# Editorial
## Has a Network Theory of Organizational Behaviour Lived Up to its Promises?[1]

The study of organizational networks has a long history in the social and behavioural sciences. On the micro side, anthropologists and psychologists studied interpersonal networks within organizations (e.g., Roethlisberger and Dickson, 1939). On the macro side, sociologists studied interlocking directorates (Allen, 1974; Levine, 1972), human service delivery systems (Aldrich, 1976; Rogers, 1974) and community power structures (Hunter, 1953; Laumann and Pappi, 1976; Perrucci and Pilisuk, 1970; Turk, 1977). Although management scholars had studied human service networks as well (e.g., Van de Ven, 1976), most credit Tichy et al. (1979) with introducing the topic of network analysis to the management literature. The institutionalization of the network approach in management circles is evident in the Academy of Management's 2002 meeting theme, 'Building Effective Networks' and special issues devoted to network analysis in the *Academy of Management Journal* (volume 47, issue 6, December 2004) and the *Academy of Management Review* (volume 31, issue, 3 July 2006).

After all these years and hundreds of publications I think it is fair to ask: has a network perspective on organizational behaviour lived up to its promises? To spare you the suspense, my answer is yes – but we are not yet at the point where we have a single omnibus network theory of organizational behaviour or anything approaching universal laws of network organizations. Rather, as this essay will show, networks are key elements in several substantive theories of organizational behavior but rarely do they alone explain outcomes. Almost all effects are contingent upon context. On the empirical side, the evidence is fairly convincing that networks matter, i.e., network variables explain significant amounts of variance, but often research designs leave much to be desired, much of the work is descriptive, and we are not necessarily sure why or how networks matter. In this way, the views expressed in this essay are not unsympathetic to those expressed by Salancik (1995) in his classic critique of network theories of organization.

The essay will be divided into four parts. First, I describe some of the ways that network analysis is more complicated than standard survey analysis. Secondly, I address the question: what role do network ideas play in network theories of organizational behaviour? Thirdly, I evaluate network theories and research

against four criteria for a scientific theory. Finally, I conclude with some suggestions for what needs to be done next with particular attention to Chinese management issues. I hope that the reader will bear with me as I move from non-controversial observations about the network literature to more controversial speculation on its utility and future research on China. I suspect that most readers will view my comments on China as an 'outside-in' approach, however, my comments are intended to stimulate 'inside-out' research. As Anne Tsui (2006, p. 3) said in the March, 2006 issue of *Management and Organization Review*, the literature driven approach '. . . carries the serious possibility of missing the truly important management or organization issues in the Chinese context.' That, of course, is unacceptable. Yet creating a dialogue among network researchers both within and outside of China can only be beneficial for all parties.

## WHAT MAKES NETWORK ANALYSIS DIFFERENT?

It is safe to say that in the USA, network analysis in the 1970s grew in popularity as a direct reaction against survey research approaches to studying human behaviour. Coleman (1986) pointed out that after World War II social science research in the USA embraced the social survey as its methodology of choice. With that, the focus shifted from highly contextualized studies of organizations (Chandler, 1962; Gouldner, 1954) and communities (e.g., Lynd and Lynd, 1929; Warner and Lunt, 1955) to a focus on individual behaviour. Data were gathered on individuals; theories attempted to explain individuals' behaviour in terms of their characteristics, e.g., gender, race, income, education and attitudes, etc. On the macro side, organizations were studied as 'big people' with their own goals, cognitive limitations, and resources. Research focused on the correlates of organizational behaviour, e.g., growth, return on investments and survival. All data points were assumed to be independent of one another like seedlings in an agricultural plot.

Granovetter (1985) argued that economic behaviour both at the individual and organizational levels is not context free but rather is embedded in social relations. Ties can be strong, e.g., family or friendship ties, or weak, e.g., acquaintances. These social relations can help ensure trustworthiness, but social relations have many other functions, e.g., easing the exchange of fine-grained information (Uzzi, 1997), gaining access to new information (Burt, 1992) and enhancing power (Brass, 1984), which have implications for organizational performance, individuals' well-being, and social welfare. Social relations become social capital when they have the potential to mobilize resources for individual or collective purposes (Lin, 2001). Network theory was attractive because it offered a rigorous, quantitative method to study individuals and organizations in relationships with one another.

In practice, network theories of organizations not only look at the consequences of networks for purposive action but also examine where networks come from, why

Table 1. Schema of network theories of organizational behavior

|  | *Micro-level analysis* | *Macro-level analysis* |
|---|---|---|
| Networks as independent variable | Structural Hole Theory (Burt) Brokerage network position → Getting ahead | Small World Theory (Watts) Local clustering + Short paths + Few ties overall → Network survival/ Performance |
| Networks as dependent variable | Balance Theory (Heider) Positive/Negative Ties → Reciprocity and Transitivity | Neo-Institutional Theory (Hamilton & Biggart) Cultural, political, and historical context → Network structures/Forms |
| Networks as both dependent and independent variables | Social Comparison Theory (Festinger) Similarity of traits → Dyadic ties → Similar behaviours | Network Evolutionary Theory (Aldrich) Population density → Network association → Cognitive, moral, and regulatory legitimacy |

they are structured as they are, and how they are reproduced. That is, networks can be studied as independent or dependent variables. Also, in practice, network researchers work at various levels of analysis. Some focus on the individual actor, some on the relationships, and others on the network as a whole.

Table 1 gives some examples of network theories that take a micro and macro perspective on studying networks. In the second column, the focus is on the individual actor and the immediate network of ties around him/her. The actor can be an individual, a subunit within an organization, or an organization itself. In the third column the network is the unit of analysis. Table 1 also distinguishes between studies that take networks as the independent variable and those that take networks as the dependent variable. In my opinion, all are examples of network theories of organizational behaviour (for another approach to synthesizing the literature, see Contractor et al., 2006). Burt's (1992) structural holes theory, in its most elementary form, focuses on ego, ego's ties and the relationships among these ties. The pattern or structure of these relationships is the independent variable and behavioural outcomes, e.g., being promoted, are the dependent variables. Heider's (1958) balance theory posits that humans seek to have cognitive consistency in their lives and thus prefer balanced relationships. This refers both to reciprocity in relationships but also in relations to third parties (a friend of my friend is my friend; an enemy of my enemy is my friend). People will establish balance either by breaking off ties or changing others' orientation toward third parties. Festinger's (1954) social comparison theory argues that actors learn about themselves by

comparing themselves to others who are similar to themselves. As Kilduff and Tsai (2003) observed, '. . . we are drawn into friendships with similar others in order to be able to evaluate our opinions and ability'. In turn, we adopt attitudes, acquire skills, or strive for outcomes based on what others in our network are experiencing. The relational ties are both a dependent and independent variable.

On the macro side, Watts' (1999) small world theory argues that certain network forms are more adaptable and thus more likely to survive and perform better. Brass et al. (2004) argued, '. . . the best network has local clustering into dense subnet-works, short paths between all actors, and relatively few ties. Such networks are effective because bridges span dense clusters and connect different parts, so that resources "hop" from cluster to cluster' (Uzzi and Spiro, 2004). Neo-institutional theories use culture, politics, and historical circumstances to explain different network patterns across East Asian societies (Hamilton and Biggart, 1988). Orga-nizational forms such as the *chaebol* in Korea and the *keiretsu* in Japan cannot be understood in terms of efficiency alone. Rather these network organizations are the product of historical events, cultural traditions and national politics. Aldrich (1999) applies evolutionary theory to explain the emergence of new organizational popu-lations. As a new population increases in size it must pursue not only cognitive strategies but socio-political strategies to achieve learning and legitimacy. This leads firms in the new industry to form networks by creating associations of similarly situated actors. These associations, in turn, help to create identities in financial markets, regulatory arenas, and popular culture that help to legitimate the new organizational form in the minds of stakeholders.

While it is an important alternative to the social survey approach, network analysis poses a number of challenges to the analyst. To begin with, there are at least three different units of analysis to study: the actor, the dyadic relations among actors, and the network of relationships as a whole.[2] On the one hand, research focuses on the relationships among actors – again, individuals or groups – and tries to build theories that can explain either actors' behaviours as a function of their relationships, e.g., structural holes theory, or the formation, content, or termina-tion of relationships as a function of either actors' characteristics, e.g., social comparison theory, or the psychology of the actor, e.g., balance theory. On the other hand, research studies the network as the unit of analysis (Mayhew, 1980). Instead of trying to explain the effect of ego's structural position in the network, e.g., his centrality, on her behaviour, one studies the effects of network structure on the behaviour of the larger network. For example, does a network displaying small world properties produce better outcomes? Alternatively, one could explain why a network as a whole is structured as it is. What historical, political and economic conditions produced the *chaebol* or *keiretsu*? Another approach to explaining emer-gent network structures is to focus on micro level relational processes, i.e., the formation or termination of ties (e.g., Powell et al., 2005). Multilevel analysis is not unique to network analysis and is commonplace in organizational research

(Oh et al., 2006), but it does raise a number of methodological challenges (see Contractor et al., 2006).

One challenge of network analysis, derivative of its multi-level approach, is that it almost always violates assumptions about independence. Because actors are part of their relationships and relationships are made up of actors, two dyads which have one actor in common are not independent of one another. Similarly, two actors who are in the same dyad are not independent. Say Barbara has two friends, Adam and Charles. The friendships between Adam and Barbara and Barbara and Charles are not independent for the simple reason that Barbara is a party to both. Similarly Barbara and Adam (and Barbara and Charles) are not independent because they have a relationship with each other. The problems of non-independence in the statistical analysis of network data are well documented in the literature and corrections are available, but, even on a theoretical level, the blurring of boundaries across basic units of analysis poses a challenge for theorists.

The blurring of boundaries across basic units of analysis also poses a challenge when modeling cross-level effects. In conventional multi-level analysis, the units of analysis at the first level are partitioned into mutually exclusive groups at the second level, e.g., children assigned to different classrooms. The exercise is to assess the impact of variables measured at the second level, e.g., student/teacher ratios at the level of the classroom, on the behaviours studied at the first level, e.g., children's test scores, net of children's characteristics. If we want to evaluate the effects of dyadic patterns, e.g., the amount of arguing in friendship relationships, on actors' psychological well being, we face the challenge that ego is embedded in several friendship relationships at once – some are argumentative and some are not. One option is to take the average level of argumentation across all of ego's friends, but this is not entirely satisfactory. The same problem presents itself looking at the effects of network structure, e.g., density, on individual behaviour, e.g., absenteeism. In most network studies we analyze two or more networks at the same time, e.g., giving advice and socializing in the workplace. Looking at the effects of, say, network density on worker absenteeism requires measuring density in both networks and averaging. The problem is similar to studying group level effects on individual behaviours when individuals belong to more than one group. This is not an uncommon problem in sociological research (Simmel, 1955), but it complicates analysis and calls for different methodological approaches (see, for example, Breiger, 1974; McPherson, 1983).

There is also debate in the networks literature about what network researchers should be studying. Some argue that the focus should be on latent network structures, while others say the focus should be on action networks. The former, which represents the bulk of network research, favours collecting data on dyadic relationships and aggregating these into something that looks like a network with arcs connecting edges. Researchers then do an analysis of this structure and correlate actors' position in this structure with some benefit, e.g., getting a

promotion. However, they never gather data on the transformation of these ties into an action network that produces benefits. What they study are latent structures that are correlated with certain outcomes, but we do not know if these latent structures were mobilized into an effective network or how that took place.

The latter approach argues that a network does not exist until it is mobilized as a system of action. Following Coleman (1988), it looks at how network structures created for one purpose are appropriated by actors for another. This utilizes data on existing network structures to make predictions about when and how future action networks are created. Adam may be friends with Barbara and Barbara with Charles, but neither Adam nor Charles may know about each other, and even Barbara seldom thinks of her friendship with Adam in the context of her friendship with Charles. She simply has two friends, but we don't yet have a network. This collection of dyadic relations becomes a network only when Adam asks Barbara if she knows about any new jobs and Barbara asks Charles about any job openings for her friend Adam. While there is a latent structure in place, Barbara's friendships with both Adam and Charles, it does not become a network until it is utilized for some purpose, i.e., Barbara mobilizes her relationship with Charles to procure information that she passes on to her friend Adam. Essentially this point of view says that more research needs to be done on the mobilization of networks (see Lin, 2001). The work would be similar to Milgram's (1967) research on the small world problem and Granovetter's (1974) work on getting a job. For one of the few examples from the organizations literature, see Stevenson and Gilly (1991).

## WHAT ROLE DO NETWORKS PLAY IN NETWORK THEORIES OF ORGANIZATIONAL BEHAVIOUR?

To answer this question we will analyze in detail two of the six theories described earlier, although the same general argument can be applied to all six. Our conclusion is that efforts to identify and develop network theories are promising, but the bulk of the work in the field has opted to use relational or network concepts as one, albeit important, component of a larger substantive theory of behaviour. I conclude that theories are typically predicated on a set of behavioural assumptions about individual motivations and cognition, an important part of each theory speaks to the distribution of resources among actors in the social system, and the structure of social relations is itself embedded in larger cultural, political, ecological, and societal contexts. In other words, network structure is one ingredient in a recipe that depends upon the presence and quality of several other ingredients.

Our first example is the structural holes theory as developed by Burt (1992, 2005). Kilduff and Tsai (2003) label this one of the best examples of 'home grown' network theory. The hole – or absence of ties – between two alters enables ego to access nonredundant information from these players and to play off one against the

other to derive the best deal for herself. In contrast, if ego's alters are linked to one another, then the information from one is likely to be redundant to the other and efforts to play alter against alter will result in a coalition against ego.

There are several ingredients that must be present for the theory to work. First, individuals who have networks rich in structural holes must be willing to exploit the opportunity to play alters off against one another. It is not clear that everyone would. It could depend on personality or cultural context, i.e., it may be more likely in the West than the Far East, but it could also depend on the expectation that interaction will be repeated and that alienating network contacts for short-term gains may undermine transactions later on. If one relies on both alters for information on important matters, this may be a concern. From a rational choice perspective, the decision to exploit one's holes depends on the potential costs and benefits. To fully understand the decision model employed by ego takes research, and one cannot assume that the decision-making processes are the same for all network participants. Secondly, it is much more likely that structural holes theory will work if the content of the tie with alter is weak rather than strong. Strong ties often have norms of reciprocity attached, contain elements of affection, and are thick with resilient trust. In other words, the social obligations attached to strong ties makes it less likely that alter will tolerate 'hardball' negotiations with ego. Thus the content of the tie matters and the cultural meaning attached to name generators such as friend, neighbor, drinking buddy, workmate, boss, acquaintance, etc. make a big difference. Thirdly, actors must be in a situation where they are free from institutional controls that include bureaucratic oversight and competition. Burt (1997) acknowledged this and noted that network effects are more likely in contexts where alter has few alternatives to chose among (ego does not compete against other egos), role relationships are unclear (as in the case with women and minorities), and there is a considerable amount of uncertainty surrounding tasks (e.g., in boundary spanning roles).

At the other extreme, we have Aldrich's (1999) evolutionary model. Again, in addition to the network component, there are several other ingredients in his recipe. First, networks within an industry do not arise spontaneously, but rather there needs to be a critical mass of producers who are somehow able to see themselves as having a common identity or fate. This may not happen, for example, until some institutional player, e.g., a governmental regulator, acts to ban a new product, check some abuse or create barriers to entry. In other words, there needs to be a shared identity among firms before networks will form. Secondly, for the network to be effective, there must be ways of overcoming freerider problems. Without either formal or informal controls members will not make contributions in proportion to the benefits they hope to realize. Thus for a network to become an effective collective actor, problems of internal governance need to be addressed. Thirdly, what the associations do is more important in ensuring legitimacy than their simple existence or how they are structured. They must ensure that the

industry is perceived as morally legitimate, its outputs serve some positive societal purpose, its procedures and technologies are socially acceptable and its form is appropriate for the activities (Aldrich, 1999). Often this means actively engaging government actors; often it means cooperating with other populations of organizations. A network or association is a necessary but not sufficient element in the evolutionary model.

Our point is that in network theories of organizational behaviour, the network part is only one part of the story explaining an individual's or organization's behaviours. In both examples, context, relational content and individual motivation are taken for granted by the theorists but all are essential for their theory. In other words, the structure emerges or the structural explanation 'works', if everything else is in place. In Burt's scheme, change either the context, content or motivation and the prediction falls apart. In Aldrich's framework, ecological conditions and political organization are necessary. For this reason we are hesitant to argue that there is a pure network theory of organizational behaviour. Rather we find relational or structural elements in more encompassing theories of human or organizational behaviour and the task is to assess the relative importance of networks.

## ARE NETWORK THEORIES OF ORGANIZATIONAL BEHAVIOUR ANY GOOD?

I will suggest that there are four criteria for a scientific theory of organizations. Bacharach (1989, p. 498) stated that 'a theory is a statement of relationships between units observed or approximated in the empirical world'. He goes on to say 'The primary goal of a theory is to answer the questions *how*, *when*, and *why*.' Building on his ideas, I claim that a scientific theory of organizations must be generalizable, causal, logical and predictive. I recognize that these criteria are strict and few if any theories in the social and behavioural sciences meet such stringent standards. Yet, I believe it is useful to use these criteria when evaluating efforts to develop network theories of organizational behaviour so as to benchmark our progress.

First, theories should be generalizable. This simply means that findings should be replicable across different settings or contexts (e.g., within organizations and across industries), across different units of analysis (e.g., individuals and groups), and across different relational content (e.g., friendship and giving work-related advice). In their review of the literature Brass et al. (2004) found a number of consistent findings across network studies that suggest that certain empirical relations reoccur consistently. For example, network centrality, measured in any number of ways, tends to be correlated with actors' actual and reputed power at the micro (Brass, 1984, 1985; Brass and Burkhardt, 1993; Burkhardt and Brass, 1990) and macro levels (Galaskiewicz, 1979; Laumann and Knoke, 1987). Actors, whether they be individuals or organizations, are more likely to have positive (e.g.,

cooperative) relationships if they are more similar to one another ('birds of a feather flock together') (Brass, 1985; Ibarra, 1992; Mehra et al., 1998). Also actors who interact with each other (Galaskiewicz and Wasserman, 1989; Umphress et al., 2003) or are structurally equivalent (Bothner, 2003; Burt, 1987; Galaskiewicz and Burt, 1991) tend to have similar attitudes and behave similarly. Finally, small world properties have been found in a wide range of networks (Baum et al., 2003; Davis et al., 2003; Kogut and Walker, 2001; Madhavan et al., 2004; Uzzi and Spiro, 2004), suggesting that this is a superior adaptive form.

At the same time, as noted above, most network effects are contingent on external conditions. For example, Burt (1997) noted that structural hole effects depend upon the level of competition which managers faced, Galaskiewicz et al. (2006) found that ties to local elites and other nonprofits yielded much greater returns for charitable nonprofit organizations than commercial nonprofits, and Mizruchi et al. (2006) found that firms' network ties affected their level of borrowing up to the mid-1980s but not afterwards (see Brass et al. (2004) for many more examples). These three studies alone showed that market conditions, resource dependencies and historical period all influenced the effect that networks had on managerial and firm outcomes. Network effects are thus far from universal, and theorists need to explain not only why networks should matter but also why they should not matter in different contexts.

Secondly, theories should be causal, not descriptive. That is, a good theory does not just attempt to establish correlation between two phenomena but rather should show that one factor is a necessary and sufficient condition for the emergence of another. That is, the theory and the empirical work testing the theory should be able to establish that A precedes B in time, that condition A is necessary for condition B to emerge, and that the presence of A is not contingent on the presence of B. The standard way of establishing causality in this manner is to utilize experimental or quasi-experimental designs. It is also important to recognize that, at times, causality is reciprocal. A may cause B, but a change in B may have a feedback effect on A.

Most network studies, because they are done in natural settings, seldom have the advantage of employing experimental methods. There are a few natural experiments where analysts were able to measure pre- and post-test conditions, e.g., social ties before and after a layoff or merger (Shah, 2000), but this is more the exception than the rule. The papers that have utilized student subjects in controlled experiments are not totally convincing because the situations are so artificial. Network researchers have, at last, begun to employ longitudinal and panel designs to sort out the temporal ordering of effects (e.g., Burkhardt and Brass, 1990; Galaskiewicz et al., 2006; Gulati, 1995; Powell et al., 2005). Yet some of the most important and visible network research still utilizes cross-sectional designs. Without longitudinal analysis and quasi-experimental designs, it is difficult to ascertain causality in these papers.

Thirdly, the explanation must be logical. In other words there must be a credible story explaining the relationships between the cause and its effect. Simply noting empirical patterns is not enough. Yet there is little consensus in the social and behavioural sciences about what is a logical theory. Some say a theory is logical if based on deductive reasoning, e.g., models based on utility maximizing assumptions. Such model building is commonplace in economics and political science, but less common in sociology and anthropology. In fact, few network theories in management are based on deduction. As Knoke (2001, p. 63) notes, 'Presently, diverse network approaches represent loosely connected sets of concepts, principles, and analysis methods rather than a rigorously deductive system'.

Others say a theory is logical if it 'makes sense' to the audience. Most network theorists explain their findings by appealing to 'human nature', e.g., a need to reduce uncertainty, enhance status, gain social acceptance, etc. In other words, most network theories have more in common with the behavioural tradition in management than with the economics tradition. Granovetter (1985), for example, talked about the need to gain trust, Macaulay (1963) cited the need to 'work out problems,' and social relationships are a vehicle for these ends. Alternatively, network theories employ evolutionary thinking and derive explanations based on the configuration of events or conditions that produced different outcomes. Aldrich (1999), for example, talks about the evolution of trade associations – which are a kind of network organization – and describes this as a process of variation, retention and selection. The explanation is post hoc and reasonable, but it is not based on deductive logic.

Fourthly, the theory should be able to predict future behaviour and outcomes. Social and behavioural scientists are quite good at explaining empirical patterns in the past. Researchers are able to gather data on what happened and to piece together credible models that can explain a reasonable amount of the variance in past behaviour. However, seldom do network studies make predictions about the future based on their theories. This is a bit surprising given the fairly large number of consistent findings in the literature, yet because of the contextual nature of most social behaviour, network analysts shy away from predicting the future.

This inability or reluctance to predict future events limits network analysts' ability to speak to policy makers and managers. There are some who have tried to bridge the worlds of theory and practice. Baker (1994, 2000), for example, has attempted to make network ideas useful for business practitioners, and Breiger et al. (2003) explore ways that governments can use network analysis to address issues of national security in the post-9/11 era. Stanley Wasserman, lists his consulting firm, Visible Path Corporation, as a primary affiliation, signaling his involvement in applied network analysis (see Contractor et al., 2006). Yet, we agree with Kilduff and Tsai (2003) that while the methodology of network analysis may further applied interests, there are no universal laws of organizational behaviour in the corpus of the network literature that managers, terrorists or governments can

harness and exploit. If the literature has any utility to practitioners, it provides a useful set of methodological tools to describe patterns of relationships in real-life settings and sensitizes practitioners as to how to use networks to attain their goals.

Given my observations, should we be worried that our theories and research are not up to scientific standards? Martin (2003) recently noted that social scientists are very insecure when it comes to theory. Often we settle for 'variance explained' as proof that our theories are credible and worthwhile, and our research is at best 'successful empirical investigations'. We often fail, however, to fully enlighten the underlying processes – the how and why – which explain our effects or outcomes. Martin (2003) also points out that natural scientists seldom study the underlying processes, functions or mechanisms which explain their findings (e.g., evolution) and that perhaps we should not expect much more from social science. Freeman (2004) also seems unconcerned. He says that the criteria for a 'modern social network analysis' are that it is motivated by structural intuition, grounded in systematic empirical research, draws on graphic imagery and relies on mathematical and/or computational models. While one may quibble about one or another criterion, e.g., using mathematical and/or computational models vs. participant observation, one is struck by the inattention to causality or the discovery of universal laws.

These attitudes are consistent with Kilduff and Tsai (2003, p. 123) who call for a 'poststructuralist network approach'.

> A poststructuralist social network approach would seek not to uncover eternal truths, but to open new questions for exploration. Rather than seeking to nail down every last aspect of some paradigmatic set of network laws, poststructuralist research would pursue enquires into previously unexplored domains of social networking in organizational contexts. . . . Poststructuralism encourages cross-fertilization across research domains in the pursuit of distinctive contributions to understanding.

Not everyone has abandoned the quest to uncover universal network laws and create a science of networks (e.g., Watts, 2003); however, the discovery of such laws is unlikely to happen any time soon, and we need to be realistic about what network analysis is capable of today.

## WHAT STILL NEEDS TO BE DONE?

In our review, Brass et al. (2004) noted several topics that still need attention. I will repeat some of the suggestions from that review and add a few suggestions of my own that are particularly relevant to the study of Chinese organizations and firms. I will return to Table 1 and make suggestions in the context of the cells in that table. Again, I should warn that my approach in this last section is more 'outside-in' than 'inside-out'. However, I will try to draw on studies done by scholars who have taken the latter approach and have shown how China differs.

First, there is still much more to learn about social relations in China, and particularly *guanxi*. Bian (2005) defines *guanxi* as 'a dyadic, particular, and sentimental tie that has potential of facilitating favour exchanges between the parties connected by the tie', yet it is clear that this is a contested concept and a full exegesis on *guanxi* is well beyond the scope of this essay (see Gold et al., 2002, for one treatment). In the literature there is a vigorous debate between those who say *guanxi* is an enduring and effective pattern with deep cultural roots in China (Yang, 1994) and those who say that as market mechanisms and the rule of law develop, *guanxi* will be much less important as a way to do business in China (Guthrie, 1999). Two contingencies need to be sorted out: the Chinese cultural context (is this unique to China?) and conditions in the institutional environment (will *guanxi* wither away as a way of doing business with more economic and legal reforms?).

Researchers also need to look for new and different ways *guanxi* might have an impact on organizations. As the Chinese economy becomes more dependent on innovation rather than imitation (Xie and White, 2006) and moves from old (Fordist) to new (knowledge based) technologies, strong, *guanxi*-like ties may be useful in helping to move complex knowledge across firm borders and thus grow new industries (Fu et al., 2006). Studying knowledge transfers within firms, Lu et al. (2006) found that co-worker collegiality decreased greedy behaviour and increased feelings of self-efficacy, thus having a positive indirect effect on knowledge sharing. An ample supply of *guanxi* may greatly facilitate the transfer of new knowledge and stimulate new organizational innovation.

It is also important to study *how* social ties are used to produce benefits. Luo (2005) described the qualitative differences in the meaning of ego's relationship to alter as we move from familial ties to familiar ties to weak ties to strangers (see also Chen and Chen, 2004; Fu et al., 2006). Ties are not simply weak or strong, and different norms govern each type of relationship. For example, familial ties are marked by assurance and obligation. In contrast, familiar ties are governed by *pao* (translated as norms of reciprocity) which help to create trust among non-familial actors. Weak ties are governed by general rules of fairness and general ethical principles. Given the different norms surrounding these relations and their psychological meanings, it seems likely that social ties will be mobilized differently with different people for different purposes. As Bian (1997) and Batjargal and Liu (2004) showed, *guanxi* were used to gain favours in labour and capital markets. However, was the process the same? Fu et al. (2006) suggest that different types of *guanxi* (*qinren* [with family members] vs. *shuren* [with acquaintances or familiar persons] vs. *shengren* [with strangers]) enable entrepreneurs and managers to access different types of knowledge resources at different stages in their firm's development. More research like this is needed on network mobilization in the Chinese context.

Secondly, we need to study the determinants of tie formation in the Chinese context. Kinship ties or having similar identity creating experiences (e.g., being

from the same town or having gone to the same school) should continue to be important, but are there other influences? For example, what role do personal values play at the dyadic and triadic levels? Hofstede's (2001) work found that Chinese workers and managers were more collectivist, while Western workers and managers were more individualistic. If Chinese managers and workers are more horizontally collectivist, as Ralston et al. (2006) suggest, what kinds of networks are they likely to build? It seems unlikely that they would build personal networks rich in structural holes. Instead their networks should be dense and redundant and contained within levels of the firm. If ties are formed with disconnected others, they are more likely to be strong than weak in strength (Bian, 1997). What happens when Chinese managers who are disposed towards strong and redundant ties partner with Western managers who are disposed towards weak and non-redundant ties? How is this reconciled? Which value system wins out?

Thirdly, we need more research on cross-level effects. Meyer and Lu's (2005) research suggests that Chinese business establishments may be ripe for this kind of analysis. With many firms organized as business groups, it is difficult to know where organizational boundaries begin and end, and transactions between parties know no bounds. Ties with joint venture partners and government entities only complicate the matter as both are in and outside the group at the same time. Seemingly, dense business and social structural relationships within these groups positively affect firm performance (Keister, 2000), but this may or may not be true depending on the circumstances. Particularly in China, researchers need to focus on ways in which managers negotiate relations with entities both in and outside the group and at various levels within the firm. As Contractor et al. (2006) argue, it is time to think of the network among people, departments and even firms as the organization that we should be studying.

Fourthly, it is also important to study the environment and its effect on organizational networks (Koka et al., 2006). Public policy researchers in the West have only begun to look more closely at the role that the state and other third party conveners play in the fostering and maintenance of inter-organizational ties (Human and Provan, 2000; McEvily and Zaheer, 1999). One of the important findings of Powell's (1990) work on network organizations was that local governments often played a crucial role in building and sustaining industrial districts. It is common knowledge that China's government played a central role in creating special economic zones, and Walder (1995) showed that local governments acted as key agents around which rural enterprises grew and prospered. Also it seems that the government's strong control of the economy has resulted in Chinese firms taking a more long-term view when selecting interorganizational partners (Hitt et al., 2004). All are examples of how government helped to stimulate and sustain inter-organizational networks. What is unknown is how the government will influence the high-tech sector in China. Research in the West shows that it takes considerable networking for new technologies to develop and mature into profitable industries

(e.g., Powell et al., 2005; Saxenian, 1994). Where will those networks come from in China and what role will state institutions, including research institutes, the military, and universities, play in creating and fostering these networks?

## CONCLUSION

We may never have a pure network theory of organizational behaviour. Rather we expect that there will be many substantive theories that utilize a relational and/or structural perspective and incorporate network data into their analysis. Our goal should be to abstract the relational or network elements of these theories and then to identify the extent to which structure matters. At times we will be able to employ the ideal research design to test our theories, but more likely we will continue to rely heavily on descriptive studies based on rigorous data collection efforts.

While it is unlikely that we will discover any universal network laws – even studying networks across cultural/national settings, it is important that we recognize the value of the social network perspective. As Coleman (1986) argued, fuller understanding comes from recognizing that individuals and organizations are not social atoms but rather are deeply embedded in context. While network analysis has often been faulted for ignoring factors such as agency and culture (Emirbayer and Goodwin, 1994), at least a network perspective gives us a way to think about and analyze actors as they are embedded in social relationships with other actors and collectivities.

## NOTES

[1] This essay is based on the keynote address given by the author at the Summer School on the Analysis of Political and Managerial Networks, University of Tilburg, September 23, 2005, a lecture at the East China University of Science and Technology Workshop on Social Network and Relationship Management, June 20, 2006, and a presentation at the Macro Organization Seminar at Northwestern University, November 4, 2006. I would like to thank Patrick Kenis and Joerg Raab for their comments on the Tilburg presentation. I also draw heavily on a review article that I co-authored on networks and organizations (Brass et al., 2004) and Kilduff and Tsai's (2003) useful book, *Social Networks and Organizations*. Finally, I would like to thank Dan Brass, Yanjie Bian, Wenpin Tsai and Anne Tsui who provided very useful comments on an earlier draft and made numerous suggestions which I have tried to incorporate into this final draft.
[2] Network analysis also looks at triads, tetrads, cliques, structurally equivalent sets and blocks among other constructions. For a description of these see Wasserman and Faust (1994). For the sake of simplicity, I will focus on the actor, dyad and network in this essay.

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