Introduction

Building Bridges

Linking Social Capital and Social Networks to Improve Theory and Research

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Why edit a special issue on social capital and social networks? To begin, work in both fields has grown dramatically in recent years. Consider Figure 1, which plots the number of articles published with the term *social networks* or *social capital* in the title, abstract, or keywords over time. Both terms show remarkable growth with little sign of slowing.

Moreover, researchers from across the social science disciplinary spectrum have engaged these topics. Attendees at the 2-day conference that inspired this special issue represented more than 30 disciplines, including business, education, economics, law, pathology, psychology, political science, sociology, and social work.[1] This interdisciplinary interest testifies to the intrinsic power of these concepts: many fields find them useful and important for understanding nearly every aspect of social life.

And yet, although work on both social capital and social networks has progressed steadily, explicit links between the two fields appear rare. Only 4.5% of abstracts for articles on social networks mention social capital, and just about 2% of those on social capital explicitly mention social networks. This disconnection strikes us as unfortunate given the obvious topical affinity between the two concepts. Our goal with this special issue is therefore to identify points of connection in these two literatures, suggest insights from each literature that can help clarify the other, and gently nudge the two fields toward a more comprehensive social theory.

The Current Topical Structure of the Two Literatures

Building bridges between the fields of social capital and social networks should be easy: the substantive topics of concern are similar in both fields. Consider

Figure 1
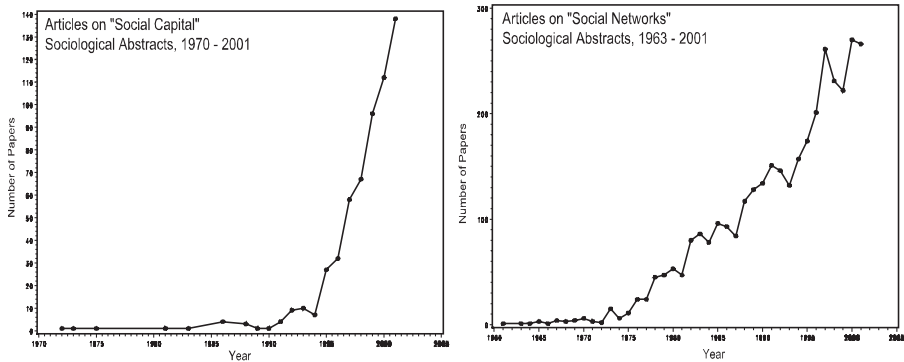**Research Trends in Social Capital and Social Networks**

Figure 2, which maps the substantive topics contained in each literature and provides a "bird's-eye view" of the two fields (Borner, Chen, & Boyack, 2003; Moody & Light, 2006). Briefly, Figures 2A and 2B are based on a network representation of co-word similarity scores between articles. The figures place articles that discuss similar topics close to each other in space. We then identified topical clusters as concentrations of articles discussing similar things, highlighted by the contour lines in the figure (and named in places). Figure 2 only focuses on the most general, largest topics and does not presume to represent the entire population of topics studied in either area.

Figure 2 shows clear areas of overlap between social networks and social capital, both in the structure of the fields and in the substantive topics addressed. Consider first the literature on social networks. It is characterized by a central set of articles focusing on network structure per se—on general features of networks as such, with only passing reference to how networks affect other outcomes (e.g., Carley, 1999; Freeman, 2000; Grahame, 2004). This central core is a mix of methods and theory but has in common a direct focus on network structure. Surrounding this core are dense pockets of topics that use or extend ideas in the core. These range from areas strongly associated with traditional network studies, such as research on power and exchange or formal models of network structure (e.g., Bienenstock & Bonacich, 1997; Cook, Emerson, Gillmore, & Yamagishi, 1983; Lawler & Yoon, 1993), to substantive issues surrounding social support, family, migration, or community (e.g., Brown & Nylander, 1998; Widmer, 1999). The relatively few articles on social networks that explicitly mention social capital are found clustering around community, with a spattering all across the lower half of the figure.

Figure 2
Topic Structure of Two Literatures
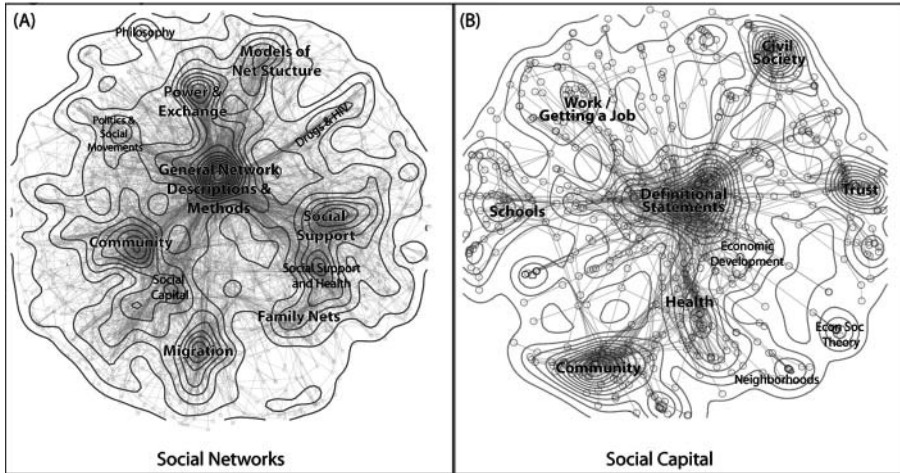
The literature on social capital is newer than the literature on social networks and is therefore comparatively sparse (see Glanville & Bienenstock, in press, for a review). But the structure of the existing social capital literature mirrors that of social networks. At the center are a set of articles devoted largely to questions about the definition of social capital (e.g., Coleman, 1988; Paxton, 1999; Portes, 1998; Robison, Schmid, & Siles, 2002). Like the core of the networks literature, a number of these articles only refer in passing to substantive outcomes of interest. The substantive topics that surround this central definitional debate cover not only many of the items in the "south" section of the social network map, particularly community and health, but also issues of getting a job, economic development, and social support. The three largest pockets of research relate social capital to trust, civil society, and communities, whereas the "northwest" region of the figure focuses on many questions that are essentially social-problem applications of social capital, with some coherence around the literature on schools and jobs.

The general profiles of each literature are therefore similar, and we think largely healthy: both fields have dramatic and rapid growth, a central core of essentially self-referential work surrounded by methodological extensions and applications to multiple substantive research areas. However, we fear this current vigor risks both conceptual and empirical overextension if left in isolation. The set of central articles in each field would likely strike readers in the other as too self-referential, with endless definitional statements or minor methodological debates. Thus, we will argue

Figure 3
Concept Space for Social Capital and Social Networks
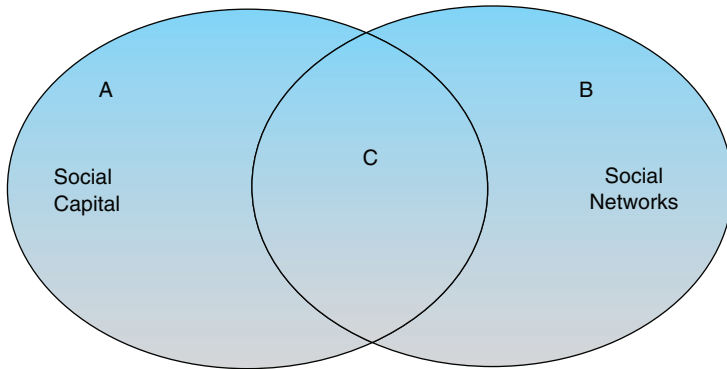
that a promising place for bridging across the literatures is to combine the *structure of networks* with the *content of social capital* to better model the substantive outcomes of interest to both (see also Alder & Kwon, 2002; Paxton, 1999).

Bridging Social Capital and Social Networks

We can abstract from the empirical literature above by asking what each field contributes uniquely and jointly to our understanding of social life. Figure 3 represents this as a simple Venn diagram.

Social Capital Without Social Networks

Work on social capital that does not rest on explicit network connections (part A of Figure 3) often references relations, feelings, or norms that are a generalized result of social embeddedness (Fukuyama, 1995; Paldam & Svendsen, 2000; Rahn & Transue, 1998). This notion of social capital works through mechanisms such as positive feelings from joint association or shared values such as patriotism and social identity, without depending on a particular network tie (Bollen & Hoyle, 1990; see also Frank, in press). A good example might be two college alums that recognize each others' school rings, even if they never had prior contact. Another example would be the immediate feeling of comradeship one has when meeting someone from one's home country while traveling abroad. Consider also collective

efficacy, or a collectivity's shared belief in its capacity for action (e.g., Sampson, Morenoff, & Earls, 1999).

Also in section A of Figure 3, although closer to the intersection with Figure 3B, is work that considers the impact of voluntary association membership on various social outcomes (e.g., Kawachi, Lochner, & Prothrow-Stith, 1997; Knack & Keefer, 1997; Messner, Baumer, & Rosenfeld, 2004; Paxton, 2002; Putnam, 2000). Much of this work does not reference the direct connections between individuals, instead relying on reports of membership in a list of types of associations and leaving network connections between individuals implicit. Critiques that these association memberships may not imply association at all (e.g., that many are "checkbook" organizations) reflect the concern that social capital not be reduced to simply fellow-feeling or shared values without real-world connection.

In general, we can think of social capital apart from social networks as socially meaningful feelings, values, or connections independent of micro-network structure. Or, as social *content* without social *structure*.

Social Networks Without Social Capital

Work on social networks that remains separate from social capital (part B of Figure 3) often focuses on networks and network structure as content free. This work focuses on "pure connection"—on networks in general rather than connection of a particular subjective type such as friendship, social support, or enmity (Bonacich, 1987; Doreian & Stockman, 1996; Frank & Harary, 1979; Friedkin & Cook, 1990; Morgan, Neal, & Carder, 1997; Snijders, 1996; Wasserman & Faust, 1994). An ideal-typic example would be a computer virus working through e-mail address books—the virus moves equally well through all connections of any type.

We see the strongest statements for a content-free approach in recent totalizing statements about networks science (Barabasi, 2002; Watts, 1999), which seek explicitly to identify general features for all node-and-edge systems, ranging from Internet Web links to sexual contact. For example, although we find consistent evidence for "small-world networks," which demonstrates that the average distance between everyone on the planet is 6 handshakes, there is almost no discussion of what sorts of social processes can be carried across those handshakes. In most social settings, however, issues of trust, reciprocity, care, enmity, and recognition all shape how actors interact, and thus the way goods flow through the network. We suspect that without content specificity, much of this current trend in network research risks removing the "social" from social networks without providing useful tools for substantive researchers.[2]

In general, we can think of social networks apart from social capital as patterns of connection independent of social meaning. Or, as social *structure* without social *content*.

Joint Effects of Social Capital and Social Networks

Much of the substantive work on social capital and social networks falls closer to the middle of Figure 3, in section C, at the intersection of these two literatures (see Podolny & Baron, 1997, or Smith, 2005, for exemplars). Indeed, the lack of direct attention to the intersection of the two fields masks an implicit and underlying connection between them. We have classic examples where the central finding implicitly rests on the intersection of content and structure. For example, Simmel's work on the structure of triads, the tertius gaudens, carefully distinguished contents of exchange, information, and support. Balance theories all use (at least minimally) aspects of the affective content in building networks (Davis, 1963; Heider, 1946). An excellent contemporary example of this approach is Podolny and Baron's (1997) work, which demonstrates that network structure and content combine in producing organizational advancement. In brief, they found that network ties conveying resources were positively related to promotion, whereas network ties conveying identity and expectations were negatively related (see also Labianca, Brass, & Gray, 1998; Sparrowe, Linden, Wayne, & Kramer, 2001).

Social capital and social networks, when combined, yield richer theory and better predictions (see Baker & Faulkner, 2009). Indeed, in both fields the complement is needed to clarify the mechanisms by which outcomes occur. As we will illustrate, full specification of theory in the social capital field requires attention to the *structure* of social networks. Simultaneously, full specification of theory in the social networks field requires attention to the *content* of social capital.

As an example in the social capital area, consider research linking voluntary association membership to increased trust (e.g., Delhey & Newton, 2003; Paxton, 2007; Stolle, 1998). This research requires the use of social networks to explain how membership creates positive fellow-feeling (Paxton, 2007). Voluntary associations promote trust among their members through the norms and social sanctions passed through the in-group network (Friedkin, 1993; Marsden & Friedkin, 1993; Moody & White, 2003). Networks also ease monitoring; a potential trustor knows he or she will engage in repeated interactions with the other members of the group, with the potential for sanctions against broken trust in future interactions (Axelrod, 1984). Further possibilities for sanctions exist because of the presence of a stable network of people—third parties are watching the exchange and can communicate negative information and damage reputations through gossip if trust is broken (Burt & Knez, 1995). All of these mechanisms explain how a voluntary association membership can create trust. But all of the mechanisms require consideration of the underlying network structure.

Alternatively, consider the importance of content to network diffusion in the social networks field. We know that certain mathematical features of the structure of networks places hard bounds on the extent of possible diffusion (Moody, 2002; Valente, 1995, 2001). But the social content of relations conditions these limits. That is, even when the network is fixed, the extent of diffusion across relations depends on features

of the dyad, the "bit" being diffused, and differential time spent with alters (Borgatti, 2005). We choose who to tell secrets to, whose gossip we believe, or who we will use condoms with based on the trusting (or other) content of the relation (Burt, 2000, 2005). Relationship history further limits acceptable moments for diffusion, effectively selecting edges from the wider graph-theoretic possible set (see McPherson, in press). One need only think of all the diffusion that fails to move across ex-romantic relations to make this clear. In sum, incorporating relationship content enhances theorizing about diffusion through networks.

Enriching the Center: Bridging
From Social Networks to Social Capital

If in practice it is the overlap between social capital and social networks that holds the most promise for understanding action in real settings, exactly how can these two approaches buttress each other? We begin with a discussion of how both measurement/conceptual development and theory from the social networks literature can enrich work on social capital. Then we turn to how social capital can aid social networks researchers in adding complexity to dyadic models, stressing context, and innovating in measurement. Altogether, we attempt to introduce some, but certainly not all, of the many promising areas for bridging across the two fields.

In bridging from social networks to social capital, we see promise first in the rigorous language social networks research provides for describing the properties of relationships. The graph-theoretic properties of networks such as "density" or "reach" are exact, measurable quantities that underlie the dynamic social processes of interest to social capital researchers (Wasserman & Faust, 1994). Defined clearly, unambiguously, and with mathematical exactness, these network properties, if adopted in social capital research, would allow social capital theories to be more precisely specified and tested (e.g., Wellman & Wortley, 1990). For example, do association memberships matter for health outcomes when they embody dense pockets of social ties that provide social support? Or do association memberships enhance health outcomes when reach is greatest, allowing members to access necessary health information?

The rigorous conceptual development of the social networks field holds other potential benefits for social capital researchers. Use of general network terms, such as the difference between *connectivity* and *structural equivalence*, would add rigor to social capital theory and measurement. *Connectivity* refers to the connections in a network that carry goods (information, resources, etc.) through the network. *Structural equivalence* refers to nodes (individuals) occupying the same position in one or more networks. Structural equivalence is theoretically important because we expect people to behave similarly if they face similar opportunities and constraints in their network, even if they never come into contact with each other (Burt, 1978, 1987; DiMaggio & Powell, 1983; White, Boorman, & Breiger, 1976). Translating these terms and ideas to a social capital framework could enrich our

theorizing. A clear example of a connectivity effect comes from Coleman's (1988) treatment of closed loops among parents and their children, where strong connectivity produces enhanced information flow and better monitoring of children. An alternative structural equivalence effect would suggest that the children of individuals who are similarly deeply embedded in an association in their community would be similarly monitored, even if their parents are never directly connected.

Consider next how theories that are well developed in the social networks area could provide both new insights and traction on existing problems in the social capital literature. For example, the literature on the social processes of networks highlights important concepts such as homophily (preferences for similarity in social relations; McPherson, Smith-Lovin, & Cook, 2001), generalized exchange (Bearman, 1997; Blau, 1964; Ekeh, 1974), or social balance (Davis, 1963; Heider, 1946). For example, a network triad is said to be "balanced" whenever my friends are friends with each other and "imbalanced," and therefore unstable, when not. As individuals move to balance their ties, it shapes the global network structure and thus the flow of information (Davis, 1963; Doreian, Kapuscinski, Krackhardt, & Szczypula, 1996). Any social capital theory that relies on the flow of information or norms would benefit from the incorporation of such network process theories. More broadly, how the network came to be, and how it changes, should be both a cause and consequence of the substantive features of interest to social capital researchers.

Other theoretical bridges are possible. Although research on social capital has tended to focus on "horizontal" relations among peers or neighbors, the literature on social networks explores the unfolding of hierarchical relations even within seemingly horizontal organizations. These models range from those built on Simmel's initial insights regarding the structural power of third parties to shape the information, resources, and exchanges among pairs they separate (see also Burt 2005) to the natural emergence of hierarchy from individual preference to avoid rejection (Gould, 2002). These theoretical insights from the social networks literature challenge social capital researchers to address hierarchy even in outwardly equal organizations.

In sum, among other benefits, the social networks field offers precise measures of social structure, rigorous conceptual development, and detailed theories of network formation and change to the social capital community. Making use of these insights will enhance both theory and research in the social capital field.

Enriching the Center: Bridging From Social Capital to Social Networks

Theory and research on social networks will similarly be enriched with new insights from burgeoning research on social capital. First, social network models tend to use a thin model of dyadic relations. Relationships that ethnographers spend years understanding and carefully documenting often get collapsed to binary social network indicators of "present" or "absent." Although the substantive impetus behind early block modeling (White et al., 1976) rested on rich conceptions of

multiplex networks, much current work focuses on single-relation systems. Thanks to new modeling advances, the set of simplifying assumptions that have been used to make mathematical models tractable can, in many instances, be expanded to account for at least some of the richness theorized in the social capital literature and apparent in much of the ethnographic literature (Snijders, 1996; Snijders, Pattison, Robins, & Handcock, 2005). Thus, the distinctions social capital researchers make between connections of friendship, trust, support, a sense of efficacy, and so on could be useful to social networks researchers as they seek to "thicken" their models of dyadic relations. Furthermore, branches of the social capital literature distinguish not only between types of connections but also between types of nodes—that a trusting tie with different types of people means different things (Lin, 2001; see also Cote & Erikson, in press). Again, these insights have implications for adding complexity to social networks models in terms of frequency, intensity, or multiplexity.[3] Finally, theory and research on social capital can help social networks researchers identify which types of relations are relevant in various social situations, and thus shape our measurement efforts even of simple presence/absence. For example, the levels of trust needed to conspire in a criminal or terrorist endeavor are likely much higher than that needed to monitor delinquent activity in a neighborhood (Baker & Faulkner, 1993; Gambetta, 1988; see also Ryan, 2006). Depending on a network researcher's substantive question, the measurement of the presence of a tie may depend on meeting a required depth of feeling.

Moving beyond the relations themselves, research on social capital can help contextualize network models by highlighting how contexts shape relations. Institutions promote particular kinds of relations (school dances and heterosexual romance, for example) and even how deep or extensive those relations can be (consider the difference between a speed dating association and a church 20/30s group). As pointed out by social capital researchers, our understanding of outcomes is likely to be enriched by considering how networks are embedded in the larger community (see Alder & Kwon, 2002; Browning, 2009; Paxton & Moody, 2002; Sampson & Graif, in press). For example, governments can strengthen or undermine ties (Berman, 1997; Letki & Evans, 2005; Levi, 1998; Paxton, 2002; Tilly, 2005; see also Alder & Borys, 1996). The importance of context for determining in-groups and out-groups should similarly shape network formation and change. For example, whereas a general homophily preference promotes same-race friendships, school context, including the mix of races, can change the meaning of cross-race ties, making them more or less common (Moody, 2001). Indeed, administrator behavior, including the promotion of racial integration, changes school context and influences individual network ties between the different races (Allport, 1954; Moody, 2001; Schofield, 1979).

As a third point, we suggest that social capital researchers are currently more focused on voluntary associations than their social networks counterparts. Thus, researchers can draw on an appreciation of the importance of associations to enrich and extend theories of social networks. For example, if we overlay associational membership on top of direct network ties, we can ask questions about how contact

structures differ within and between groups. Processes that we typically theorize on homogeneous populations may differ depending on where an individual sits in the associational overlay. For example, we might expect balance and homophily to work differently within groups than between groups. Similarly, reputational processes, typically theorized through direct contact, could alternatively or simultaneously be modeled through the associational overlay. Put another way, the organization could become an efficient conduit for information that is different from channels typically theorized in existing social network models.

Finally, data innovations advanced most recently in the social capital area, such as the network position generator (Lin, 1999; Lin, Fu, & Hsung, 2001; see also Cote & Erickson, 2009), suggest efficient and powerful data collection tools that could be modified for use by social network researchers. In the position generator model, an actor's ties are summarized as a mixing profile: a distribution of types of alters. Typical network research starts with a type of relation and asks about the types of nodes within that set ("Are any of the five friends you've listed mechanics?). A position generator flips this on its head, asking "Do you know any mechanics?" Because respondents are queried about multiple positions, the position generator approach acknowledges that a *mix* of resources may matter for certain outcomes, not simply more of a single resource. Asking about multiple positions also allows researchers to tap into diverse external linkages and may therefore provide a way to better assess weak ties (McPherson, in press). Finally, this approach can be theoretically tailored to very specific research questions; the positions asked about would be quite different in studies of getting a job versus studies of voting behavior.

Conclusion: Using Social Networks and Social Capital to Better Social Science

In summary, although some may be interested in definitions of social capital or in the microprocesses within dyads as scientific ends in themselves, most researchers likely care about these features of social life as "independent variables" used to help build better models of the social world. We have argued that when predicting social outcomes, we are better served by integrating the insights of the social capital and social networks literatures. Our general point with this introduction has been that it is difficult to divorce form from content—indeed, we argue that the most promising bridge is to combine the *structure of networks* with the *content of social capital* to better understand social reality. Similar network structures based on different contents will produce different social effects. At the same time, shared values or norms based in different network structures will produce different social effects. In short, the intersection of social capital and networks should improve our ability to model behavior.

Our focus here on the intersection of network structure and relational content immediately raises two related research problems. Theoretically, we need to think carefully about the endogeneity of structure and content. For example, although

network models built on positive and negative ties are well known (Davis & Leinhardt, 1972; Holland & Leinhardt, 1970; Johnsen, 1986), this work rarely generalizes to the dynamics of network change or discusses how resources would flow across the network as it evolves. Although more complex than "connected or not," there are precedents in the area of formal kinship structure and block models (Pattison, 1993; White et al., 1976) for modeling multiple relations types. We should be able to similarly develop simple rules to govern how resources flow across types of ties (see Goffman, 1983; Ryan, 2006). Some of the simplest starting points may take us quite far, such as positing a simple positive relation between the emotive strength of a tie and the likelihood that valued information is transferred across it. The related methodological problem is that a full integration of network structure and content means asking different questions in our surveys. In the future, we must focus on multiple indicators of relational content (to battle measurement ambiguity) and do so over multiple relation partners. Our suggestion goes further than the introduction of an extra question on a survey. As the social capital and social networks literatures combine, we will together be able to construct measurement instruments that combine structure and content to better predict outcomes. Developing efficient ways to capture such rich information will be a challenge, but one that we believe will be well rewarded in better models of social outcomes.

Articles in the Edited Volume

The articles in these two issues address the connections between social capital and social networks. In doing so, they exemplify the themes introduced above—theoretically, methodologically, or both. Their focus on diverse settings, from businesses to neighborhoods to schools, demonstrates that bridging social capital and social networks can occur in models of various social outcomes. In this section, we briefly introduce the articles in this two-volume special issue.

The two-volume special issue begins with two theoretical contributions that explore the intersection of social capital and social networks and how it can inform the micro–macro link. Jennifer Glanville and Elisa Bienenstock open with a useful review of the social capital literature and then outline how various substantive outcomes can be produced as combinations of networks, trust, and resources. They introduce a simulation study to demonstrate how social networks and social capital can link micro- and macrobehavior. Ultimately, they demonstrate that a combination of networks and prior trust fulfillment produces an advantage in cooperative strategies.

Like the Glanville and Bienenstock article, Baker and Faulkner also explore micro–macro links in social theory. They explain that action (political, economic, or social) is "double embedded" in social structure (networks) and culture. Using a two-cycle macro–micro–macro model of change, they first illustrate how structural embeddedness can change without a change in cultural embeddedness (Putnam's declining social capital coupled with Baker's shared values thesis). Second, they demonstrate how structural and cultural embeddedness can change together—as the

hypothesized simultaneous polarization of America into red and blue sets of values and networks.

The first volume concludes with two explorations of social capital and social networks in Chicago neighborhoods. Chris Browning demonstrates that structure and content not only combined to produce substantive outcomes but may compete in producing those outcomes. Specifically, Browning demonstrates that across Chicago neighborhoods, increasing network interaction reduces the regulatory effect of collective efficacy on crime. Robert Sampson and Corina Graif consider the dimensionality of social capital, producing two dimensions of neighborhood structure—networks and organizational ties—and two dimensions of content—collective efficacy and norms. Combining and contrasting these dimensions produces a typology of neighborhoods (e.g., the Urban Village cluster vs. the cosmopolitan efficacy cluster) that are unique combinations of structure and content.

In the first article of the second volume, Kenneth Frank attempts to directly measure and include emotional content, in the form of identification with a group or collective, in a network model of technological diffusion across teachers. The theoretical notion of the quasi-tie holds promise for linking social capital theories of ties to groups with direct social network relationships. Frank demonstrates one way in which social capital (content) theories can be included in network models.

In another article seeking to extend models of social networks, Miller McPherson directly addresses an important aspect of content—the absence of a tie. Correctly pointing out that ties to others are both created *and* lost over time, McPherson's simple models of network change have implications for theory, survey methodology, and empirical tests. Future researchers interested in extensions of this model can tie the formation, acquisition, and loss of social ties to a substantive model based on the social content of the relations in question.

The second issue continues with two articles that address prosocial outcomes—trust and tolerance—from different angles. Wendy Rahn and Kwang Suk Yoon predict trust with individual and contextual-level factors. Of particular interest is their distinction between realistic communities of trust—based in interpersonal interaction experiences—and imagined communities of trust—linked to psychological investment in place. Rahn and Yoon demonstrate that an oft-cited explanation for declines in social capital, suburbanization, is related to a reduction in imagined community. Rochelle Cote and Bonnie Erikson demonstrate that distinguishing (a) among types of associations and (b) between various forms of network diversity leads to quite different understandings of how the structure and content of connections between individuals produces, or does not produce, tolerance.

The second issue concludes with two studies of interorganizational ties. David Knoke applies both social capital and social networks theories to corporate connections. He maps the global information sector network structure and tracks its change over time. In another study of change, Lisa Keister looks at Chinese business groups, or collections of firms. She demonstrates how social capital and social networks

contributed to the formation of exchange tie between firms into ultimate firm performance. Importantly, the changing context of China's economic reform affected both the formation and competitiveness of China's business groups.

Notes

1. See http://www.sociology.ohio-state.edu/facesofinequality/scsn/ for further information on the conference.

2. In a humorous example of this problem, Valdis Krebs, in a recent post to the SocNet discussion board, tells of a business client who asked him how to "make his network more scale-free," a statement that strongly belies a desire to be part of a faddish trend without understanding what it would mean within a real social setting. Of course, to generate a "scale-free" network in a business is easy: get the vast majority of employees to stop talking to each other. It is not clear whether this would help productivity.

3. Note also that social capital research emphasizes that individuals socialize for many reasons that are not always instrumental (Portes, 1998). Furthermore, social ties of one kind can be used for a variety of purposes, including purposes quite different from those involved in their original formation (Coleman, 1988).

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