Culture and Networks

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Abstract

Changing conceptions within the sociology of culture and in the research community of social network analysts have led to the development of a new specialty area, research at the intersection of culture and networks. The new research entails a rethinking both of the kinds of actors and actions that takes place in networks, and of the connections among actors that are relevant. This article emphasizes conversations, objections, and ongoing concerns within this evolving research specialty as well as research accomplishments.

Keywords: culture, social networks, practice theory, narrative networks, duality of culture and structure, negative ties

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The concept of *culture* has traditionally connoted large-scale phenomena such as national character, the ultimate values of a society, shared stores of knowledge, and a people's total way of life. The concept of *social networks* has traditionally referred to the patterning of connections among actors, with analytical power deriving from an emphasis on the formal modeling of system and structure. Over the past thirty years, but especially during the past decade, each of these concepts has undergone significant reorientation. Moreover, the topic of "culture and networks" has emerged as a research specialty in its own right and became the subject of a number of overviews, reviews, and orienting statements (DiMaggio 2011; Fuhse and Mützel 2010; Mische 2011; Mohr and Rawlings 2010; Pachucki and Breiger 2010) in the wake of widely influential calls a decade earlier for the production of new models and syntheses of social structural and cultural analysis (DiMaggio 1992; Emirbayer and Goodwin 1994). The focus of this article is to describe the main contours of these changes as well as the most noteworthy of the emerging research questions and approaches guiding the contemporary work.

Culture and Networks as a Developing Research Specialty

We review recent changes in emphasis in the study of both culture and social networks that has led to the new research specialty at their intersection.

Culture

A diverse set of influential anthropologists and sociologist writing in the 1970s pointed the way toward a more activist view of culture than the one that had long dominated these disciplines and which posited an autonomous sphere of clearly known

values that were imprinted inside the heads of all members of a society. As against theories of Saussure, Durkheim, Kluckhohn, and Parsons, the new analysts—grouped under the rubric of "practice theorists" by Ortner (1984)—included Clifford Geertz, Marshall Sahlins, Pierre Bourdieu, and Anthony Giddens. A major contribution of Geertz was his insistence on studying culture from the actor's point of view; however, his most radical theoretical move, as Ortner (1984, p. 129) has emphasized, was to argue that culture is not something locked inside people's heads, but rather is embodied in public symbols. For Geertz, "man is an animal suspended in webs of significance he himself has spun," and Geertz took culture to be those webs (Geertz 1973, p. 5). Moreover, as argued most sharply by Giddens, the study of practice is not antagonistic to the study of systems or structures, but rather a necessary complement to it (Ortner 1984, pp. 146-47).

Beginning with Geertz's definition of culture, but seeking to change the emphasis from interpretation to explanation, Ann Swidler (1986) theorized a model alternative to the traditional conception, according to which, rather than values providing the ultimate ends that actors seek, actors' cultivated skills, styles, and habits, bundled together as repertoires or "tool kits," provide robust linkages between culture and action. Symbols, stories, rituals, and world-views constitute repertoires that people use actively to construct diverse strategies of action. The term "strategy" connoted for Swidler not a consciously defined plan to attain a goal, but rather a general way of organizing action. Thus, lines of action might for some purposes take shape as trading in a market, and in other instances might refer to gaining resources from existing networks of relatives and friends. This insight provides an opening to subsequent findings on the conditions for within-network exchanges (DiMaggio and Louch 1998). Many currents of contemporary research in cultural sociology have been strongly influenced by this concept of culture operating at a more local level than in the

traditional formulation and emphasizing culture as providing repertoires of capacities and practices.

Networks

Many commentators (including Pachucki and Breiger 2010) draw attention to the extent to which the 1970s breakthroughs in network modeling seemed explicitly to reject culture as any part of an explanation for network patterning. This is too simplistic a view on two accounts.

Important currents of network analysis have defined themselves, much as is apparent in Swidler's work, as a move from unwarranted abstraction and toward the analysis of contextualized and concrete structures. Harrison White and his collaborators on blockmodeling indeed did explicitly reject rooting network analysis in "a harmony among abstract norms and values" (a reference to the sociology of Talcott Parsons, which was also the main point of departure for Swidler's cultural-toolkits approach), and in doing so they endeavored to redefine the classic concepts of role and position "so that they apply to concrete, observable interactions" (White et al., 1976, pp. 731, 733). While there are today, and have always been, analytical movements within network analysis to study abstract "structure," in the singular (well epitomized by the search for laws that apply to "all networks," as reviewed popularly in Barabási 2002), White and collaborators set out to ground network analysis in the study of "structures" in the plural—different networks that might be associated with different strategies or lines of action. Indeed, even a single network, a small college fraternity, was shown to evolve within its first fifteen weeks from one pattern (that of in-groups) toward a distinctively different one emphasizing hierarchy and increasingly negative ties aimed at an outgroup (White et al., 1976, p. 764).

The second way in which blockmodeling (search for macro-structure) across multiple networks (sets of connections among social actors, with a different network

defined for each of several distinct types of relationship, such as affect and economic exchanges) admits an opening to culture is in putting forward an explicit approach to the meaning of ties, albeit an approach that was firmly grounded in structuralism. For Boorman and White (1976), two networks have the same meaning if and only if they have identical pattern of incidence, either at the individual-actor level or (more usually) at the macro level. Thus for example, if the network reporting enemies of enemies of each actor (such that there is a tie from each person i to person j if j is an enemy of an enemy of i) produces a pattern of ties among actors that is identical to the network of friendship among the same actors (a tie from i to j in the friendship network indicating that j is a friend of i), then by Boorman and White's (1976) *axiom of quality*, the analyst has a warrant to conclude that, in the context studied, enemies of enemies are friends, and precisely in this way the two networks are said to share the same meaning.

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The emphases on concrete structure and on structure-as-meaning thus provided some openings toward culture, but the 1970s approaches to social network analysis were justly criticized by Brint (1992) for marginalizing culture, yet smuggling it back in to provide an interpretation of blocks of actors who, for example, might be characterized as the "top dogs … [who] remain largely ignorant of most lesser mortals" (White et al. 1976, p. 749), a phrase expressive of cultural distinctions that the network analysts did not however interpret on a cultural plane. Symbolic interactionists (most recently and astutely, Salvini 2010) urge a reconceptualization of social networks as emergent effects of the complex interlinking of situated social interactions, never entirely stable, and informing an analysis of how actors work through constraints to formulate courses of action for social interactions.

A significant spur to the creation of joint interest in networks and culture arose in the 1990s with the formation of a working group on "measurement and meaning" within the five-year-old Section on the Sociology of Culture of the American Sociological Association. Paul DiMaggio, John Mohr, and Ann Swidler were among the active participants. Meanwhile, Harrison White published *Identity and Control* in 1992 (a largely new second edition appeared in 2008), upending existing network theory and proclaiming that a social network is a network of meanings (see Mische 2011 and Pachucki and Breiger 2010, pp. 208-09, for expanded discussion). The journal *Poetics*, an interdisciplinary journal of theoretical and empirical research on culture, the media and the arts, began from the 1990s onward to be a vibrant center for research at the intersection of social networks and culture. Within the past decade the annual meeting of social network analysts has begun to feature sessions specifically on networks and culture, and models of social influence processes have been brought to bear on studying the reception of texts (Childress and Friedkin 2011).

Significant Research Questions and Controversies

We will address the principal research issues at the interface of culture and networks under two main rubrics, relating respectively to the kinds of actors, and the kinds of connections or ties, that constitute social networks from the perspective of cultural analysis.

What Kinds of Actors Inhabit Social Networks?

Rational vs. practical network actors

Much traditional social network analysis models the actors or "nodes" of network diagrams as black boxes and lacking in purpose, agency, or motivation. DiMaggio (1992, p. 120) referred to it as the effort to create a structural sociology that is culture-free, and urged the formulation of a suitable theory of action and of the cognitive status of role definitions, action scripts, and typifications. Moreover, DiMaggio portrayed the early blockmodeling work as well as the continuing tradition in network analysis as smuggling in such frameworks implicitly. In contrast to both the Parsonsian and the rational choice traditions, DiMaggio (1992, p. 121) saw these forms of network analysis as sharing with ethnomethodology a radical realism focused on concrete social relations, and a view of culture as "a mystifying system of post hoc accounts used by actors to normalize or explain interaction rather than to shape it." Sketching a contrast between rational action and practical action, the latter consisting of a mix of cognitive psychology, social constuctionism, the Carnegie School of organizational behavior research, and a conception of practical reason akin to Bourdieu's, DiMaggio (1992, p. 138) urged network theorists to develop the practical actor model, with its emphasis on what actors do not know about social structure and the shortcuts they develop to operate under conditions of uncertainty. Somers (1992, p. 766-67) put forward a "relational realist and pragmatist ontology" taking as the basic units of social analysis neither individuals nor structural wholes, but rather the relational processes of interaction between and among identities.

Inner-directed and tradition-directed vs. other-directed network actors

Recently there has arisen something of a counterrevolution against what its proponents see as excessive social constructivism on the part of analysts of the culture-network interface. With reference to David Riesman's (1950) distinction among action orientations, it is possible that (explicit or, more usually, implicit) models of network actors

have tended to portray them as "other-directed," implying a muted form of individuality according to which actors who inhabit social networks are incessantly oriented only to the actions of others, rather than holding a firm course fixed by a person's internal gyroscope or moral compass ("inner-directed" actors) or to an orientation emphasizing the value of community norms and a sense of taken-for-granted purpose ("tradition-directed"). C. Smith (2010, p. 340, italics in original) brings to bear a philosophical standpoint positing that a "*natural drive toward a sustained and thriving personal life broadly … generates*" social structure. Writing on "network structuralism's missing persons," he insists that norms cannot be dismissed as causally insignificant. While sympathetic to the network structuralists' rejection of the variables paradigm and Parsonsian theory, Smith portrays the pendulum as having swung too far, resulting in a network theory that is anti-humanist and person-annihilating. It is necessary to reject the package of presuppositions that brings together reductionism, constructivism, pragmatism, empiricism, and positivism in order to redress network structuralism's neglect of human dignity, rights, respect, and rational deliberation (C. Smith 2010, pp. 270, 272).

Vaisey (2009, p. 1687), grounding his approach in the dual-process model of cognitive science, puts forward a conception according to which actors are driven primarily by deeply internalized schemata (akin, he believes, to Bourdieu's habitus or to implicit consciousness), yet are also capable of deliberation and justification (discursive consciousness) when the situational demands of social interaction require it. Vaisey argues that, with their championing of culture as repertoire (which Vaisey identifies with his deliberative pole), analysts of the culture-network nexus have been focusing on only half of the cognitive process, and the less interesting half at that.

Vaisey and Lizardo (2010) applied the dual-process model to survey data relating "worldviews" (such as whether respondents say they believe in moral relativism) to

respondents' network composition at a subsequent time (for example, whether respondents claim friends who engaged in deviant acts or who, on the other hand, volunteered in community service). Results showed that worldview had a significant and relatively large effect on subsequent network composition, controlling for aspects of network structure and composition. There are questions about whether durable moral worldviews were successfully measured (in that over 50% of the respondents were categorized as having different worldviews in the survey's second wave) and about whether survey data can provide an appropriate measure of implicit cognition (Srivastava and Banaji 2011, p. 208), but the larger point for present purposes is the desirability of pioneering efforts such as this one to assess the effects of both implicit and discursive cognition on actors' formation of social network ties. Further in this regard, the dual process model has been brought to the nodes and arcs of full who-to-whom social network data in the study of Srivastava and Banaji (2011). The test for implicit association that they employ is based on the measurement of response times as network actors sort descriptions that might characterize them, thus capturing the phenomenology of implicit cognition. The authors build these cognitive measures into a sophisticated (ERGM) model of network structure.

Network actors as people who remember

T. Smith (2007) models networks in a highly innovative way. The context is extreme ethnic conflict. The location is Istria, the land at the northern tip of the Adriatic where Italy, Slovenia, and Croatia meet. The data concern the stories that people tell about their life histories, as these intertwine with wars and long and internecine conflicts among ethnic Italian and Croatian inhabitants of Istria. Nodes in the network are not persons or groups but narrative elements such as "superior culture" and "ethnic cleansing" as told to the researcher in the stories of several dozen people on each side of the conflict in Istria and

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(subsequently) in New York City, where Smith interviewed members of the immigrant Italian and Croatian immigrant communities. Of special importance to Smith are boundary elements that can act as bridges to otherwise unconnected narratives (those related by Italians and those told by Croatians) and transform the meaning of those story components that overlap the two narratives. At the same time, their ties to the original narratives open up opportunities for importing new meanings into existing narrative structures, which is one meaning of bridging a cultural hole (Pachucki and Breiger 2010, p. 216).

Network actors have memories, and T. Smith's (2007) study of immigrant Istrians in New York City shows how they can deploy discursive repertoires that are consistent with ethnic reconciliation and enhanced humanity and dignity. When Istrian immigrants of Croation and Italian ancestry came to interact in New York churches, ethnic clubs, and restaurants, the narrative boundaries softened, to the point that all Istrians were now seen as common victims of external forces. Without wanting to be seen as questioning the historical fact of the fierce ethnic conflict, the researcher nonetheless emphasizes the social construction of memories of violence, and in particular their muting, as a potential step toward reconciliation and shared dignity. To be sure, silence about conflict comes at a cost as the suffering of victims is forgotten and perpetrators go unpunished; on the other hand, enshrining the bases of divisions in constitutions or land partitions would deny actors opportunities for co-narration (T. Smith 2007, pp. 43, 44). Mapping individual and collective memory (Cunningham et al. 2010) seems a promising direction for research on cultural strategies of network cognition. The further development of this line of empirical study might begin to address the concerns of C. Smith (2010), reviewed earlier, on the asserted anti-humanism of social network analysis.

What Types of Network Tie Comprise Culture?

The connections among actors that are most typically studied by social network analysts are either social relationships or ties of persons to groups. If the locus of culture is "webs of significance" (Geertz 1973), then the question is raised as to what types of network tie adequately capture signification. We review answers to this question that have been influential for work on culture and networks.

Beyond persons and groups

Building on insights of Simmel, Cooley, Nadel, and Goffman, Breiger proposed in the 1970s a locus for network analysis that differed from the usual emphasis on ties among a set of social actors. Breiger suggested a "duality" according to which groups are connected to one another on the basis of the members they share in common while, at the same time, the individuals who are members of multiple groups form a dual network. In the one network, persons are the nodes and their joint memberships in groups are the connections among the persons; in the dual network, groups are the nodes and shared persons are the ties among groups. The structure of the intergroup network and the structure of the interpersonal network are distinct but, also, mutually constitutive (reviewed in Mohr and Duquenne 1997).

Mohr and Duqenne (1997) introduced a crucial move from networks to culture by recognizing that the formalism of this model of dual affiliation well captured a key aspect of the emphasis of Geertz and other practice theorists on the logic of culture as co-constituting the patterning of everyday activities. The ideas of a culture (for example, "private property") are constituted by the practices used and recognized to sustain them, even as these practices are shaped by implementations of the idea. In their application, Mohr and Duquenne studied poverty relief in New York City around the beginning of the twentieth century, and in particular the ways in which categories of the poor (such as "fallen" and

"stranger") were associated with procedural remedies (such as help in providing employment, or putting a person in an almshouse or other long-term custodial care facility) applied to classes of persons, as this information was gleaned from directories of charity organizations. In this way, the researchers were able to deduce a web of meaning among the categories of poor person on the basis of how those categories were used.

The method used by Mohr and Duquenne was dual (Galois) lattice analysis, a technique that represents two orders of information by graphically portraying the composition of elements at each level by those at the other. Mische (2008) applies a form of three-mode lattice analysis (jointly relating persons, organizations, and events) as one among a number of innovative procedures for studying "civic mediation," according to which both connections and identities are constructed across social movement organizations.

In addition to algebraic techniques such as lattice analysis, statistical methods have also been used to study duality, notably the method of correspondence analysis. In a departure from usual modes of network analysis, this procedure is capable of application—as in Bourdieu's research—to categories of person (such as occupational categories) and types of cultural object (such as the distribution of preferences of each occupational category for a first communion, a sunset, or a car crash as the subject of a beautiful photograph). Rather than as a lattice, the results of correspondence analysis are often presented in a Cartesian plane, where social positions and cultural dispositions can be captured spatially and with respect to the oppositions as well as affinities that define a social field. Rouanet et al. (2000) provide a more adequate overview of Bourdieu's orientation to correspondence analysis . Further on the subject of methods for the study of duality, Charles Ragin has introduced qualitative comparative analysis (QCA) as a way of understanding cases as constituted by configurations of variables. Breiger (2009), in an

application to the mobilization of ethnic sub-national groups in Western Europe and the social and cultural properties of those groups, demonstrates how a form of correspondence analysis can be used to analyze the duality of cases (ethnic groups) and variables (social and cultural group properties and behaviors) that is one of the motivating principles of QCA.

Recent work has employed innovative definitions of network affiliation ties to illuminate cultural webs. Using correspondence analysis of survey data, Hedegard (2013) studies relations among racial self-categorizations in Brazil (seven categories spanning black, brown, white, indigenous, and their combinations) on the basis of respondents' tastes for thirteen cultural objects (most of which are musical forms). One of the main findings is that, despite incorporation of forms such as samba and *capoeira* into the national identity, and their practice across racial and class lines, these cultural objects continue to associate with divergent racial identities.

A variety of network-analytic concepts and methods may be usefully applied to the domain of culture. In a study of four Washington, DC marches in support of lesbian, gay, bisexual, and transgender (LGBT) agendas and causes in the period 1979 – 2000, Ghaziani and Baldassarri (2011) take as their basic data structure a matrix indicating the presence or absence of each of twelve themes in each of hundreds of newspaper articles. The authors study this affiliation matrix directly, and they also study the dual theme-by-theme network that it implies. The affiliation matrix is normalized to take account of differing main effects in the popularity of themes. We believe that three kinds of analyses reported in this paper will be of interest in subsequent research on culture and networks: (a) the authors apply usual concepts from network analysis (such as centrality and brokerage) to the networks of themes, identifying a stable core of themes as well as several time-varying sets of concerns that are congenial to the authors' argument for the existence of thematic "anchors" that allow social movements to support differences within the frame of a common core; (b)

representing each of the four marches as a network among the twelve thematic elements, the authors compare all pairs of networks by means of a network analysis tool (QAP correlation), discovering statistically significant coherence over time; (c) they represent each of the four normalized matrices of thematic co-occurrence as a network graph, thus identifying stable and varying sets of thematic elements over time.

Another method that we believe will prove generally applicable in the study of affiliations of actors for cultural forms is relational class analysis (Goldberg 2011), which allows the analyst to parse out groups of like-minded individuals, not on the basis of individuals within the groups sharing similar attitudes, but rather on the basis of having similar beliefs about the relations among attitudes. (An example given by the author is that two people within the same relational class might disagree vehemently about abortion, but agree that the debate revolves around women's right to control their bodies; people in a separate class might identify abortion with a complex of issues pertaining to social welfare.) Goldberg's data are in the form of a preference matrix, respondents by musical genres, and he identifies three distinctive logics combining musical tastes and social class on the basis of his relational class analysis.

At a very different level (but one that turns out to be remarkably relevant), computational scientists and complexity theorists (Ahn et al., 2011) have built on findings of food chemists about the flavor compounds (i.e., chemical compounds) contained in many culinary ingredients. The researchers begin with a matrix of 381 ingredients used in recipes throughout the world, and 1,021 flavor compounds, indicating which compound is in which ingredient. A dual projection results in a "flavor network" in which two ingredients are connected if they share at least one compound, and the weight of each link is the number of compounds shared. Further analysis (not reported here) leads to a visualization of the flavor network. It is found that, on the basis of shared chemical compounds, ingredients

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used in Western European and North American cuisines are statistically similar. In North

American recipes, for example, the more compounds two ingredients share, the more likely

they are to appear together. However, the authors found sharply different results for

Southern European and East Asian cuisines: in those cases, the more compounds two

ingredients share, the less likely they are to appear together in the same recipe. The

researchers could identify broad cultural regions of the world on the basis of a network of

combinations of chemical compounds. This work reaffirms that only a researcher's

imagination limits the kinds of data that can be brought to bear in the study of dual

networks of culture and practices. We also note that the study of Ahn et al. connects to

actor-network theory and its study of the interpenetration of social and nonhuman

networks.

Networks of narrative elements

The work reviewed above focuses on affiliations between two orders of phenomena

(such as persons and musical tastes). Researchers at the interface of culture and networks

have also been providing innovative formulations of one-mode networks (i.e., ties among a

single kind of entity, such as persons). We have already reviewed T. Smith's (2007) study of

memory and ethnic conflict, in which the nodes are elements of narratives and the ties

reflect sequential order in the narrative. DiMaggio (2011, pp. 295-96) reviews a wider

range of network studies of narrative events, as well as computational science studies of

texts. See also Varga (2011) on measuring the relative degree of fragmentation of scientific

fields on the basis of co-citation analysis.

The role of negative ties

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Negative network ties may play a distinctively important role in culture, and may even enhance cultural creativity, as Giuffre (2009) found in a study of artists on the Polynesian island of Rarotonga. In the past decade the island has earned a reputation across the South Pacific as a hub for the revival of traditional Polynesian arts and as a center of artistic creativity and ferment. The island has more fine arts galleries per capita than London, New York, and smaller arts centers like Santa Fe, New Mexico. Complementing an ethnographic study, the author conducted a network analysis of artists who were asked to name the three best artists on the island, excluding themselves. A number of "worst artist" references were also volunteered, though they had not been solicited. Among the four positions that emerged from the network analysis were the "Stars," consisting of artists who had been born in New Zealand of Cook Islands ancestry and who had recently arrived on Rarotonga with a reverence for its traditional culture along with a Westernized sense of professionalism and an interest in the international fine arts world. By way of contrast, the "Old Guard" consisted mainly of older artists who had grown up in the Cook Islands and who had pursued their interests in spite of the traditional opprobrium directed against artistic careers; they were more interested in pleasing their local customers than in international standing, and they often painted local flora and landscapes. Although occupying a coherent position in the network relationally, members of the Old Guard directed virtually no esteem toward one another and, moreover, the negative ties were concentrated between the Old Guard and the Stars. A third set of artists endeavored (not too successfully) to mediate between the first two sets, and a fourth were acolytes of the Stars. It is as if the Old Guard and the Stars both served as action ideals (Swidler 1986) that were taken to be negative by members of the other set. The negativity was heightened by the small size and confined geography of an island setting. Giuffre builds upon work by Labianca and Brass (2006) on negative social network ties in American organizations and

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the stultifying features of workflow demands and internal hierarchies that might make it difficult or impossible for workers to avoid those who dislike them—much as on an island. Labianca and Brass write that negative ties may be more important than positive ones in their impact on organizations.

Giuffre (2009) suggests that a mix of positivity and negativity may be necessary in social networks that foster creativity, in that the negative ties trigger critical evaluations, discourage groupthink, and (by presenting action ideals that are negative) provide a spur to expanding one's own artistic identity. This study of negative ties and creativity links in a useful way to research on symbolic boundaries. Doreian and Mrvar (2009) provide practicable methods for partitioning networks containing a mixture of positive and negative connections.

Conclusion

In this article we have reviewed changes in the sociology of culture and in the research community of social network analysts that have led to the development of a new specialty area, research at the intersection of culture and networks. The new research has led to a rethinking both of the kinds of actors and actions that takes place in networks, and of the connections among actors that are relevant. We have emphasized conversations, objections, and ongoing concerns within this evolving research community as well as research accomplishments.

DiMaggio (2011) argues that network analysis is the natural methodological framework for developing insights from leading theoretical approaches to cultural analysis. While making use of and offering some further support for that argument, we have tried also in this article to emphasize some of the benefits to network analysis of the opening to culture that has been made possible by a diverse set of researchers who share a commitment to working at the interface of culture and networks.

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Cross References: Culture and Actor Network Theory; Networks and Meaning; Culture and Cognition; Formal Methods of Cultural Analysis; Narrative Networks; Symbolic Boundaries (Overview)