© Academy of Management Review
1998, Vol. 23, No. 2, 242–266.

SOCIAL CAPITAL, INTELLECTUAL CAPITAL, AND THE ORGANIZATIONAL ADVANTAGE

JANINE NAHAPIET
Templeton College, University of Oxford

SUMANTRA GHOSHAL
London Business School

Scholars of the theory of the firm have begun to emphasize the sources and conditions of what has been described as "the organizational advantage," rather than focus on the causes and consequences of market failure. Typically, researchers see such organizational advantage as accruing from the particular capabilities organizations have for creating and sharing knowledge. In this article we seek to contribute to this body of work by developing the following arguments: (1) social capital facilitates the creation of new intellectual capital; (2) organizations, as institutional settings, are conducive to the development of high levels of social capital; and (3) it is because of their more dense social capital that firms, within certain limits, have an advantage over markets in creating and sharing intellectual capital. We present a model that incorporates this overall argument in the form of a series of hypothesized relationships between different dimensions of social capital and the main mechanisms and processes necessary for the creation of intellectual capital.

Kogut and Zander recently have proposed "that a firm be understood as a social community specializing in the speed and efficiency in the creation and transfer of knowledge" (1996: 503). This is an important and relatively new perspective on the theory of the firm currently being formalized through the ongoing work of these (Kogut & Zander, 1992, 1993, 1995, 1996; Zander & Kogut, 1995) and several other authors (Boisot, 1995; Conner & Prahalad, 1996; Loasby, 1991; Nonaka & Takeuchi, 1995; Spender, 1996). Standing in stark contrast to the more established transaction cost theory that is grounded in the assumption of human opportunism and the resulting conditions of market failure (e.g., Williamson, 1975), those with this perspective essentially argue that organizations have some particular capabilities for creating and sharing knowledge that give them their distinctive advantage over other institutional arrangements, such as markets. For strategy theory, the implications of this emerging perspective lie in a shift of focus from the historically dominant theme of value appropriation to one of value creation (Moran & Ghoshal, 1996).

The particular capabilities of organizations for creating and sharing knowledge derive from a range of factors, including the special facility organizations have for the creation and transfer of tacit knowledge (Kogut & Zander, 1993, 1996; Nonaka & Takeuchi, 1995; Spender, 1996); the organizing principles by which individual and functional expertise are structured, coordinated, and communicated, and through which individuals cooperate (Conner & Prahalad, 1996; Kogut & Zander, 1992; Zander and Kogut, 1995); and the nature of organizations as social communities (Kogut & Zander, 1992, 1996). However, notwithstanding the substantial insights we now have into the attributes of organizations as knowledge systems, we still lack a coherent theory for explaining them. In this article we seek to address this gap and to present a theory of how firms can enjoy what Ghoshal and Moran (1996) have called "the organizational advantage."

Our theory is rooted in the concept of social capital. Analysts of social capital are centrally concerned with the significance of relationships as a resource for social action (Baker, 1990; Bourdieu, 1986; Burt, 1992; Coleman, 1988, 1990;

This research was supported in part by a grant from the Sundridge Park Research Fund. We are grateful to John Stopford, Peter Moran, Morten Hansen, Richard Pascale, Max Boisot, Wen-Pin Tsai, Nitin Nohria, Paul Willman, Anthony Hopwood, Tim Ambler, Martin Waldenstrom, and three anonymous referees for their helpful comments on earlier drafts of this article and in discussions of its subject matter.

Jacobs, 1965; Loury, 1987). However, as Putnam (1995) recently has observed, social capital is not a unidimensional concept, and, while sharing a common interest in how relational resources aid the conduct of social affairs, the different authors on this topic have tended to focus on different facets of social capital. In this article we (1) integrate these different facets to define social capital in terms of three distinct dimensions; (2) describe how each of these dimensions facilitates the creation and exchange of knowledge; and (3) argue that organizations, as institutional settings, are able to develop high levels of social capital in terms of all three dimensions. Our primary focus, however, is on the interrelationships between social and intellectual capital since, as we have already noted, there is already a clear stream of work that identifies and elaborates the significance of knowledge processes as the foundation of such organizational advantage. Our aim here is to provide a theoretical explanation of why this is the case.

SOCIAL CAPITAL

The term "social capital" initially appeared in community studies, highlighting the central importance—for the survival and functioning of city neighborhoods—of the networks of strong, crosscutting personal relationships developed over time that provide the basis for trust, cooperation, and collective action in such communities (Jacobs, 1965). Early usage also indicated the significance of social capital for the individual: the set of resources inherent in family relations and in community social organizations useful for the development of the young child (Loury, 1977). The concept has been applied since its early use to elucidate a wide range of social phenomena, although researchers increasingly have focused attention on the role of social capital as an influence not only on the development of human capital (Coleman, 1988; Loury, 1977, 1987) but on the economic performance of firms (Baker, 1990), geographic regions (Putnam, 1993, 1995), and nations (Fukuyama, 1995).

The central proposition of social capital theory is that networks of relationships constitute a valuable resource for the conduct of social affairs, providing their members with "the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word" (Bourdieu, 1986: 249). Much of this capital is embedded within networks of mutual acquaintance and recognition. Bourdieu (1986), for example, identifies the durable obligations arising from feelings of gratitude, respect, and friendship or from the institutionally guaranteed rights derived from membership in a family, a class, or a school. Other resources are available through the contacts or connections networks bring. For example, through "weak ties" (Granovetter, 1973) and "friends of friends" (Boissevain, 1974), network members can gain privileged access to information and to opportunities. Finally, significant social capital in the form of social status or reputation can be derived from membership in specific networks, particularly those in which such membership is relatively restricted (Bourdieu, 1986; Burt, 1992; D'Aveni & Kesner, 1993).

Although these authors agree on the significance of relationships as a resource for social action, they lack consensus on a precise definition of social capital. Some, like Baker (1990), limit the scope of the term to only the structure of the relationship networks, whereas others, like Bourdieu (1986, 1993) and Putnam (1995), also include in their conceptualization of social capital the actual or potential resources that can be accessed through such networks. For our purposes here, we adopt the latter view and define social capital as the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network (Bourdieu, 1986; Burt, 1992).

As a set of resources rooted in relationships, social capital has many different attributes, and Putnam (1995) has argued that a high research priority is to clarify the dimensions of social capital. In the context of our exploration of the role of social capital in the creation of intellectual capital, we suggest that it is useful to consider these facets in terms of three clusters: the structural, the relational, and the cognitive dimensions of social capital. Although we separate these three dimensions analytically, we recognize that many of the features we describe are, in fact, highly interrelated. Moreover, in our analysis we set out to indicate important facets

of social capital rather than review such facets exhaustively.

In making the distinction between the structural and the relational dimensions of social capital, we draw on Granovetter's (1992) discussion of structural and relational embeddedness. Structural embeddedness concerns the properties of the social system and of the network of relations as a whole.[1] The term describes the impersonal configuration of linkages between people or units. In this article we use the concept of the structural dimension of social capital to refer to the overall pattern of connections between actors—that is, who you reach and how you reach them (Burt, 1992). Among the most important facets of this dimension are the presence or absence of network ties between actors (Scott, 1991; Wasserman & Faust, 1994); network configuration (Krackhardt, 1989) or morphology (Tichy, Tushman, & Fombrun, 1979) describing the pattern of linkages in terms of such measures as density, connectivity, and hierarchy; and appropriable organization—that is, the existence of networks created for one purpose that may be used for another (Coleman, 1988).

In contrast, the term "relational embeddedness" describes the kind of personal relationships people have developed with each other through a history of interactions (Granovetter, 1992). This concept focuses on the particular relations people have, such as respect and friendship, that influence their behavior. It is through these ongoing personal relationships that people fulfill such social motives as sociability, approval, and prestige. For example, two actors may occupy equivalent positions in similar network configurations, but if their personal and emotional attachments to other network members differ, their actions also are likely to differ in important respects. For instance, although one actor may choose to stay in a firm because of an attachment to fellow workers, despite economic advantages available elsewhere, another without such personal bonds may discount working relationships in making career moves. In this article we use the concept of the relational dimension of social capital to refer to those assets created and leveraged through relationships, and parallel to what Lindenberg (1996) describes as behavioral, as opposed to structural, embeddedness and what Hakansson and Snehota (1995) refer to as "actor bonds." Among the key facets in this cluster are trust and trustworthiness (Fukuyama, 1995; Putnam, 1993), norms and sanctions (Coleman, 1990; Putnam, 1995), obligations and expectations (Burt, 1992; Coleman, 1990; Granovetter, 1985; Mauss, 1954), and identity and identification (Hakansson & Snehota, 1995; Merton, 1968).

The third dimension of social capital, which we label the "cognitive dimension," refers to those resources providing shared representations, interpretations, and systems of meaning among parties (Cicourel, 1973). We have identified this cluster separately because we believe it represents an important set of assets not yet discussed in the mainstream literature on social capital but the significance of which is receiving substantial attention in the strategy domain (Conner & Prahalad, 1996; Grant, 1996; Kogut & Zander, 1992, 1996). These resources also represent facets of particular importance in the context of our consideration of intellectual capital, including shared language and codes (Arrow, 1974; Cicourel, 1973; Monteverde, 1995) and shared narratives (Orr, 1990).

Although social capital takes many forms, each of these forms has two characteristics in common: (1) they constitute some aspect of the social structure, and (2) they facilitate the actions of individuals within the structure (Coleman, 1990). First, as a social-structural resource, social capital inheres in the relations between persons and among persons. Unlike other forms of capital, social capital is owned jointly by the parties in a relationship, and no one player has, or is capable of having, exclusive ownership rights (Burt, 1992). Moreover, although it has value in use, social capital cannot be traded easily. Friendships and obligations do not readily pass from one person to another. Second, social capital makes possible the achievement of ends that would be impossible without it or that could be achieved only at extra cost.

[1] We recognize that this terminology deviates from much that is customary in the field of network analysis. In particular, the focus of network analysis is relational data, but included under its heading are attributes that we label structural here. Scott, for example, describes network analysis as being concerned with "the contacts, ties and connections, the group attachments and meetings which relate one agent to another . . . . These relations connect pairs of agents to larger relational systems" (1991: 3). However, we justify our usage both through reference to Granovetter and because we believe this terminology captures well the personal aspect of this dimension.

In examining the consequences of social capital for action, we can identify two distinct themes. First, social capital increases the efficiency of action. For example, networks of social relations, particularly those characterized by weak ties or structural holes (i.e., disconnections or nonequivalencies among players in an arena), increase the efficiency of information diffusion through minimizing redundancy (Burt, 1992). Some have also suggested that social capital in the form of high levels of trust diminishes the probability of opportunism and reduces the need for costly monitoring processes. It thus reduces the costs of transactions (Putnam, 1993).

Whereas the first theme could be regarded as illustrative of what North (1990) calls "allocative efficiency," the second theme centers on the role of social capital as an aid to adaptive efficiency and to the creativity and learning it implies. In particular, researchers have found social capital to encourage cooperative behavior, thereby facilitating the development of new forms of association and innovative organization (Fukuyama, 1995; Jacobs, 1965; Putnam, 1993). The concept, therefore, is central to the understanding of institutional dynamics, innovation, and value creation.

We should note, however, that social capital is not a universally beneficial resource. As Coleman observes, "[A] given form of social capital that is useful for facilitating certain actions may be useless or harmful for others" (1990: 302). For example, the strong norms and mutual identification that may exert a powerful positive influence on group performance can, at the same time, limit its openness to information and to alternative ways of doing things, producing forms of collective blindness that sometimes have disastrous consequences (Janis, 1982; Perrow, 1984; Turner, 1976).

The main thesis of the work we have reviewed thus far is that social capital inheres in the relations between and among persons and is a productive asset facilitating some forms of social action while inhibiting others. Social relationships within the family and wider community have been shown to be an important factor in the development of human capital (Coleman, 1988). In a parallel argument we suggest that social relationships—and the social capital therein—are an important influence on the development of intellectual capital. In elaborating this argument, we focus on the firm as the primary context in which to explore the interrelationships between social and intellectual capital. Later in the article we consider how our analysis may be extended to a wider range of institutional settings.

INTELLECTUAL CAPITAL

Traditionally, economists have examined physical and human capital as key resources for the firm that facilitate productive and economic activity. However, knowledge, too, has been recognized as a valuable resource by economists. Marshall, for example, suggests that "capital consists in a great part of knowledge and organization . . . . [K]nowledge is our most powerful engine of production" (1965: 115). He goes on to note that "organization aids knowledge," a perspective also central to the work of Arrow (1974). More recently, Quinn has expressed a similar view, suggesting that "with rare exceptions, the economic and producing power of the firm lies more in its intellectual and service capabilities than its hard assets—land, plant and equipment . . . . [V]irtually all public and private enterprises—including most successful corporations—are becoming dominantly repositories and coordinators of intellect" (1992: 241).

In this article we use the term "intellectual capital" to refer to the knowledge and knowing capability of a social collectivity, such as an organization, intellectual community, or professional practice. We have elected to adopt this terminology because of its clear parallel with the concept of human capital, which embraces the acquired knowledge, skills, and capabilities that enable persons to act in new ways (Coleman, 1988). Intellectual capital thus represents a valuable resource and a capability for action based in knowledge and knowing.

This orientation to intellectual capital builds on some central themes and distinctions found in the substantial and expanding literature on knowledge and knowledge processes. Many of these themes have a long history in philosophy and Western thought, dating back to Plato, Aristotle, and Descartes. Two issues are of particular relevance to our consideration of the special advantage of organizations as an institutional context for the development of intellectual capital. These are, first, debates about the different types of knowledge that may exist and, second, the issue of the level of anal-

ysis in knowledge processes, particularly the question of whether social or collective knowledge exists and in what form.

Dimensions of Intellectual Capital

Types of knowledge. Arguably, the most persistent theme in writing about the nature of knowledge centers on the proposition that there are different types of knowledge. For example, a key distinction scholars frequently make is between practical, experience-based knowledge and the theoretical knowledge derived from reflection and abstraction from that experience—a distinction reminiscent of the debate of early philosophers between rationalism and empiricism (Giddens & Turner, 1987; James, 1950). Variously labeled "know-how" or "procedural knowledge," the former frequently is distinguished from know-that, know-what, or declarative knowledge (Anderson, 1981; Ryle, 1949). It concerns well-practiced skills and routines, whereas the latter concerns the development of facts and propositions.[2]

Perhaps the most-cited and influential distinction of this sort is Polanyi's identification of two aspects of knowledge: tacit and explicit. This is a distinction he aligns with the "knowing how" and "knowing what" of Gilbert Ryle (Polanyi, 1967). Polanyi distinguishes tacit knowledge in terms of its incommunicability, and Winter (1987) has suggested that it may be useful to consider tacitness as a variable, with the degree of tacitness a function of the extent to which the knowledge is or can be codified and abstracted (see also Boisot, 1995). However, close reading of Polanyi indicates that he holds the view that some knowledge will always remain tacit. In so doing, he stresses the importance of *knowing*, as well as knowledge, and, in particular, the active shaping of experience performed in the pursuit of knowledge.[3] Discussing the practice of science, he observes that "science is operated by the skill of the scientist and it is through the exercise of this skill that he shapes his scientific knowledge" (Polanyi, 1962: 49). This suggests both a view of knowledge as object and of knowing as action or enactment in which progress is made through active engagement with the world on the basis of a systematic approach to knowing.

Levels of analysis in knowledge and knowing. Another equally fundamental cause for debate within philosophical and sociological circles centers on the existence, or otherwise, of particular phenomena at the collective level. That is, what is the nature of social phenomena that is different from the aggregation of individual phenomena (Durkheim, 1951; Gowler & Legge, 1982)? In the context of this article, the question concerns the degree to which it is possible to consider a concept of organizational, collective, or social knowledge that is different from that of individual organizational members.

Simon represents one extreme of the argument, stating that "all organizational learning takes place inside human heads; an organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have" (1991a: 176). In contrast, Nelson and Winter take a very different position, asserting that

> the possession of technical "knowledge" is an attribute of the firm as a whole, as an organized entity, and is not reducible to what any single individual knows, or even to any simple aggregation of the various competencies and capabilities of all the various individuals, equipments and installations of the firm (1982: 63).

A similar view is reflected in Brown and Duguid's (1991) analysis of communities of practice, in which shared learning is inextricably located in complex, collaborative social practices. Weick and Roberts (1993) also report research demonstrating collective knowing at the organizational level.[4] Our definition of intellectual capital reflects the second of these perspectives and acknowledges the significance of socially and contextually embedded forms of knowledge and knowing as a source of value differing from the simple aggregation of the knowledge of a set of individuals.

These two dimensions of explicit/tacit and individual/social knowledge have been combined by Spender (1996), who created a matrix of four

[2] To this recent authors have added the concept of know-why (Hamel, 1991; Kogut & Zander, 1992).

[3] Indeed, his much-referenced chapter, in which he introduces the tacit dimension, is entitled "Tacit Knowing," not "tacit knowledge."

[4] See also Walsh's (1995) comprehensive discussion of organizational cognition.

different elements of an organization's intellectual capital. Individual explicit knowledge—what Spender labels "conscious knowledge"—is typically available to the individual in the form of facts, concepts, and frameworks that can be stored and retrieved from memory or personal records. The second element, individual tacit knowledge—what Spender labels "automatic knowledge"—may take many different forms of tacit knowing, including theoretical and practical knowledge of people and the performance of different kinds of artistic, athletic, or technical skills. Availability of people with such explicit knowledge and tacit skills clearly is an important part of an organization's intellectual capital and can be a key factor in the organization's performance, particularly in contexts where the performance of individual employees is crucial, as in specialist craft work (Cooke & Yanow, 1993).

The other two elements of an organization's intellectual capital are social explicit knowledge (what Spender calls "objectified knowledge") and social tacit knowledge ("collective knowledge," in Spender's terms). The former represents the shared corpus of knowledge—epitomized, for example, by scientific communities, and often regarded as the most advanced form of knowledge (Boisot, 1995). Across a wide range of organizations, we are currently witnessing major investments in the development of such objectified knowledge as firms attempt to pool, share, and leverage their distributed knowledge and intellect (Quinn, Anderson, & Finkelstein, 1996).

The latter represents the knowledge that is fundamentally embedded in the forms of social and institutional practice and that resides in the tacit experiences and enactment of the collective (Brown & Duguid, 1991). Such knowledge and knowing capacity may remain relatively hidden from individual actors but be accessible and sustained through their interaction (Spender, 1994). It is the type of knowledge frequently distinguishing the performance of highly experienced teams. This shared knowledge has been defined as "routines" by Nelson and Winter (1982), and it appears that much important organizational knowledge may exist in this form. For example, Weick and Roberts (1993) describe the complex, tacit, but heedful interrelating they observed between members of the flight operations team on aircraft carriers, which they suggest may characterize all high-reliability organizations.

For a given firm, these four elements collectively constitute its intellectual capital. Further, the elements are not independent, as Spender (1996) notes. However, in a stylized comparison of individuals working within an organization versus the same individuals working at arm's length across a hypothetical market (in the spirit of Conner and Prahalad's [1996] analysis), we use the two categories of social knowledge to provide the crux of our distinction: as Spender argues, "[C]ollective knowledge is the most secure and strategically significant kind of organizational knowledge" (1996: 52). Therefore, it is on the social explicit knowledge and the social tacit knowledge that we focus our analysis of organizational advantage. This is an important limitation of our theory because, by restricting the scope of our analysis only to social knowledge, we will be unable to capture the influences that explicit and tacit individual knowledge may have on the intellectual capital of the firm.

There is another important way in which we limit our analysis. The potential advantages of internal organization over market organization may arise from its superior abilities in both creating and exploiting intellectual capital (Kogut & Zander, 1993). We focus here only on the creation of intellectual capital and ignore the exploitation aspects. We have two reasons for imposing this constraint. First, comprehensive consideration of both processes would exceed the space available. Second, and more important, the benefits of intraorganizational exploitation of knowledge stem largely from missing, incomplete, or imperfect markets for such knowledge (Arrow, 1974; Teece, 1988; Williamson, 1975). Therefore, such advantages historically have been a part of the more traditional market-failure-based theories of the firm. Where we go beyond such theories is in our argument that internal organization may, within limits, be superior to market transactions for the creation of new knowledge.

The Creation of Intellectual Capital

How is new knowledge created? Following Schumpeter (1934), Moran and Ghoshal (1996) have argued that all new resources, including knowledge, are created through two generic pro-

cesses: namely, combination and exchange. While this argument is yet to be widely scrutinized, and although it is possible there may be still other processes for the creation of new knowledge (particularly at the individual level), we believe that these two, indeed, are among the key mechanisms for creating social knowledge; therefore, we adopt this framework for our purposes.

Combination and the creation of intellectual capital. Combination is the process viewed by Schumpeter as the foundation for economic development—"to produce means to combine materials and forces within our reach" (1934: 65)—and this perspective has become the starting point for much current work on organizations as knowledge systems (Boisot, 1995; Cohen & Levinthal, 1990; Kogut & Zander, 1992). In this literature scholars frequently identify two types of knowledge creation. First, new knowledge can be created through incremental change and development from existing knowledge. Schumpeter (1934), for example, talks of continuous adjustment in small steps, and March and Simon (1958) identify "localized search" and "stable heuristics" as the basis for knowledge growth. Within the philosophy of science, Kuhn (1970) sees development within the paradigm as the dominant mode of progression. Second, many authors also discuss more radical change: innovation, in Schumpeter's terms; double-loop learning, according to Argyris and Schon (1978); and paradigmatic change and revolution, according to Kuhn (1970). There appears to be a consensus that both types of knowledge creation involve making new combinations—incrementally or radically—either by combining elements previously unconnected or by developing novel ways of combining elements previously associated. "Development in our sense is then defined by the carrying out of new combinations" (Schumpeter, 1934: 66),[5] a view endorsed by the recent research of Leonard-Barton (1995).

Exchange and the creation of intellectual capital. Where resources are held by different parties, exchange is a prerequisite for resource combination. Since intellectual capital generally is created through a process of combining the knowledge and experience of different parties, it, too, is dependent upon exchange between these parties. Sometimes, this exchange involves the transfer of explicit knowledge, either individually or collectively held, as in the exchange of information within the scientific community or via the Internet. Often, new knowledge creation occurs through social interaction and coactivity. Zucker, Darby, Brewer, and Peng (1996) recently have shown the importance of collaboration for the development and acquisition of fine-grained collective knowledge in biotechnology. Their research endorses the significance of teamwork in the creation of knowledge, as identified much earlier by Penrose (1959). In developing her theory of the growth of the firm, Penrose proposed that a firm be viewed as "a collection of individuals who have had experience in working together, for only in this way can 'teamwork' be developed" (1959: 46).

There are many aspects to the learning embedded in such shared experience. They include the specific meanings and understandings subtly and extensively negotiated in the course of social interaction. Importantly, they also include an appreciation of the ways in which action may be coordinated. For, as Penrose observes, such experience

> develops an increasing knowledge of the possibilities for action and the ways in which action can be taken by . . . the firm. This increase in knowledge not only causes the productive opportunity of a firm to change . . . but also contributes to the "uniqueness" of the opportunity of each individual firm (1959: 53).

An interest in the ways in which such collective learning, especially concerning how to coordinate diverse production skills and to integrate several technology streams, has been at the

[5] In their theory of the knowledge-creating company, Nonaka and Takeuchi define combination as "a process of systematizing concepts into a knowledge system. This mode of knowledge conversion involves combining different bodies of explicit knowledge" (1995: 67). They prefer to use different terms for those forms of conversion involving tacit knowledge. However, following Polanyi (1967), we believe that all knowledge processes have a tacit dimension and that, fundamentally, the same generic processes underlie all forms of knowledge conversion. Therefore, our usage of the term "combination" in this context is more general and is rooted in our view of intellectual capital as embracing both the explicit knowledge and the tacit knowing of a collective and its members. Our view, thus, resembles more closely the concept of combinative capabilities discussed by Kogut and Zander (1992).

heart of much recent discussion of core competence as the source of competitive advantage (Prahalad & Hamel, 1990) and is suggestive of the complex ways in which exchange contributes to the creation of intellectual capital.

The Conditions for Exchange and Combination

In their analysis of value creation, Moran and Ghoshal (1996) identify three conditions that must be satisfied for exchange and combination of resources actually to take place. We believe that these conditions apply to the creation of new intellectual capital. In addition, however, we identify a fourth factor, which we regard as a prerequisite for the creation of intellectual capital.

The first condition is that the opportunity exists to make the combination or exchange. In our context we see this condition being determined by accessibility to the objectified and collective forms of social knowledge. A fundamental requirement for the development of new intellectual capital is that it is possible to draw upon and engage in the existing and differing knowledge and knowing activities of various parties or knowing communities (Boland & Tenkasi, 1995; Zucker et al., 1996). In the academic world the "invisible college" long has been recognized as an important social network giving valuable early access to distributed knowledge, facilitating its exchange and development, and thereby accelerating the advancement of science (Crane, 1972). Clearly, recent developments in technology, such as Lotus Notes and the Internet, have considerably increased the opportunities for knowledge combination and exchange. In addition, however, as the history of science demonstrates, the creation of new intellectual capital also may occur through accidental rather than planned combinations and exchanges, reflecting emergent patterns of accessibility to knowledge and knowledge processes.

Second, in order for the parties involved to avail themselves of the opportunities that may exist to combine or exchange resources, value expectancy theorists suggest that those parties must expect such deployment to create value. In other words, they must anticipate that interaction, exchange, and combination will prove worthwhile, even if they remain uncertain of what will be produced or how. Writing about the anticipated outcome of a conference of business practitioners and researchers, Slocum comments, "[E]ach of us expects to learn something of value as a result of our being here. None of us knows exactly what we are going to learn or what path we will take in the pursuit of this knowledge. We are confident, however, that the process works" (1994: ix). This anticipation of or receptivity to learning and new knowledge creation has been shown to be an important factor affecting the success or otherwise of strategic alliances (Hamel, 1991). It exemplifies Giddens' (1984) concept of intentionality as an influence on social action and, in so doing, also acknowledges the possibility that outcomes may turn out to be different from those anticipated.

The third condition for the creation of new resources highlights the importance of motivation. Even where opportunities for exchange exist and people anticipate that value may be created through exchange or interaction, those involved must feel that their engagement in the knowledge exchange and combination will be worth their while. Moran and Ghoshal (1996) see this as the expectation that the parties engaged in exchange and combination will be able to appropriate or realize some of the new value created by their engagement, even though, as noted previously, they may be uncertain about precisely what that value may be. For example, while having considerable potential, the availability of electronic knowledge exchange does not automatically induce a willingness to share information and build new intellectual capital. Quinn et al. (1996) found, in a study of Arthur Andersen Worldwide, that major changes in incentives and culture were required to stimulate use of its new electronic network, and they suggest that motivated creativity, which they describe as "care-why," is a fundamental influence in the creation of value through leveraging intellect. In his research on internal stickiness, Szulanski (1996) also found that lack of motivation may inhibit the transfer of best practice within the firm. However, Szulanski discovered that far more important as a barrier was the lack of capacity to assimilate and apply new knowledge.

Accordingly, we propose that there is a fourth precondition for the creation of new intellectual capital: combination capability. Even where the opportunities for knowledge exchange and combination exist, these opportunities are perceived as valuable, and parties are motivated to make

such resource deployments or to engage in knowing activity, the capability to combine information or experience must exist. In their research on innovation, Cohen and Levinthal (1990) argue that the ability to recognize the value of new knowledge and information, but also to assimilate and use it, are all vital factors in organizational learning and innovation. Their work demonstrates that all of these abilities, which they label "absorptive capacity," depend upon the existence of related prior knowledge. Moreover, they suggest that an organization's absorptive capacity does not reside in any single individual but depends, crucially, on the links across a mosaic of individual capabilities—an observation that parallels Spender's (1996) discussion of collective knowledge.

Toward a Theory of the Creation of Intellectual Capital

By way of summary, we have argued the following. First, new intellectual capital is created through combination and exchange of existing intellectual resources, which may exist in the form of explicit and tacit knowledge and knowing capability. Second, there are four conditions that affect the deployment of intellectual resources and engagement in knowing activity involving combination and exchange. Third, in reviewing the burgeoning literature on knowledge and knowing, we have encountered much evidence in support of the view that the combination and exchange of knowledge are complex social processes and that much valuable knowledge is fundamentally socially embedded—in particular situations, in coactivity, and in relationships. As yet, we have uncovered no single theoretical framework that pulls together the various strands we can identify in this literature. For example, although a growing body of work exists in which scholars adopt an evolutionary perspective and identify the special capabilities of firms in the creation and transfer of tacit knowledge, this work has not yet produced a coherent theory explaining these special capabilities. Given the social embeddedness of intellectual capital, we suggest that such a theory is likely to be one that is primarily concerned with social relationships. Accordingly, we believe that social capital theory offers a potentially valuable perspective for understanding and explaining the creation of intellectual capital. It is to this theory we now return.

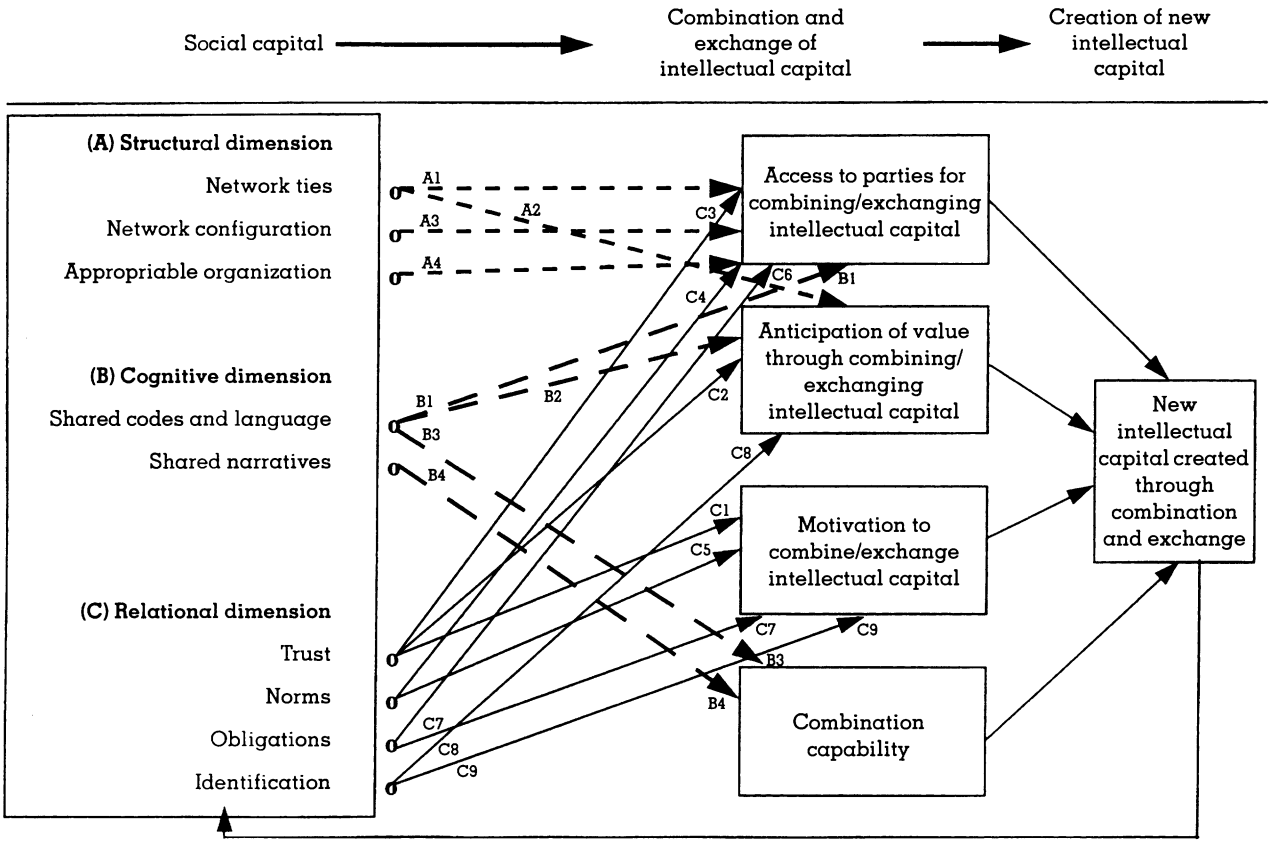
SOCIAL CAPITAL, EXCHANGE, AND COMBINATION

Social capital resides in relationships, and relationships are created through exchange (Bourdieu, 1986). The pattern of linkages and the relationships built through them are the foundation for social capital. What we observe is a complex and dialectical process in which social capital is created and sustained through exchange and in which, in turn, social capital facilitates exchange. For example, there is mounting evidence demonstrating that where parties trust each other, they are more willing to engage in cooperative activity through which further trust may be generated (Fukuyama, 1995; Putnam, 1993; Tyler & Kramer, 1996). In social systems, exchange is the precursor to resource combination. Thus, social capital influences combination indirectly through exchange. However, we argue below that several facets of social capital, particularly those pertaining to the cognitive dimension, also have a direct influence on the ability of individuals to combine knowledge in the creation of intellectual capital. Although our primary objective is to explore the ways in which social capital influences the development of intellectual capital, we recognize that intellectual capital may, itself, facilitate the development of social capital. Thus, later in the article we consider how the coevolution of these two forms of capital may underpin organizational advantage.

The main thesis we develop here is that social capital facilitates the development of intellectual capital by affecting the conditions necessary for exchange and combination to occur. To explore this proposition, we now examine some of the ways in which each of the three dimensions of social capital influences the four conditions for resource exchange and combination we presented earlier. The specific relationships we identify are summarized in Figure 1.

For the sake of clarity of exposition, we consider, in the following analysis, the impact of each dimension of social capital independently of the other dimensions. We recognize, however, that both the dimensions and the several facets of social capital are likely to be interrelated in important and complex ways. For example, par-

FIGURE 1
Social Capital in the Creation of Intellectual Capital



ticular structural configurations, such as those displaying strong symmetrical ties, have consistently been shown to be associated with such relational facets as interpersonal affect and trust (Granovetter, 1985; Krackhardt, 1992). Similarly, researchers have highlighted the often-complex interdependencies between social identification and shared vocabulary and language (Ashforth & Mael, 1995).

Moreover, not all dimensions of social capital are mutually reinforcing. For instance, an efficient network in structural terms may not be the best way to develop the strong relational or cognitive social capital that may be necessary to ensure the effective operation of such networks. Nohria and Eccles (1992), for example, highlight important differences between face-to-face and electronic exchange and propose that using electronically mediated exchange to help create a network organization requires more, not less, face-to-face communication. Our primary focus on the independent effects of these dimensions therefore limits the richness of the present exploration and identifies an important area for future work.

Exchange, Combination, and the Structural Dimension of Social Capital

Our main argument in this section is that, within the context of the framework of combination and exchange adopted by us in this article, the structural dimension of social capital influences the development of intellectual capital primarily (though not exclusively) through the ways in which its various facets affect access to parties for exchanging knowledge and participating in knowing activities. While recognizing that the structural facets also may be systematically associated with other conditions for the exchange and combination of knowledge, we believe that these associations are primarily derived indirectly, through the ways in which structure influences the development of the re-

lational and cognitive dimensions of social capital. For example, the strong, symmetrical ties frequently associated with the development of affective relationships (both positive and negative) may, in turn, influence individuals' motivation to engage in social interaction and, thereby, exchange knowledge (Krackhardt, 1992; Lawler & Yoon, 1996). Similarly, stable networks characterized by dense relations and high levels of interaction are conducive to the development of the different facets of the cognitive social capital we discuss in this article (Boisot, 1995; Orr, 1990).

Network ties. The fundamental proposition of social capital theory is that network ties provide access to resources. One of the central themes in the literature is that social capital constitutes a valuable source of information benefits (i.e., "who you know" affects "what you know"). Coleman (1988) notes that information is important in providing a basis for action but is costly to gather. However, social relations, often established for other purposes, constitute information channels that reduce the amount of time and investment required to gather information.

Burt (1992) suggests that these information benefits occur in three forms: access, timing, and referrals. The term "access" refers to receiving a valuable piece of information and knowing who can use it, and it identifies the role of networks in providing an efficient information-screening and -distribution process for members of those networks. Thus, network ties influence both access to parties for combining and exchanging knowledge (A1 in Figure 1) and anticipation of value through such exchange (A2 in Figure 1). The operations of the invisible college provide an example of such networks.

"Timing" of information flows refers to the ability of personal contacts to provide information sooner than it becomes available to people without such contacts. This may well increase the anticipated value of such information (A2 in Figure 1), as demonstrated in research on job-seeking behavior (Granovetter, 1973). Such early access to information may be especially important in commercially oriented research and development, where speed to market may be a crucial factor in determining success.

"Referrals" are those processes providing information on available opportunities to people or actors in the network, hence influencing the opportunity to combine and exchange knowledge (A1 in Figure 1). They constitute a flow of information not only about possibilities but frequently include reputational endorsement for the actors involved—thereby influencing both the anticipated value of combination and exchange and the motivation for such exchange (see Granovetter, 1973, and Putnam, 1993). However, we believe that such reputational endorsement derives more from relational than structural factors, which we explore below.

Network configuration. Ties provide the channels for information transmission, but the overall configuration of these ties constitutes an important facet of social capital that may impact the development of intellectual capital. For example, three properties of network structure—density, connectivity, and hierarchy—are all features associated with flexibility and ease of information exchange through their impact on the level of contact or the accessibility they provide to network members (A3 in Figure 1; Ibarra, 1992; Krackhardt, 1989).

Burt (1992) notes that a player with a network rich in information benefits has contacts established in the places where useful bits of information are likely to air and who will provide a reliable flow of information to and from those places. While acknowledging the importance of trust and trustworthiness as a factor in the choice of contacts, Burt (1992) devotes much more attention to the efficiency of different relationship structures, arguing, in particular, that the sparse network, with few redundant contacts, provides more information benefits. The dense network is inefficient in the sense that it returns less diverse information for the same cost as that of the sparse network. The benefits of the latter, thus, derive from both the diversity of information and the lower costs of accessing it.

Jacobs (1965) and Granovetter (1973) have made similar arguments, identifying the role of "hop-and-skip" links and "loose ties" in information diffusion through communities. This aspect of diversity is very important, because it is well established that significant progress in the creation of intellectual capital often occurs by bringing together knowledge from disparate sources and disciplines. Networks and network structures, thus, represent facets of social capital that influence the range of information that may be accessed (A3 in Figure 1) and that becomes available for combination. As such, these

structures constitute a valuable resource as channels or conduits for knowledge diffusion and transfer.

However, there are important limitations to the conduit model, in which meaning is viewed as unproblematic and in which the primary concern is with issues of information transfer. For example, Hansen (1996) has found that weak ties facilitate search but impede transfer, especially when knowledge is not codified. Thus, whereas networks having little redundancy may be both effective and efficient for the transfer of information whose meaning is relatively unproblematic, much richer patterns of relationship and interaction are important where the meaning of information is uncertain and ambiguous or where parties to an exchange differ in their prior knowledge. For example, Cohen and Levinthal (1990) have shown that some redundancy is necessary for the development of cross-functional absorptive capacity. Nonetheless, the general point remains that the configuration of the network is an important influence on the accessibility of information resources (A3 in Figure 1), although the appropriate level of redundancy is contingent on the degree to which the parties to knowledge exchange share a common knowledge base.

Appropriable organization. Social capital developed in one context, such as ties, norms, and trust, can often (but not always) be transferred from one social setting to another, thus influencing patterns of social exchange. Examples include the transfer of trust from family and religious affiliations into work situations (Fukuyama, 1995), the development of personal relationships into business exchanges (Coleman, 1990), and the aggregation of the social capital of individuals into that of organizations (Burt, 1992). This suggests that organizations created for one purpose may provide a source of valuable resources for other, different purposes (Nohria, 1992; Putnam, 1993, 1995). Such appropriable social organization can provide a potential network of access to people and their resources, including information and knowledge (A4 in Figure 1), and, through its relational and cognitive dimensions, may ensure motivation and capability for exchange and combination (see below). However, such organization also may inhibit such processes; indeed, research demonstrates how organizational routines may separate rather than coordinate groups within organizations, constraining rather than enabling learning and the creation of intellectual capital (Dougherty, 1996; Hedberg, 1981).

Exchange, Combination, and the Cognitive Dimension of Social Capital

Earlier in this article, we defined intellectual capital as the knowledge and knowing capability of a social collectivity. This reflects our belief that, fundamentally, intellectual capital is a social artifact and that knowledge and meaning are always embedded in a social context—both created and sustained through ongoing relationships in such collectivities. Although scholars widely recognize that innovation generally occurs through combining different knowledge and experience and that diversity of opinion is a way of expanding knowledge, meaningful communication—an essential part of social exchange and combination processes—requires at least some sharing of context between the parties to such exchange (Boisot, 1995; Boland & Tenkasi, 1995; Campbell, 1969). We suggest that this sharing may come about in two main ways: (1) through the existence of shared language and vocabulary and (2) through the sharing of collective narratives. Further, we suggest that these two elements constitute facets of shared cognition that facilitate the creation of intellectual capital especially through their impact on combination capability. In each case they do so by acting as both a medium and a product of social interaction.

Shared language and codes. There are several ways in which a shared language influences the conditions for combination and exchange. First, language has a direct and important function in social relations, for it is the means by which people discuss and exchange information, ask questions, and conduct business in society. To the extent that people share a common language, this facilitates their ability to gain access to people and their information. To the extent that their language and codes are different, this keeps people apart and restricts their access (B1 in Figure 1).

Second, language influences our perception (Berger & Luckman, 1966; Pondy & Mitroff, 1979). Codes organize sensory data into perceptual categories and provide a frame of reference for observing and interpreting our environment. Thus, language filters out of awareness those

events for which terms do not exist in the language and filters in those activities for which terms do exist. Shared language, therefore, may provide a common conceptual apparatus for evaluating the likely benefits of exchange and combination (B2 in Figure 1).

Third, a shared language enhances combination capability (B3 in Figure 1). Knowledge advances through developing new concepts and narrative forms (Nonaka & Takeuchi, 1995). However, as we noted previously, in order to develop such concepts and to combine the information gained through social exchange, the different parties must have some overlap in knowledge. Boland and Tenkasi (1995) identify the importance of both perspective taking and perspective making in knowledge creation, and they demonstrate how the existence of a shared vocabulary enables the combining of information. We suggest it is for all these reasons that researchers increasingly recognize group-specific communication codes as a valuable asset within firms (Arrow, 1974; Kogut & Zander, 1992; Monteverde, 1995; Prescott & Visscher, 1980).

Shared narratives. Beyond the existence of shared language and codes, researchers have suggested that myths, stories, and metaphors also provide powerful means in communities for creating, exchanging, and preserving rich sets of meanings—a view long held by some social anthropologists (Clark, 1972; Nisbet, 1969). Recently, Bruner (1990) proposed that there are two different modes of cognition: (1) the information or paradigmatic mode and (2) the narrative mode. The former suggests a process of knowledge creation rooted in rational analysis and good arguments; the latter is represented in synthetic narratives, such as fairy tales, myths and legends, good stories, and metaphors. According to Bateson (1972), metaphors cut across different contexts, thus enabling the combining of both imaginative and literal observations and cognitions. Orr (1990) demonstrates how narrative in the form of stories, full of seemingly insignificant details, facilitates the exchanging of practice and tacit experience between technicians, thereby enabling the discovery and development of improved practice. The emergence of shared narratives within a community thus enables the creation and transfer of new interpretations of events, doing so in a way that facilitates the combination of different forms of knowledge, including those largely tacit (B4 in Figure 1).

Exchange, Combination, and the Relational Dimension of Social Capital

Much of the evidence for the relationship between social capital and intellectual capital highlights the significance of the relational dimension of social capital. Szulanski (1996) has found that one of the important barriers to the transfer of best practice within organizations is the existence of arduous relations between the source and the recipient. Whereas we have argued that the structural dimension has its primary direct impact on the condition of accessibility, and the cognitive dimension through its influence on accessibility and combination capability, research suggests that the relational dimension of social capital influences three of the conditions for exchange and combination in many ways. These are access to parties for exchange, anticipation of value through exchange and combination, and the motivation of parties to engage in knowledge creation through exchange and combination.

Trust. Misztal defines trust as the belief that the "results of somebody's intended action will be appropriate from our point of view" (1996: 9–10). A substantial body of research now exists (Fukuyama, 1995; Gambetta, 1988; Putnam, 1993, 1995; Ring & Van de Ven, 1992, 1994; Tyler & Kramer, 1996) that demonstrates where relationships are high in trust, people are more willing to engage in social exchange in general, and cooperative interaction in particular (C1 in Figure 1). Mishira (1996) argues that trust is multidimensional and indicates a willingness to be vulnerable to another party—a willingness arising from confidence in four aspects: (1) belief in the good intent and concern of exchange partners (Ouchi, 1981; Pascale, 1990; Ring & Van de Ven, 1994), (2) belief in their competence and capability (Sako, 1992; Szulanski, 1996), (3) belief in their reliability (Giddens, 1990; Ouchi, 1981), and (4) belief in their perceived openness (Ouchi, 1981).

Misztal observes that "trust, by keeping our mind open to all evidence, secures communication and dialogue" (1996: 10), suggesting thereby that trust may both open up access to people for the exchange of intellectual capital (C3 in Figure 1) and increase anticipation of value

through such exchanges (C2 in Figure 1). One can find support for this view in research demonstrating that where there are high levels of trust, people are more willing to take risks in such exchange (Nahapiet, 1996; Ring & Van de Ven, 1992). This may represent an increased willingness to experiment with combining different sorts of information. For example, Luhmann (1979) has shown trust to increase the potential of a system for coping with complexity and, thus, diversity—factors known to be important in the development of new intellectual capital. Trust may also indicate greater openness to the potential for value creation through exchange and combination (C2 in Figure 1). Boisot highlights the importance of interpersonal trust for knowledge creation in contexts of high ambiguity and uncertainty: "[W]hen the message is uncodified, trust has to reside in the quality of the personal relationships that bind the parties through shared values and expectations rather than the intrinsic plausibility of the message" (1995: 153).

As we noted earlier, there is a two-way interaction between trust and cooperation: trust lubricates cooperation, and cooperation itself breeds trust. This may lead to the development, over time, of generalized norms of cooperation, which increase yet further the willingness to engage in social exchange (Putnam, 1993). In this respect, collective trust may become a potent form of "expectational asset" (Knez & Camerer, 1994) that group members can rely on more generally to help solve problems of cooperation and coordination (Kramer, Brewer, & Hanna, 1996).

Norms. According to Coleman (1990), a norm exists when the socially defined right to control an action is held not by the actor but by others. Thus, it represents a degree of consensus in the social system. Coleman suggests that "where a norm exists and is effective, it constitutes a powerful though sometimes fragile form of social capital" (1988: S104). Norms of cooperation can establish a strong foundation for the creation of intellectual capital. Becoming, in effect, "expectations that bind" (Kramer & Goldman, 1995), such norms may be a significant influence on exchange processes, opening up access to parties for the exchange of knowledge (C4 in Figure 1) and ensuring the motivation to engage in such exchange (C5 in Figure 1; Putnam, 1993).

For example, Starbuck (1992) notes the importance of social norms of openness and teamwork as key features of knowledge-intensive firms; he highlights the significance of the emphasis on cooperation rather than competition, on open disclosure of information, and on building loyalty to the firm as significant underpinnings of the success of the American law firm Wachtell, Lipton, Rosen and Katz, which specializes in advice on nonroutine, challenging cases. Other norms of interaction that have been shown to be important in the creation of intellectual capital include a willingness to value and respond to diversity, an openness to criticism, and a tolerance of failure (Leonard-Barton, 1995). Such norms may offset the tendency to "groupthink" that may emerge in strong, convergent groups and that represents the way in which high levels of social capital may be a real inhibitor for the development of intellectual capital (Janis, 1982). At the same time, as Leonard-Barton (1995) has shown, norms also may have a dark side; those capabilities and values initially seen as a benefit may become, in time, a pathological rigidity.

Obligations and expectations. Obligations represent a commitment or duty to undertake some activity in the future. Coleman (1990) distinguishes obligations from generalized norms, viewing the former as expectations developed within particular personal relationships. He suggests that obligations operate as a "credit slip" held by A to be redeemed by some performance by B—a view reminiscent of Bourdieu's (1986) concept of credential we referred to earlier in this article. In the context of the creation of intellectual capital, we suggest that such obligations and expectations are likely to influence both access to parties for exchanging and combining knowledge (C6 in Figure 1) and the motivation to combine and exchange such knowledge (C7 in Figure 1). The notion that "there is no such thing as a free lunch" represents a commonly held view that exchange brings with it expectations about future obligations—a view explicated in detail by Mauss (1954), Bourdieu (1977), and Cheal (1988). Fairtlough (1994) ascribes considerable importance to the formal, professional, and personal obligations that develop between those involved in cooperative research and development projects between different organizations:

> People in the two companies could rely on each other .... This was cooperation which certainly went beyond contractual obligations. It might also have gone beyond enlightened self interest, and beyond good professional behaviour, because the scientists liked working together, felt committed to the overall project and felt a personal obligation to help the others involved (1994: 119).

Identification. Identification is the process whereby individuals see themselves as one with another person or group of people. This may result from their membership in that group or through the group's operation as a reference group, "in which the individual takes the values or standards of other individuals or groups as a comparative frame of reference" (Merton, 1968: 288; see also Tajfel, 1982). Kramer et al. (1996) have found that identification with a group or collective enhances concern for collective processes and outcomes, thus increasing the chances that the opportunity for exchange will be recognized. Identification, therefore, acts as a resource influencing both the anticipation of value to be achieved through combination and exchange (C8 in Figure 1) and the motivation to combine and exchange knowledge (C9 in Figure 1). We find support for this in the research of Lewicki and Bunker (1996), whose evidence suggests that salient group identification may not only increase the perceived opportunities for exchange but also may enhance the actual frequency of cooperation. In contrast, where groups have distinct and contradictory identities, these may constitute significant barriers to information sharing, learning, and knowledge creation (Child & Rodrigues, 1996; Pettigrew, 1973; Simon & Davies, 1996).

Thus far, we have argued that social capital theory provides a powerful basis for understanding the creation of intellectual capital in general. The various specific links we have proposed are summarized in Figure 1. In the next section we suggest that the theory also provides a basis for understanding the nature of organizational advantage since firms, as institutions, are likely to be relatively well endowed with social capital.

SOCIAL CAPITAL, INTELLECTUAL CAPITAL, AND THE ORGANIZATIONAL ADVANTAGE

The last 20 years have witnessed a substantial resurgence of interest in the theory of the firm. During this period, those espousing transaction cost approaches became increasingly influential, positing, at their simplest, that the existence of firms can be explained in terms of market failure and the greater ability of firms, through hierarchy, to reduce the costs of transactions in particular (and relatively restricted) circumstances (Williamson, 1975, 1981, 1985). The transaction cost theory of the firm has proved robust and has been applied across a wide range of issues, but it has also become subject to growing criticism for a range of definitional, methodological, and substantive reasons (see, for example, Conner & Prahalad, 1996, and Pitelis, 1993). More fundamentally, as we noted at the outset of this article, researchers now are seeking to develop a theory of the firm that is expressed in positive terms (Kogut & Zander, 1996; Masten, Meehan, & Snyder, 1991; Simon, 1991b)—away from a market-failure framework to one grounded in the concept of organizational advantage (Moran & Ghoshal, 1996).

Increasingly, the special capabilities of organizations for creating and transferring knowledge are being identified as a central element of organizational advantage. We suggest that social capital theory provides a sound basis for explaining why this should be the case. First, organizations as institutional settings are characterized by many of the factors known to be conducive to the development of high levels of social capital. Second, it is the coevolution of social and intellectual capital that underpins organizational advantage.

Organizations as Institutional Settings Are Conducive to the Development of Social Capital

Social capital is owned jointly by the parties to a relationship, with no exclusive ownership rights for individuals. Thus, it is fundamentally concerned with resources located within structures and processes of social exchange; as such, the development of social capital is significantly affected by those factors shaping the evolution of social relationships. We discuss four such conditions here: time, interaction, interdependence, and closure. We argue that all four are more characteristic of internal organization than of market organization as represented in neoclassical theory and that, as a result, organizations as institutional settings are conducive

to the development of high levels of social capital relative to markets. However, as we subsequently note, in practice these conditions may also occur in some forms of interorganizational networks, thereby enabling such networks to become relatively well endowed with social capital.

Time and the development of social capital. Like other forms of capital, social capital constitutes a form of accumulated history—here reflecting investments in social relations and social organization through time (Bourdieu, 1986; Granovetter, 1992). Time is important for the development of social capital, since all forms of social capital depend on stability and continuity of the social structure. The concept of embedding fundamentally means the binding of social relations in contexts of time and space (Giddens, 1990). Coleman highlights the importance of continuity in social relationships:

> One way in which the transactions that make up social action differ from those of the classical model of a perfect market lie in the role of time. In a model of a perfect market, transactions are both costless and instantaneous. But in the real world, transactions are consummated over a period of time (1990: 91).

For example, since it takes time to build trust, relationship stability and durability are key network features associated with high levels of trust and norms of cooperation (Axelrod, 1984; Granovetter, 1985; Putnam, 1993; Ring & Van de Ven, 1992). The duration and stability of social relations also influence the clarity and visibility of mutual obligations (Misztal, 1996).

Although, in the main, social capital is created as a by-product of activities engaged in for other purposes, intentional or constructed organization represents a direct, purposeful investment in social capital (Coleman, 1990, 1993). "These organizations ordinarily take the form of authority structures composed of positions connected by obligations and expectations and occupied by persons" (Coleman 1990: 313). In contrast to the short-term transactions characterizing the markets of neoclassical theory, intentional or constructed organization represents the creation and maintenance of an explicit and enduring structure of ties constituting, through organizational design, a configuration of relationships and resources usable for a variety of purposes—both formal and informal. Moreover, this commitment to continuity facilitates the other processes known to be influential in the development of social capital: interdependence, interaction, and closure.

Interdependence and the development of social capital. Coleman (1990) states that social capital is eroded by factors that make people less dependent upon each other. This appears especially so for the relational dimension of social capital. For example, expectations and obligations are less significant where people have alternative sources of support. Indeed, Misztal (1996) has suggested that the recent resurgence of interest in trust can be explained by the increasingly transitional character of our present condition and the erosion of social interdependence and solidarity. Yet, most authors agree that high levels of social capital usually are developed in contexts characterized by high levels of mutual interdependence.

Whereas markets as institutional arrangements are rooted in the concept of autonomy (and institutional economists largely neglect interdependence between exchange parties; Zajac & Olsen, 1993), firms fundamentally are institutions designed around the concepts and practices of specialization and interdependence and differentiation and integration (Lawrence & Lorsch, 1967; Smith, 1986; Thompson, 1967). Interdependence—and the coordination it implies—long has been recognized as perhaps the key attribute of business organization (Barnard, 1938). Follet goes so far as to suggest that

> the fair test of business administration, of industrial organization, is whether you have a business with all its parts so co-ordinated, so moving together in their closely knit and adjusting activities, so linking, interlocking and inter-relating, that they make a working unit, not a congerie of separate pieces (1949: 61).

Such interdependence provides the stimulus for developing many organizationally embedded forms of social capital. For example, through providing the opportunity to create contexts characterized by the condition of interdependent viability—that is, the requirement that exchanges are positive in outcome for the system overall rather than for each individual member of the system—organizations considerably extend the circle of exchange that takes place among their members (Coleman, 1993; Moran & Ghoshal, 1996), thereby increasing social identification and encouraging norms of cooperation and risk taking.

Interaction and the development of social capital. Social relationships generally, though not always, are strengthened through interaction but die out if not maintained. Unlike many other forms of capital, social capital increases rather than decreases with use. Interaction, thus, is a precondition for the development and maintenance of dense social capital (Bourdieu, 1986). In particular, as we noted already, scholars have shown that the cognitive and relational dimensions of social capital accumulate in network structures where linkages are strong, multidimensional, and reciprocal—features that characterize many firms but that rarely surface in pure market forms of organization. Discussing the development of language, Boland and Tenkasi note that it is "through action within communities of knowing that we make and remake both our language and our knowledge" (1995: 353). According to these authors, such communities must have space for conversation, action, and interaction in order for the codes and language to develop that facilitate the creation of new intellectual capital.

In a different context Boissevain (1974) shows how multiplex relations are more intimate than single-stranded relationships, therefore providing more accessibility and more response to pressure than single-stranded relations. Such relations typically are imbued with higher levels of obligation between network members, as well as trust-based norms (Coleman, 1990). Further, Powell (1996) argues that norm-based conceptions of trust miss the extent to which cooperation is buttressed by sustained contact, regular dialogue, and constant monitoring. He adds that, without mechanisms and institutions to sustain such conversations, trust does not ensue (see also Coleman, 1990). This echoes Bourdieu's earlier emphasis on the fundamental need for "an unceasing effort of sociability" (1986: 250) for the reproduction of social capital in its many forms.

In neoclassical theory, markets as institutional settings are epitomized by impersonal, arm's length, spot transactions. Firms, in contrast, provide many opportunities for sustained interaction, conversations, and sociability—both by design and by accident. Formal organizations explicitly are designed to bring members together in order to undertake their primary task, to supervise activities, and to coordinate their activities, particularly in contexts requiring mutual adjustment (Mintzberg, 1979; Thompson, 1967), change, and innovation (Burns & Stalker, 1961; Galbraith, 1973). Through copresence (Giddens, 1984), colocation (Fairtlough, 1994), and the creation of such processes as routine choice opportunities (March & Olsen, 1976), organizations also create a myriad of contexts and occasions for the more-or-less planned coming together of people and their ideas. Finally, the literature is replete with evidence that organizational life is characterized by a substantial amount of conversation: in meetings, conferences, and social events that fill the everyday life of workers and managers (Mintzberg, 1973; Prescott & Visscher, 1980; Roy, 1960). Together, these can be viewed as collective investment strategies for the institutional creation and maintenance of dense networks of social relationships and for the resources embedded within, available through, and derived from such networks of relationships. Alternatively, these meetings and social events provide the unplanned and unstructured opportunities for the accidental coming together of ideas that may lead to the serendipitous development of new intellectual capital.

Closure and the development of social capital. Finally, there is much evidence that closure is a feature of social relationships that is conducive to the development of high levels of relational and cognitive social capital. Strong communities—the epitome of systems of dense social capital—have "identities that separate and a sense of sociological boundary that distinguishes members from nonmembers" (Etzioni, 1996: 9; see also Bourdieu, 1986). The development of norms, identity, and trust has been shown to be facilitated by network closure (Coleman, 1990; Ibarra, 1992), and the development of unique codes and language is assisted by the existence of community separation (Boland & Tenkasi, 1995). Formal organizations, by definition, imply a measure of closure through the creation of explicit legal, financial, and social boundaries (Kogut & Zander, 1996). Markets, in contrast, represent open networks that benefit from the freedom offered to individual agents but that have less access to the relational and cognitive facets of social capital.

The Coevolution of Social and Intellectual Capital Underpins Organizational Advantage

Our main argument thus far has been that social capital is influential in the development of new intellectual capital and that organizations are institutional settings conducive to the development of social capital. We have noted the significant and growing body of work that indicates organizations have some particular capabilities for creating and sharing knowledge, giving them their distinctive advantage over other institutional arrangements, such as markets. We now pull the strands of our analysis together by proposing that it is the interaction between social and intellectual capital that underpins organizational advantage.

Although our primary aim has been to suggest that social capital influences the development of intellectual capital, we recognize that the pattern of influence may be in the other direction. The view that shared knowledge forms the basis from which social order and interaction flow is a central theme in sociology, exemplified in the work of Berger and Luckman (1966) and Schutz (1970). Within organizational analysis, authors long have suggested that the firm's particular knowledge about how activities are to be coordinated underpins its capability to develop and operate as a social system (Kogut & Zander, 1992, 1996; March & Simon, 1958; Penrose, 1959; Thompson, 1967). We represent the influence of intellectual capital on social capital as a feedback relationship in Figure 1. More important, however, we believe that it is the coevolution of social and intellectual capital that is of particular significance in explaining the source of organizational advantage.

Earlier in the article we noted the dialectical process by which social capital is both created and sustained through exchange and, in turn, enables such exchange to take place. As Berger and Luckman observe,

> The relationship between man, the producer, and the social world, his product, is and remains a dialectical one. That is, man (not, of course, in isolation but in his collectivities) and his social world interact with each other. The product acts back upon the producer (1966: 78; see also Bourdieu, 1977).

Giddens, too, examines the self-reproducing quality of social practices, noting that social activities are recursive—that is, "continually recreated by actors via the very means by which they express themselves as actors" (1984: 2). For Giddens this implies a concept of human knowledgeability that underpins all social practice.

The discussion of knowledgeability that ensues suggests the reciprocal quality of the relationship between social and intellectual capital and is consistent with our emphasis on the social embeddedness of both forms of capital. Since both social and intellectual capital develop within and derive their significance from the social activities and social relationships within which they are located, their evolutionary paths are likely to be highly interrelated.

Consideration of the reciprocal relationship between knowledge and its social context permeates the sociology of science (Zuckerman, 1988). Mullins (1973), for example, describes the joint evolution of social interaction, communication networks, and the elaboration of scientific ideas and notes that cognitive development is facilitated by the thickening of communication networks, which then leads to their further elaboration. Research within organizations offers many parallel examples (Burns & Stalker, 1961; Leonard-Barton, 1995; Weick, 1995; Zucker et al., 1996). For instance, in a study of change in health administration, Nahapiet (1988) describes, in detail, how a new accounting calculus both shaped and was, in turn, shaped by the social context in which it was embedded.

Discussing Orr's (1990) influential ethnography of service technicians, Brown and Duguid (1991) provide further insight into this coevolution of knowledge and relationships. Specifically, they describe how technicians achieve two distinct forms of social construction. First, through their work, and "through cultivating connections throughout the corporation" (Brown & Duguid, 1991: 67), technicians engage in the ongoing creation and negotiation of shared understanding—an understanding that represents their view of the world, that is their collective knowledge. The second form of social construction, which, according to Brown and Duguid, is also important but less evident, is the creation of a shared identity. "In telling these stories an individual rep contributes to the construction and development of his or her own identity as a rep and reciprocally to the construction and development of the community of reps in which he or she works" (Brown & Duguid, 1991: 68). In an analysis reminiscent of Weick and Roberts'

(1993) discussion of collective mind—itself located in processes of interrelating—these authors highlight the mutually dependent and interactive ways in which social and intellectual capital coevolve.

We suggest that this emphasis on the coevolution of the two forms of capital provides a dynamic perspective on the development of organizational advantage. Spender (1996) argues that it is the collective forms of knowledge that are strategically important, and many authors claim that it is these forms of shared tacit knowledge that underpin what we have termed the "organizational advantage." It is these collective forms of knowledge, we believe, that are particularly tightly interconnected with the relational and cognitive forms of social capital with which, we have argued, organizations are relatively well endowed. Organizations, thus, build and retain their advantage through the dynamic and complex interrelationships between social and intellectual capital.

DISCUSSION AND IMPLICATIONS

The view of organizational advantage we present here is fundamentally a social one. We see the roots of intellectual capital deeply embedded in social relations and in the structure of these relations. Such a view contrasts strongly with the relatively individualistic and acontextual perspectives that characterize more transactional approaches for explaining the existence and contribution of firms. Although we have identified several ways in which facets of social capital may, indeed, reduce transaction costs by economizing on information and coordination costs, we believe that our theoretical propositions go much farther in identifying those factors underpinning dynamic efficiency and growth.

In so doing, we note that our arguments are consistent with resource-based theory in so far as that theory highlights the competitive advantage of firms as based in their unique constellation of resources: physical, human, and organizational (Barney, 1991). Those resources found to be especially valuable are those that are rare, durable, imperfectly imitable, and nontradable (Barney, 1991; Dierickx & Cool, 1989). Among the factors making a resource nonimitable are tacitness (Reed & DeFillippi, 1990), causal ambiguity (Lippman & Rumelt, 1992), time compression diseconomies, and interconnectedness (Dierickx & Cool, 1989), as well as path dependence and social complexity (Barney, 1991; Reed & DeFillippi, 1990). All of these are features integral to the facets of social capital and to its interrelationships with intellectual capital. Thus, we suggest that differences between firms, including differences in performance, may represent differences in their ability to create and exploit social capital. Moreover, at least regarding the development of intellectual capital, those firms developing particular configurations of social capital are likely to be more successful. Evidence for this suggestion is found in studies of knowledge-intensive firms that have been shown to invest heavily in resources, including physical facilities, to encourage the development of strong personal and team relationships, high levels of personal trust, norm-based control, and strong connections across porous boundaries (Alvesson, 1991, 1992; Starbuck, 1992, 1994; Van Maanen & Kunda, 1989). The framework developed here will provide a useful basis for further testing these propositions about firm differences.

In developing our thesis, we have noted several limitations in our approach. First, regarding social capital, our analysis has concentrated primarily, although not exclusively, on how social capital assists the creation of new intellectual capital. However, we recognize that social capital also may have significant negative consequences. For example, certain norms may be antagonistic rather than supportive of cooperation, exchange, and change. Moreover, organizations high in social capital may become ossified through their relatively restricted access to diverse sources of ideas and information. But the general point underpinning our analysis is that institutions facilitate some forms of exchange and combination but limit their scope (Ghoshal & Moran, 1996); thus, effective organization requires a constant balancing of potentially opposing forces (Boland & Tenkasi, 1995; Etzioni, 1996; Leonard-Barton, 1995).

Furthermore, the creation and maintenance of some forms of social capital, particularly the relational and cognitive dimensions, are costly. The development of social capital thus represents a significant investment—conscious or unconscious—and, like all such investments, requires an understanding of the relative costs and benefits likely to be derived from such in-

vestment. These are likely to be influenced by the size and complexity of the social structure in which social capital is embedded, since the costs of maintaining linkages usually increase exponentially as a social network increases in size. Although technology may make it possible to stretch the conventional limits of networks of social capital, our arguments about the significance of interdependence, interaction, and closure suggest that there still remain important upper limits. Indeed, adding people to the network may serve to reduce certain forms of social capital, such as personal obligations or high status.

Finally, although we have responded to Putnam's challenge to progress our understanding of the various dimensions and facets of social capital, in our analysis we largely have considered these dimensions separately. Of great interest is the interrelationships among the three dimensions and, indeed, among the various facets within each dimension. We regard this as an important focus for future research.

Second, regarding intellectual capital, we have concentrated on just one aspect: its creation, rather than its diffusion and exploitation. A fuller understanding of knowledge as the source of organizational advantage will require an examination of the ways in which social capital may influence these important and complementary processes. We believe that the framework we develop here provides a sound basis for such examination. Also, we have focused very much on the types and processes of intellectual capital rather than its content—that is, the know-how rather than the know-what. Clearly, the specific knowledge content, including its quality, are important factors to be considered when attempting to gain an understanding of the effective creation of intellectual capital.

Third, our exploration of organizational advantage began with the proposition that knowledge and knowledge processes are major foundations of such advantage. However, our discussion of the coevolution of social and intellectual capital potentially enriches this understanding of organizational advantage in important ways. For instance, our analysis elucidates resource creation within networks, concentrating particularly on the interrelated development of social and intellectual capital as key resources. As such, it is suggestive of the processes whereby organizational networks create value and that, perhaps, underpin their advantage. More generally, we believe that a detailed understanding of social capital itself may be an important element in extending our understanding of the significant, but as yet inadequately understood, concept of organizational advantage. However, we could not explore such issues in this article, and we recognize that much work still needs to be done to elaborate both the concept of organizational advantage and the significance of social capital therein.

Fourth and finally, we have developed our thesis about the relationships between social and intellectual capital in the context of exploring and explaining the source of organizational advantage—that is, we have made the argument regarding these interrelationships within one type of boundary: the firm. It is our view that structures of social capital fundamentally are relatively bounded, and these boundaries typically come from some external physical or social basis for grouping, such as a geographic community (Jacobs, 1965; Putnam, 1993), the family (Coleman, 1988; Loury, 1977), religion (Coleman, 1990), or class (Bourdieu, 1977). As we noted earlier, social capital is typically a by-product of other activities; thus, its development requires a "focus": an entity around which joint activities are organized (Nohria, 1992) and which forms the basis for a level of network closure.

However, our analysis of the conditions conducive to the development of social capital suggests that wherever institutions operate in contexts characterized by enduring relationships—with relatively high levels of interdependence, interaction, and closure—we would expect to see these institutions emerge with relatively dense configurations of social capital. We have argued that these conditions typically occur more within organizations than in neoclassical markets, but they may also be found in particular forms of interorganizational relationship (Baker, 1990; Hakansson & Snehota, 1995; Larson, 1992; Powell, 1996; Ring & Van de Ven, 1992, 1994). Therefore, we see the potential to extend our fundamental analysis to other institutional settings, including those existing between organizations.

Bourdieu (1993) argues that, by making the concept of social capital explicit, it is possible to focus rigorously on the intuitively important concept of "connections" and to establish the

basis for research designed to identify the processes for social capital's creation, accumulation, dissipation, and consequence. The concept also provides a theoretical justification for the study of many social practices, such as the "social round," popularly recognized as important but frequently ignored in formal research. In particular, for Bourdieu, systematic analysis of the volume and structure of social capital enables examination of the relationships between social and other forms of capital.

In identifying the interrelationship between social and intellectual capital, we have made a similar argument. That is, by defining the concepts and developing clear propositions about their interrelationships, we have established an agenda for future research that both complements and extends existing knowledge-based theories of the firm. Moreover, we suggest that the model outlined here also provides the foundation of a viable framework to guide the investments—individual or collective—of practitioners seeking to build or extend their network of connections and, therefore, their stocks of social capital. As Bourdieu observes, "[T]he existence of connections is not a natural given, or even a social given . . . it is the product of an endless effort at institution" (1986: 249).

REFERENCES

Alvesson, M. 1991. Corporate culture and corporatism at the company level: A case study. ***Economic and Industrial Democracy,*** 12: 347–367.

Alvesson, M. 1992. Leadership as a social integrative action. A study of a computer consultancy company. ***Organization Studies,*** 13: 185–209.

Anderson, J. R. 1981. ***Cognitive skills and their acquisition.*** Hillsdale, NJ: Lawrence Erlbaum Associates.

Argyris, C., & Schon, D. 1978. ***Organizational learning: A theory of action perspective.*** Reading, MA: Addison Wesley.

Arrow, K. 1974. ***The limits of organization.*** New York: Norton.

Ashforth, B. E., & Mael, F. A. 1995. ***Organizational identity and strategy as a context for the individual.*** Paper presented at the Conference on the Embeddedness of Strategy, University of Michigan, Ann Arbor.

Axelrod, R. 1984. ***The evolution of co-operation.*** New York: Basic Books.

Baker, W. 1990. Market networks and corporate behavior. ***American Journal of Sociology,*** 96: 589–625.

Barnard, C. I. 1938. ***The functions of the executive.*** Cambridge, MA: Harvard University Press.

Barney, J. 1991. Firm resources and sustained competitive advantage. ***Journal of Management,*** 17: 99–120.

Bateson, G. 1972. ***Steps to an ecology of mind.*** New York: Ballantine Books.

Berger, P. L., & Luckman, T. 1966. ***The social construction of reality.*** London: Penguin Press.

Boisot, M. 1995. ***Information space: A framework for learning in organizations, institutions and culture.*** London: Routledge.

Boissevain, J. 1974. ***Friends of friends.*** Oxford: Basil Blackwell.

Boland, R. J., & Tenkasi, R. V. 1995. Perspective making and perspective taking in communities of knowing. ***Organization Science,*** 6: 350–372.

Bourdieu, P. 1977. ***Outline of a theory of practice.*** Cambridge, England: Cambridge University Press.

Bourdieu, P. 1986. The forms of capital. In J. G. Richardson (Ed.), ***Handbook of theory and research for the sociology of education:*** 241–258. New York: Greenwood.

Bourdieu, P. 1993. ***Sociology in question.*** London: Sage.

Brown, J. S., & Duguid, P. 1991. Organizational learning and communities-of-practice: Toward a unified view of working, learning and innovation. ***Organization Science,*** 2: 40–57.

Burns, T., & Stalker, G. 1961. ***The management of innovation.*** London: Tavistock.

Bruner, J. S. 1990. ***Acts of meaning.*** Cambridge, MA: Harvard University Press.

Burt, R. S. 1992. ***Structural holes: The social structure of competition.*** Cambridge, MA: Harvard University Press.

Campbell, D. T. 1969. Ethnocentricism of disciplines and the fish-scale model of omniscience. In M. Sherif & C. Sherif (Eds.), ***Interdisciplinary relationships in the social sciences:*** 328–348. Chicago: Aldine.

Cheal, D. 1988. ***The gift economy.*** London: Routledge.

Child, J., & Rodrigues, S. 1996. The role of social identity in the international transfer of knowledge through joint ventures. In S. R. Clegg & G. Palmer (Eds.), ***The politics of management knowledge:*** 46–68. London: Sage.

Cicourel, A. V. 1973. ***Cognitive sociology.*** Harmondsworth, England: Penguin Books.

Clark, B. R. 1972. The occupational saga in higher education. ***Administrative Science Quarterly,*** 17: 178–184.

Cohen, W. M., & Levinthal, D. A. 1990. Absorptive capacity: A new perspective on learning and innovation. ***Administrative Science Quarterly,*** 35: 128–152.

Coleman, J. S. 1988. Social capital in the creation of human capital. ***American Journal of Sociology,*** 94: S95–S120.

Coleman, J. S. 1990. ***Foundations of social theory.*** Cambridge, MA: Belknap Press of Harvard University Press.

Coleman, J. S. 1993. Properties of rational organizations. In S. M. Lindenberg & H. Schreuder (Eds.), ***Interdisciplinary perspectives on organization studies:*** 79–90. Oxford, England: Pergamon Press.

Conner, K. R., & Prahalad, C. K. 1996. A resource-based theory of the firm: Knowledge versus opportunism. ***Organization Science,*** 7: 477–501.

Cooke, S. D. N., & Yanow, D. 1993. Culture and organizational learning. ***Journal of Management Inquiry,*** 2: 373–390.

Crane, D. 1972. ***Invisible colleges: Diffusion of knowledge in scientific communities.*** Chicago: University of Chicago Press.

D'Aveni, R. A., & Kesner, I. 1993. Top managerial prestige, power and tender offer response: A study of elite social networks and target firm cooperation during takeovers. ***Organization Science,*** 4: 123–151.

Dierickx, I., & Cool, K. 1989. Asset stock accumulation and sustainability of competitive advantage. ***Management Science,*** 35: 1504–1511.

Dougherty, D. 1996. Interpretive barriers to successful product innovation in large firms. In J. R. Meindl, C. Stubbart, & J. F. Porac (Eds.), ***Cognition within and between organizations:*** 307–340. Thousand Oaks, CA: Sage.

Durkheim, E. 1951. (First published in 1897.) ***Suicide: A study in sociology.*** New York: Free Press.

Etzioni, A. 1996. The responsive community: A communitarian perspective. ***American Sociological Review,*** 61: 1–11.

Fairtlough, G. 1994. ***Creative compartments: A design for future organization.*** London: Adamantine Press.

Follet, M. P. 1949. Coordination. In L. Urwick (Ed.), ***Freedom and co-ordination: Lectures in business organization:*** 61–76. London: Management Publications Trust.

Fukuyama, F. 1995. ***Trust: Social virtues and the creation of prosperity.*** London: Hamish Hamilton.

Galbraith, J. 1973. ***Designing complex organizations.*** Reading, MA: Addison-Wesley.

Gambetta, D. (Ed.). 1988. ***Trust: Making and breaking cooperative relations.*** Oxford, England: Basil Blackwell.

Ghoshal, S., & Moran, P. 1996. Bad for practice: A critique of the transaction cost theory. ***Academy of Management Review,*** 21: 13–47.

Giddens, A. 1984. ***The constitution of society: Outline of a theory of structuration.*** Cambridge, England: Polity Press.

Giddens, A. 1990. ***The consequences of modernity.*** Cambridge, England: Polity Press.

Giddens, A., & Turner, J. (Eds.). 1987. ***Social theory today.*** Cambridge, England: Polity Press.

Gowler, D., & Legge, K. 1982. The integration of disciplinary perspectives and levels of analysis in problem-oriented research. In N. Nicholson & T. Wall (Eds.), ***The theory and practice of organizational psychology:*** 69–101. London: Academic Press.

Granovetter, M. S. 1973. The strength of weak ties. ***American Journal of Sociology,*** 78: 1360–1380.

Granovetter, M. S. 1985. Economic action and social structure: The problem of embeddedness. ***American Journal of Sociology,*** 91: 481–510.

Granovetter, M. S. 1992. Problems of explanation in economic sociology. In N. Nohria & R. Eccles (Eds.), ***Networks and organizations: Structure, form and action:*** 25–56. Boston: Harvard Business School Press.

Grant, R. M. 1996. Knowledge, strategy and the theory of the firm. ***Strategic Management Journal,*** 17(S2): 109–122.

Hakansson, H., & Snehota, I. 1995. ***Developing relationships in business networks.*** London: Routledge.

Hamel, G. 1991. Competition for competence in inter-partner learning within international strategic alliances. ***Strategic Management Journal,*** 12: 83–103.

Hansen, M. 1996. ***Using the wisdom of others: Searching for and transferring knowledge.*** Presentation at the London Business School.

Hedberg, B. 1981. How organizations learn and unlearn. In P. C. Nystrom & W. H. Starbuck (Eds.), ***Handbook of organizational design,*** vol. 1: 3–27. Oxford, England: Oxford University Press.

Ibarra, H. 1992. Structural alignments, individual strategies, and managerial action: Elements toward a network theory of getting things done. In N. Nohria & R. G. Eccles (Eds.), ***Networks and organizations: Structure, form and action:*** 165–188. Boston: Harvard Business School Press.

Jacobs, J. 1965. ***The death and life of great American cities.*** London: Penguin Books.

James, W. 1950. ***The principles of psychology,*** vols. I and II. New York: Dover Publications.

Janis, I. L. 1982. ***Groupthink: Psychological studies of policy decisions and fiascos.*** Boston: Houghton Mifflin.

Knez, M., & Camerer, C. 1994. Creating expectational assets in the laboratory: Coordination in "weakest link" games. ***Strategic Management Journal,*** 15: 101–119.

Kogut, B., & Zander, U. 1992. Knowledge of the firm, combinative capabilities and the replication of technology. ***Organization Science,*** 3: 383–397.

Kogut, B., & Zander, U. 1993. Knowledge of the firm and the evolutionary theory of the multinational corporation. ***Journal of International Business Studies,*** 24: 625–645.

Kogut, B., & Zander, U. 1995. Knowledge, market failure and the multinational enterprise: A reply. ***Journal of International Business Studies,*** 26: 417–426.

Kogut, B., & Zander, U. 1996. What do firms do? Coordination, identity and learning. ***Organization Science,*** 7: 502–518.

Krackhardt, D. 1989. ***Graph theoretical dimensions of informal organization.*** Paper presented at the annual meeting of the Academy of Management, Washington, DC.

Krackhardt, D. 1992. The strength of strong ties. In N. Nohria & R. G. Eccles (Eds.), ***Networks and organizations: Structure, form and action:*** 216–239. Boston: Harvard Business School Press.

Kramer, R. M., Brewer, M. B., & Hanna, B. A. 1996. Collective trust and collective action: The decision to trust as a social decision. In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations. Frontiers of theory and research:*** 357–389. Thousand Oaks, CA: Sage.

Kramer, R. M., & Goldman, L. 1995. Helping the group or helping yourself? Social motives and group identity in resource dilemmas. In D. A. Schroeder (Ed.), ***Social dilemmas:*** 49–68. New York: Praeger.

Kuhn, T. S. 1970. ***The structure of scientific revolutions*** (2nd ed.). Chicago: University of Chicago Press.

Larson, A. 1992. Network dyads in entrepreneurial settings: A study of the governance of exchange relations. ***Administrative Science Quarterly,*** 37: 76–104.

Lawler, E. J., & Yoon, J. 1996. Commitment in exchange relations: Test of a theory of relational cohesion. ***American Sociological Review,*** 61: 89–108.

Lawrence, P. R., & Lorsch, J. W. 1967. ***Organization and environment: Managing differentiation and integration.*** Boston: Division of Research, Graduate School of Business Administration, Harvard University.

Leonard-Barton, D. 1995. ***Wellsprings of knowledge: Building and sustaining the sources of innovation.*** Boston: Harvard Business School Press.

Lewicki, R. J., & Bunker, B. B. 1996. Developing and maintaining trust in work relationships. In R. M. Kramer & T. M. Tyler (Eds.), ***Trust in organizations: Frontiers of theory and research:*** 114–139. Thousand Oaks, CA: Sage.

Lindenberg, S. 1996. Constitutionalism versus relationalism: Two views of rational choice sociology. In J. Clark (Ed.), ***James S. Coleman:*** 229–311. London: Falmer Press.

Lippman, S. A., & Rumelt, R. P. 1982. Uncertain imitability: An analysis of interfirm differences in efficiency under competition. ***Bell Journal of Economics,*** 13: 418–438.

Loasby, B. 1991. ***Equilibrium and evolution: An exploration of connecting principles in economics.*** Manchester, England: Manchester University Press.

Loury, G. C. 1977. A dynamic theory of racial income differences. In P. A. Wallace & A. M. LaMonde (Eds.), ***Women, minorities and employment discrimination:*** 153–186. Lexington, MA: Lexington Books.

Loury, G. 1987. Why should we care about group inequality? ***Social Philosophy & Policy,*** 5: 249–271.

Luhmann, N. 1979. ***Trust and power.*** Chichester, England: Wiley.

March, J. G., & Olsen, J. P. 1976. ***Ambiguity and choice in organizations.*** Bergen: Universitetsforlaget.

March, J. G., & Simon, H. A. 1958. ***Organizations.*** New York: Wiley.

Marshall, A. 1965. ***Principles of economics.*** London: Macmillan.

Masten, S. E., Meehan, J. W., & Snyder, E. A. 1991. The costs of organization. ***Journal of Law Economics and Organization,*** 7: 1–25.

Mauss, M. 1954. ***The gift.*** New York: Free Press.

Merton, R. K. 1968. (First published in 1948.) ***Social theory and social structure.*** New York: Free Press.

Mintzberg, H. 1973. ***The nature of managerial work.*** New York: Harper & Row.

Mintzberg, H. 1979. ***The structuring of organizations.*** Englewood Cliffs, NJ: Prentice-Hall.

Mishira, A. K. 1996. Organizational responses to crisis. The centrality of trust. In R. M. Kramer & T. M. Tyler (Eds.), ***Trust in organizations:*** 261–287. Thousand Oaks, CA: Sage.

Misztal, B. 1996. ***Trust in modern societies.*** Cambridge, England: Polity Press.

Monteverde, K. 1995. ***Applying resource-based strategic analysis: Making the model more accessible to practitioners.*** Working Paper No. 95-1, Department of Management and Information Systems, St. Joseph's University, Philadelphia.

Moran, P., & Ghoshal, S. 1996. Value creation by firms. In J. B. Keys & L. N. Dosier (Eds.), ***Academy of Management Best Paper Proceedings:*** 41–45.

Mullins, N. 1973. ***Theories and theory groups in contemporary American sociology.*** New York: Harper & Row.

Nahapiet, J. E. 1988. The rhetoric and reality of an accounting change: A study of resource allocation in the NHS. ***Accounting, Organizations and Society,*** 13: 333–358.

Nahapiet, J. E. 1996. ***Managing relationships with global clients: Value creation through cross-border networks.*** Paper presented at the 16th Annual Conference of the Strategic Management Society, Phoenix, AZ.

Nelson, R. R., & Winter, S. G. 1982. ***An evolutionary theory of economic change.*** Boston: Belknap Press of Harvard University Press.

Nisbet, R. A. 1969. ***Social change and history: Aspects of the western theory of development.*** London: Oxford University Press.

Nohria, N. 1992. Information and search in the creation of new business ventures. In N. Nohria & R. G. Eccles (Eds.), ***Networks and organizations: Structure, form and action:*** 240–261. Boston: Harvard Business School Press.

Nohria, N., & Eccles, R. G. 1992. Face-to-face: Making network organizations work. In N. Nohria and R. G. Eccles (Eds.), ***Networks and organizations: Structure, form and action.*** Boston: 288–308. Harvard Business School Press.

Nonaka, I., & Takeuchi, H. 1995. ***The knowledge creating company.*** New York: Oxford University Press.

North, D. C. 1990. ***Institutions, institutional change and economic performance.*** Cambridge, England: Cambridge University Press.

Orr, J. 1990. Sharing knowledge, celebrating identity: Community memory in a service culture. In D. Middleton & D. Edwards (Eds.), ***Collective remembering:*** 169–189. London: Sage.

Ouchi, W. G. 1981. ***Theory Z: How American business can meet the Japanese challenge.*** Reading, MA: Addison-Wesley.

Pascale, R. 1990. ***Managing on the edge: How the smartest companies use conflict to stay ahead.*** New York: Simon and Schuster.

Penrose, E. 1959. ***The theory of the growth of the firm.*** Oxford, England: Basil Blackwell.

Perrow, C. 1984. ***Normal accidents.*** New York: Basic Books.

Pettigrew, A. M. 1973. ***The politics of organizational decision making.*** London: Tavistock.

Pitelis, C. 1993. Transaction costs, markets and hierarchies: The issues. In C. Pitelis (Ed.), ***Transaction costs, markets and hierarchies:*** 7–19. Oxford, England: Basil Blackwell.

Polanyi, M. 1962. (First published in 1958.) ***Personal knowledge: Towards a post-critical philosophy.*** London: Routledge and Kegan Paul.

Polanyi, M. 1967. (First published in 1966.) ***The tacit dimension.*** London: Routledge and Kegan Paul.

Pondy, L. R., & Mitroff, I. I. 1979. Beyond open systems models of organizations. In B M. Staw (Ed.), ***Research in Organization Behavior,*** vol. 1: 3–39. Greenwich, CT: JAI Press.

Powell, W. W. 1996. Trust based form of governance. In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations: Frontiers of theory and research:*** 51–67. Thousand Oaks, CA: Sage.

Prahalad, C. K., & Hamel, G. 1990. The core competence of the organization. ***Harvard Business Review,*** 68: 79–91.

Prescott, E. C., & Visscher, M. 1980. Organization capital. ***Journal of Political Economy,*** 88: 446–461.

Putnam, R. D. 1993. The prosperous community: Social capital and public life. ***American Prospect,*** 13: 35–42.

Putnam, R. D. 1995. Bowling alone: America's declining social capital. ***Journal of Democracy,*** 6: 65–78.

Quinn, J. B. 1992. ***Intelligent enterprise.*** New York: Free Press.

Quinn, J. B., Anderson, P., & Finkelstein, S. 1996. Leveraging intellect. ***Academy of Management Executive,*** 10: 7–27.

Reed, R., & DeFillippi, R. J. 1990. Causal ambiguity, barriers to imitation and sustainable competitive advantage. ***Academy of Management Review,*** 15: 88–102.

Ring, P. S., & Van de Ven, A. H. 1992. Structuring cooperative relationships between organizations. ***Strategic Management Journal,*** 13: 483–498.

Ring, P. S., & Van de Ven, A. H. 1994. Developmental processes of cooperative interorganizational relationships. ***Academy of Management Review,*** 19: 90–118.

Roy, D. F. 1960. Banana time: Job satisfaction and informal interaction. ***Human Organization,*** 18: 156–168.

Ryle, G. 1949. ***The concept of mind.*** London: Hutchinson.

Sako, M. 1992. ***Prices, quality and trust: Inter-firm relations in Britain and Japan.*** New York: Cambridge University Press.

Schumpeter, J. A. 1934. (Reprinted in 1962.) ***The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle.*** Cambridge, MA: Harvard University Press.

Schutz, A. 1970. ***On phenomenology and social relations.*** Chicago: University of Chicago Press.

Scott, J. 1991. ***Social network analysis: A handbook.*** London: Sage.

Simon, H. A. 1991a. Bounded rationality and organizational learning. ***Organization Science,*** 2: 125–134.

Simon, H. A. 1991b. Organizations and markets. ***Journal of Economic Perspectives,*** 5(2): 25–44.

Simon, L., & Davies, G. 1996. A contextual approach to management learning. ***Organization Studies,*** 17: 269–289.

Slocum, K. R. 1994. Foreward. In G. von Krogh & J. Roos (Eds.), ***Organizational epistemology:*** ix. Basingstoke, England: Macmillan.

Smith, A. 1986. (First published in 1776.) ***The wealth of nations,*** books I–III. London: Penguin Books.

Spender, J-C. 1994. Knowing, managing and learning: A dynamic managerial epistemology. ***Management Learning,*** 25: 387–412.

Spender, J-C. 1996. Making knowledge the basis of a dynamic theory of the firm. ***Strategic Management Journal,*** 17(S2): 45–62.

Starbuck, W. H. 1992. Learning by knowledge intensive firms. ***Journal of Management Studies,*** 29: 713–740.

Starbuck, W. H. 1994. Keeping a butterfly and elephant in a house of cards: The elements of exceptional success. ***Journal of Management Studies,*** 30: 885–922.

Szulanski, G. 1996. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. ***Strategic Management Journal,*** 17(S2): 27–44.

Tajfel, H. (Ed.). 1982. ***Social relations and intergroup relations.*** Cambridge, MA: Cambridge University Press.

Teece, D. J. 1988. Technological change and the nature of the firm. In G. Dosi, C. Freeman, R. Nelson, G. Silverberg, & L. Soete (Eds.), ***Technical change and economic theory:*** 256–281. New York: Pinter.

Thompson, J. D. 1967. ***Organizations in action.*** New York: McGraw-Hill.

Tichy, N. M., Tushman, M. L., & Fombrun, C. 1979. Social network analysis for organizations. ***Academy of Management Review,*** 4: 507–519.

Turner, B. A. 1976. The organizational and interorganizational development of disasters. ***Administrative Science Quarterly,*** 21: 378–397.

Tyler, T. R., & Kramer, R. M. 1996. Whither trust? In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations: Frontiers of theory and research:*** 1–15. Thousand Oaks, CA: Sage.

Van Maanen, J., & Kunda, G. 1989. Real feelings: Emotional expression and organizational culture. ***Research in organizational behavior,*** vol. 11: 43–103. Greenwich, CT: JAI Press.

Walsh, J. P. 1995. Managerial and organizational cognition: Notes from a trip down memory lane. ***Organization Science,*** 6: 280–321.

Wasserman, S., & Faust, K. 1994. ***Social network analysis: Methods and applications.*** Cambridge, England: Cambridge University Press.

Weick, K. E. 1995. ***Sensemaking in organizations.*** London: Sage.

Weick, K. E., & Roberts, K. H. 1993. Collective mind in organizations: Heedful interrelating on flight decks. ***Administrative Science Quarterly,*** 38: 357–381.

Williamson, O. E. 1975. ***Markets and hierarchies: Analysis and antitrust implications.*** New York: Free Press.

Williamson, O. E. 1981. The economics of organization: The transaction cost approach. ***American Journal of Sociology,*** 87: 548–577.

Williamson, O. E. 1985. ***The economic institutions of capitalism.*** New York: Free Press.

Winter, S. G. 1987. Knowledge and competence as strategic assets. In D. J. Teece (Ed.), ***The competitive challenge: Strategy for industrial innovation and renewal:*** 159–184. New York: Harper & Row.

Zajac, E. J., & Olsen, C. P. 1993. From transaction cost to transactional value analysis: Implications for the study of interorganizational strategies. ***Journal of Management Studies,*** 30: 131–146.

Zander, U., & Kogut, B. 1995. Knowledge and the speed of transfer and imitation of organizational capabilities: An empirical test. ***Organization Science,*** 6: 76–92.

Zucker, L. G., Darby, M. R., Brewer, M. B., & Peng, Y. 1996. Collaboration structures and information dilemmas in biotechnology: Organization boundaries as trust production. In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations: Frontiers of theory and research:*** 90–113. Thousand Oaks, CA: Sage.

Zuckerman, H. 1988. The sociology of science. In N. J. Smelser (Ed.), ***Handbook of sociology:*** 511–574. Beverly Hills, CA: Sage.

Janine Nahapiet is a fellow of strategic management at Templeton College, Oxford University, and Director of the Oxford Institute of Strategic and International Management. Her current research focuses on the links between strategy and organization in global firms and on value creation through networks. She has a postgraduate diploma in management from the London School of Economics and a first degree in psychology and sociology from the University of Sheffield, England.

Sumantra Ghoshal received his Ph.D. in international management from MIT's Sloan School of Management and a DBA in business policy from the Harvard Business School. He holds the Robert P. Bauman Chair in Strategic Leadership at the London Business School and is on leave from INSEAD in Fontainebleau, France. His current research focuses on the roles and tasks of managers in large corporations.