. 1992. *Protecting Soldiers and Mothers: The Political Origins of Social Policy in the United States*. Cambridge, MA: Harvard Univ. Press.
Snider JG, Osgood CE. 1969. *Semantic Differential Technique: A Sourcebook*. Chicago: Aldine
Snow DA, Rochford EB Jr, Worden SK, Benford RD. 1986. Frame alignment processes, micromobilization, and movement participation. *Am. Sociol. Rev*. 51:464–81
Sudman S, Bradburn NM, Schwarz N. 1996. *Thinking About Answers: The Application of Cognitive Processes to Survey Methodology*. San Francisco: Jossey-Bass
Swidler A. 1986. Culture in action: symbols and strategies. *Am. Sociol. Rev.* 51:273–86
Tilly C. 1997. Parliamentarization of popular contention in Great Britain, 1758–1834. *Theory Soc.* 26(2-3):245–73
Ventresca M, Yin X. 1997. *Representing economy and society: comparative trends in what states count, 1800–1970.* Presented at Am. Sociol. Assoc. Meet., 92nd, Toronto
Wasserman S, Faust K. 1994. *Social Network Analysis: Methods and Applications*. Cambridge, UK: Cambridge Univ. Press
Weller SC, Romney AK. 1988. *Systematic Data Collection*. Newbury Park, CA: Sage
Weller SC, Romney AK. 1990. *Metric Scaling: Correspondence Analysis*. Newbury Park, CA: Sage
White HC, Boorman SA, Breiger RL. 1976. Social structure from multiple networks. I: Blockmodels of roles and positions. *Amer. J. Sociol*. 81:730–80
Wuthnow R. 1987. *Meaning and Moral Order: Explorations in Cultural Analysis*. Berkeley: Univ. Calif. Press