



Human Capital Management: A complexity viewpoint

The paper visits the HCM from the viewpoint of complexity science

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HCM architecture, a complexity-based viewpoint:

Theories of knowledge-based competition tend to focus upon internal resources as the source of value creation. The HR architecture (Lepak & Snell, 1999) brought human resource management directly into this forum by developing a model of human capital allocation and management. There has been attempts to take this further and to extend the HR architecture by introducing a framework of relational archetypes (entrepreneurial and cooperative), derived from unique combinations of three core dimensions (cognitive, structural, and affective) that characterizing internal and external relationships of core knowledge employees (Kang, Morris & Snell, 2003). Their research and white paper suggest Entrepreneurial archetypes facilitate value creation from external partnerships while Cooperative archetypes facilitate value creation from internal partnerships, and how these archetypes are managed by a corresponding HR configuration and how they together contribute to value creation by facilitating organisational learning through exploration and exploitation.

As theories of strategic management have shifted toward resource-based and knowledge-based views of the firm, researchers have increasingly looked inward for sources of competitive advantage and value creation. Arguably, the most distinctive and inimitable resources available to firms are its human capital (Hitt, Bierman, Shimizu, and Kichhar, 2001; Wernerfelt, 1984). The people-centric view (Prahalad, 1983: 242) of employees is the foundation of an organisation's core capabilities, and fundamental to the development of its value proposition. In this regard, human resource management (HRM) has become inextricably tied to the larger context of strategic management (cf., Barney & Wright, 1998; Boxall, 1996). Lepak and Snell (1999, 2002), for example, have established a framework that positions human capital as central to both value creation and asset specificity as well as to decisions about HR. The framework, referred to as the R architecture, is used to identify HR practices, employment modes, and employment relationships for different employees based on the degree to which their human capital is strategically valuable and unique. The architectural perspective makes clear that:

1. Employees do not all contribute in the same way based on their human capital;
2. That multiple HR configurations are used within firms for different skill groups depending on the nature of their contribution, and
3. That value creation and strategic positioning are derived from combinations of human capital across these different employees.

Because the HR architectural perspective draws on the resource-based view of the firm, it tends to focus on managing the stocks of knowledge as sources of value creation. However, in the contemporary setting, the flow of knowledge is perhaps equally important. In high velocity environments especially, value creation derives from a firm's ability to acquire and integrate new knowledge as a basis for innovation and continuous adaptation (Grant, 1996; Kogut & Zander, 1992; Nonaka & Takeuchi, 1995; Spender, 1996).

This view resonates, to a degree with the BAT® viewpoint in recognising the importance of human capital, as a key enabler, but do not provide depth to describe how this may be structured, other than the compliance to certain higher-level needs (based roughly upon Maslow's hierarchy), both views thereby recognising that new knowledge and shared knowledge are equally important.



Lepak and Snell (1999) recognises the limits of their HR architecture, concluding that, “research is needed that transcends the individual quadrants of the framework and focuses on balancing the complexity and dynamics of the entire HR architecture.” To do so requires that we shift our attention to organizational relationships as a basis for value creation. While individuals are considered a primary origin for new knowledge, relationships facilitate information sharing, transfer, and knowledge creation. When knowledge is developed through interaction and experience it is typically more tacit, socially complex, path dependent, and strategically valuable. When it is produced and held collectively, knowledge can be embedded in the organisation making it more difficult to imitate or appropriate (Kogut & Zander, 1992; Nonaka & Takeuchi, 1995; Grant, 1996; Spender 1996). While it may seem intuitive that HR systems provide a primary mechanism for enabling employees to effectively exchange, transfer, and combine knowledge, very little research has focused on this particular issue (Leana & Van Buren, 1999; Lepak & Snell, 2002).

However, the paper by Kang, Morris & Snell (2003), extend Lepak and Snell’s model by establishing a relational approach to the HR architecture (see matrix below).

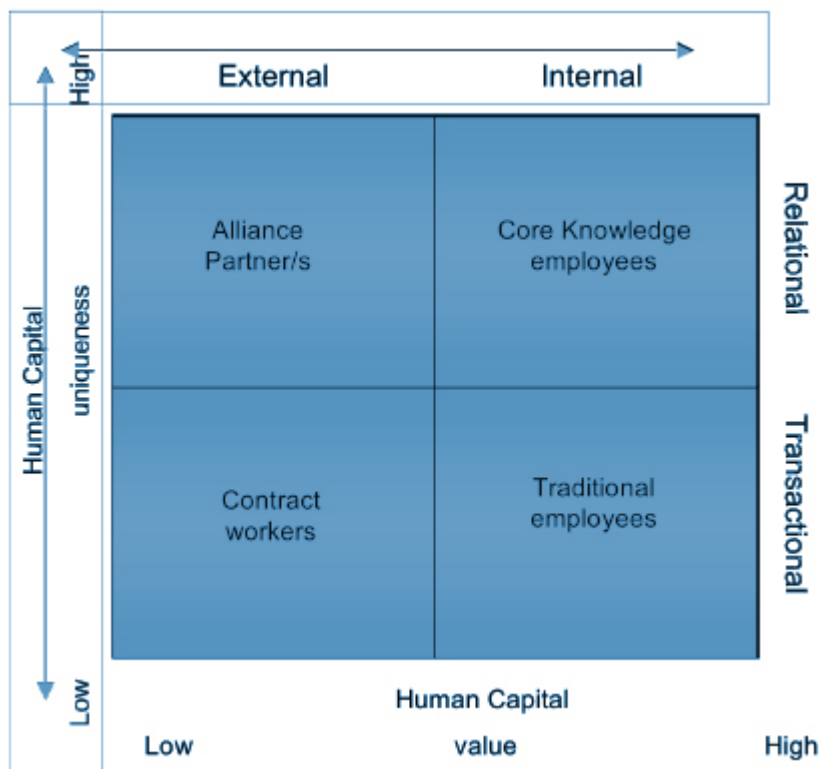


Figure 1: HR Architecture from Lepak & Snell

A number of researchers acknowledge that individuals cannot recognise, understand, and share the unique competencies and resources of one another without some shared context (i.e., knowledge). In this regard, a common cognitive structure among individuals is necessary to create relational value (Nonaka & Takeuchi, 1995; Grant, 1996; Nahapiet & Ghoshal, 1998). Shared cognition literature suggests that team processes for sharing and integrating individual knowledge is supported by the similarity of member’s mental models, i.e., knowledge structures (e.g., Klimoski & Mohammed, 1994; Mohammed & Dumvill, 2001; Cannon-Bowers & Salas, 2001). Cohen and Levinthal (1990) also argue that a social unit’s ability to absorb new external knowledge and resources is determined by its prior related knowledge. Both viewpoints suggesting that shared or common knowledge is a vital component of the



cognitive dimension of HR relationships.

Employment Mode: The Structural Dimension

The second dimension distinguishing quadrants is the employment mode, discussed in terms of the benefits and costs of internal or permanent employment versus external or consultant/contract worker (Davis-Blake & Uzzi, 1993). The employment mode can be viewed in the context of organising structures in which employees are managed. Social network theorists argue that the value derived from relationships is primarily determined by structures of those exchanges, meaning patterns of interconnectedness or interactions among employees (Coleman, 1988; Burt, 1992; Gabbay & Leenders, 1999).

Employment structures affecting opportunities to identify the locus of specific resources, meaning “know-who” and access to those resources, meaning “know-how” (Burt, 1992; Nahapiet & Ghoshal, 1998). Thus, network theories offer a lens for understanding how employment structures contribute to creating relational value.

Employment Relationship: The Affective Dimension

The third dimension of the HR architecture is the employment relationship, relating to the type and amount of trust, obligation, and reciprocity that exists between the employer and employee. According to Rousseau, employment relationships can be viewed in terms of the “psychological contract of individual believers, shaped by the organisation, regarding terms of an exchange agreement between individuals and their organisations” (1995). Following social exchange theory, scholars such as Whitemer (2001) suggest that since relationships develop through repetitive interactions, the motivations, attitudes, and expectations of associated individuals has an enduring effect on the nature of their exchange (Blau, 1964). This implies, the potential value of social connections cannot be cultivated and exploited if individuals are not willing to share their knowledge and resources with one another (Portes, 1998; Nahapiet & Ghoshal, 1998; Gupta & Govindrajana, 2000; Adler & Kwon, 2002), perhaps hinting to the need of change management. This is true even in situations where employees have opportunities to access knowledge and resources through structural connections (BAT®, 2004).

Identifying Relational Archetypes

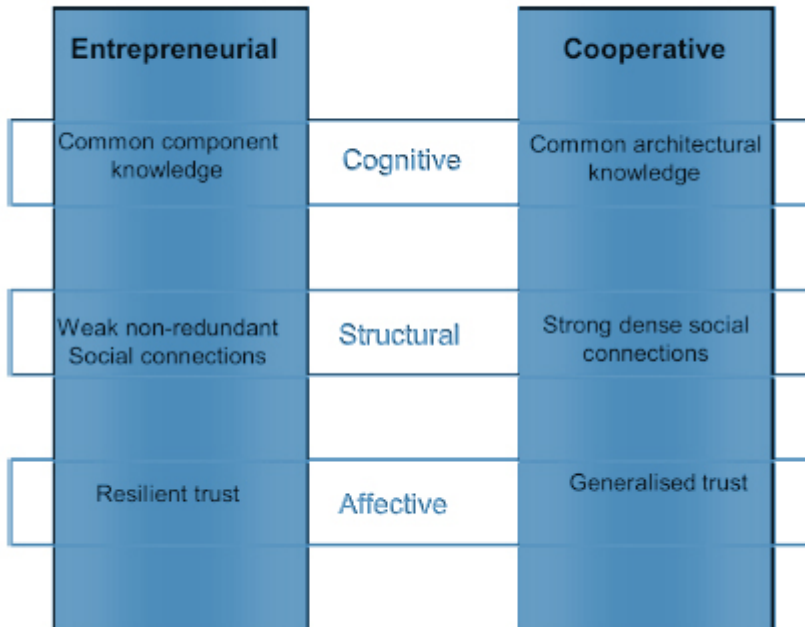
While each of these dimensions that extend the HR architecture (cognitive, structural, affective), is directly linked to the original focus on stock of knowledge, they are grounded in the literature on social interaction. Researchers have proposed relational exchanges build on these dimensions since it affects their opportunities for new knowledge-based resources, their willingness to share those resources, and their ability to understand, interpret, and absorb those resources, respectively; the structural dimension refers to the structure of social relations among individuals; the affective dimension addresses peoples social motives (i.e., trust); cognitive dimensions associate with shared knowledge or cognitive structure providing shared representation, understanding, and systems of meaning among individuals. Consistent with an architectural perspective, these dimensions are increasingly seen as working together.

While the various literatures (e.g., social exchange, social networks, and shared cognition) tend to focus on a particular aspect of social relations, scholars increasingly



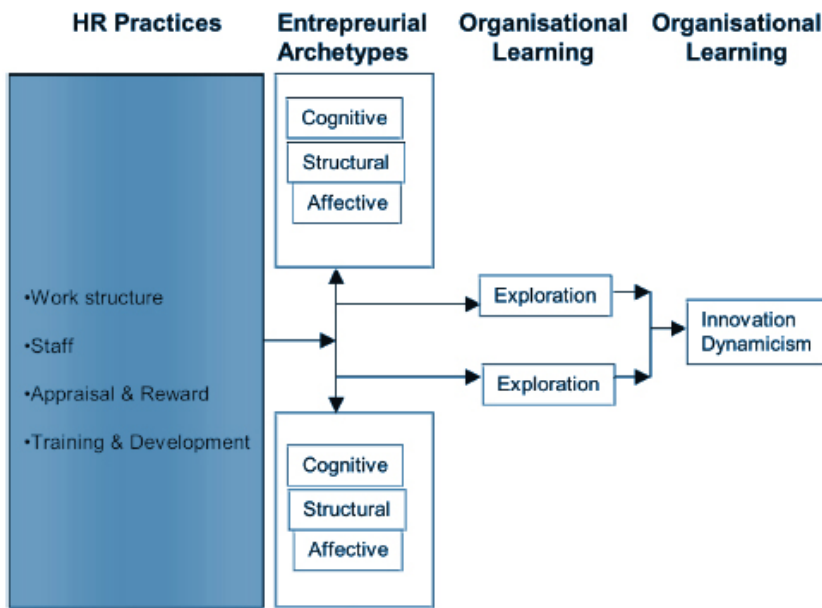
note that social relations are not unidimensional but, multidimensional and each dimension create relational value, playing a distinct role in transferring, combining, and integrating various knowledge and resources distributed over the firm (e.g., Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998; Gupta & Govindarajan, 2000; Yli-Renko, Autio, & Sapienza, 2001; Adler & Kwon, 2002).

Relational Archetypes



Figures 2: Relational archetypes

As shown in Figure 2, two relational archetypes are described, while there are many possible relational combinations within the HR architecture, this focuses upon those that inform the core knowledge area, especially considering that strategy literature consistently notes that continual development of the core is most important for competitiveness (Barney, 1991; Hitt et al., 2001; Pennings, Lee, & van Witteloostuijn, 1999; Peteraf, 1993).



Figures 3: Overall conceptual framework

Figure 3, the value of relational archetypes can be acknowledged through their contributions to organisational learning, innovation, and dyadic capabilities. First, organisational learning refers to the process in which the firm acquires, distributes, and interprets new knowledge (Huber, 1991). Organisational learning expands the firm's knowledge base, its range of potential behaviors, and its capacity for adaptation to provide an important source of sustained competitive advantage (Snell, Youndt, & Wright, 1996).

While organisational learning may originate from various sources (e.g., internal or external) or various entities (individual or organisation), via mutual learning between individuals and organisations (March, 1991). Relational archetypes may affect organisational learning by prescribing the ways in which employees access, share, interpret, and absorb knowledge and resources distributed over the firm to expand individual and organisational knowledge.

Discussion and Conclusion

Human resources contribute to improving the firm's competitive advantage and performance through maximising the value embodied in social relations among employees. This paper makes several important contributions to the strategic human resource management literature: insight into the potential value of human resource relationships by providing a theoretical framework of value creating relationships; The

HR architecture suggests that firms compete with different HR competencies in a market and that they are even likely to develop various forms of HR competencies (Lepak & Snell, 1999); Identify how the firm can facilitate the sharing and combining of knowledge between distinctive HR competencies with relational archetypes; It also contribute to uncovering the multidimensional characteristics of social relations.



References

- Adler, P. S., & Kwon, S.-W. 2002. *Social capital: Prospects for a new concept*. *Academy of Management Review*, 27:17-40.
- Adler, P., & Cole, R. 1993. *Designed for learning: A tale of two auto plants*. *Sloan Management Review*, 34: 85-94.
- Alvarez, S. A., & Busenitz, L. W. 2001. *The entrepreneurship of resource based theory*. *Journal of Management*, 17: 99-120. 755-775.
- Bae, J. & Lawler, J. 2000. *Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy*. *Academy of Management Journal*, 43: 502-517.
- Barney, J. B. 1991. *Firm resources and sustained competitive advantage*. *Journal of Management*, 17: 99-120.
- Barney, J. B., & Wright, P. M. 1998. *On becoming a strategic partner: The role of human resources in gaining competitive advantage*. *Human Resource Management*, 37: 31-46.
- Baum, J. A. C., Li, S. X., & Usher, J. M. 2000. *Making the next move: How experiential and vicarious learning shape the locations of chains' acquisition*. *Administrative Science Quarterly*, 45: 766-801.
- Becker, G. S. 1964. *Human capital*. New York: Columbia University Press.
- Becker, G. S., & Gerhart, B. 1996. *The impact of human resource management on organizational performance: Progress and prospects*. *Academy of Management Journal*, 39: 779-801.
- Bierly, P., & Chakrabarti, A. 1996. *Generic knowledge strategies in the U.S. pharmaceutical industry*. *Strategic Management Journal*, 17(winter special issue): 123-135.
- Blau, P. M. 1964. *Exchange and power in social life*. New York: J. Wiley.
- Borys, B., & Jemison, D. 1989. *Hybrid arrangements as strategic alliances: Theoretical issues in organizational combinations*. *Academy of Management Review*, 14: 234-249.
- Boxall, P. F. 1996. *The strategic HRM debate and the resource-based view of the firm*. *Human Resource Management Journal*, 6:59-75.
- Brass, D. I., & Labianca, G. 1999. *Social capital, social liabilities, and social resources management*. In R. Th. A. J. Leenders, & S. M. Gabbay (Eds.), *Corporate social capital and liability*: 323- 338MA: Kluwer Academic Publishers.
- Burt, R. S. 1992. *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.
- Burt, R. S. 1997. *The contingent value of social capital*. *Administrative Science Quarterly*, 42: 339-365.
- Cannon-Bowers, J. A., & Salas, E. 2001. *Reflections on shared cognition*. *Journal of Organizational Behavior*, 22: 195-202.
- Cicourel, A. V. 1973. *Cognitive sociology*. Harmondsworth, England: Penguin Books.



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: 95-120.

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

Conway, J. M. 1999. *Distinguishing contextual performance from task performance for managerial jobs*. *Journal of Applied Psychology*, 84: 3-13.

Danneels, E. 2002. *The dynamics of product innovation and firm competences*. *Strategic Management Journal*, 23: 1095-1121.

Day, D. V. 2001. *Leadership development: A review in context*. *Leadership Quarterly*, 11: 581-613.

Davis-Blake, A., & Uzzi, B. 1993. *Determinants of employment externalization: A study of temporary workers and independent contractors*. *Administrative Science Quarterly*, 38: 195-223.

Defillippi, R. J., & Arthur, M. B. 1994. *The boundaryless career: A competency-based perspective*. *Journal of Organizational Behavior*, 15: 307-324.

Delaney, J. T., & Huselid, M. A. 1996. *The impact of human resource management practices on perceptions of organizational performance*. *Academy of Management Journal*, 39: 949-969.

Delery, J. E. & Doty, D. H. 1996. *Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions*. *Academy of Management Journal*, 39: 802-835.

Dyer, J. H., & Nobeoka, K. 2000. *Creating and managing a high-performance knowledge-sharing network: The Toyota case*. *Strategic Management Journal*, 21: 345-367.

Edmondson, A. 1999. *Psychological safety and learning behavior in network teams*. *Administrative Science Quarterly*, 44: 350-383.

Etzioni, A. 1961. *A comparative analysis of complex organizations*. New York: Free Press.

Feldman, D. C. 1989. *Socialization, resocialization, and training: Reframing the research agenda*. In I. L. Goldstein (Ed.), *Training and development in organizations*.

San Francisco: Jossey-Bass. Fisher, S. & White, M. A. 2000. *Downsizing in a learning organization: Are there hidden costs?* *Academy of Management Journal*, 25: 244-251.

Gabbay, S. M., & Leenders, R. Th. A. J. 1999. *CSC: The structure of advantage and disadvantage*. In R. Th. A. J. Leenders, & S. M. Gabbay (Eds.), *Corporate social capital and liability: 1-14*. MA: Kluwer Academic Publishers.

Galunic, D. C., & Rodan, S. 1998. *Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation*. *Strategic Management Journal*, 19: 1193- 1201.

Gant, J., Ichniowski, C., & Shaw, K. 2002. *Social capital and organizational change in high-involvement and traditional work organizations*. *Journal of Economics & Management Strategy*, 11: 289-328.



Gargiulo, M., & Benassi, M. 2000. *Trapped in your own net? Network cohesion, structural holes, and the adaptation of social capital.* *Organization Science*, 11: 183-196.

Gittell, J. H. 2000. *Organizing work to support relational co-ordination.* *International Journal of Human Resource Management*, 11(3): 517-539.

Grannovetter, M. S. 1973, *The strength of weak tie,* *American Journal of Sociology*, 78:1360-1380.

Grannovetter, M. S. 1985, *Economic action and social structure: The problem of embeddedness.* *American Journal of Sociology*, 91(3): 481-510.

Grant, R. M. 1996. *Toward a knowledge-based theory of the firm.* *Strategic Management Journal*, 17(S2): 109-122.

Gupta, A. K., & Govindarajan, V. 2000. *Knowledge flows within multinational corporations.* *Strategic Management Journal*, 21: 473-496.

Hamel, G. 1991. *Competition for competence and interpartner learning within international strategic alliances.* *Strategic Management Journal*, 12: 83-103.

Handy, C. 1989. *The age of unreason.* Boston: Harvard Business School Press.

Hansen, M. T. 1999. *The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits.* *Administrative Science Quarterly*, 44: 82-111.

Hargadon, A., & Sutton, R. 1997. *Technology brokering and innovation in a product development firm.* *Administrative Science Quarterly*, 42: 716-749.

Handerson, R. M., & Clark, K. B. 1990. *Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms.* *Administrative Science Quarterly*, 35: 9-30.

Hite, J. M., & Hesterly, W. S. 2001. *The evolution of firm networks: from emergence to early growth of the firm.* *Strategic Management Journal*, 22: 275-286.

Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. 2001. *Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource based perspective.* *Academy of Management Journal*, 44(1): 13-16.

Huber, G. P. 1991. *Organizational learning: The contributing processes and the literatures.* *Organization Science*, 2: 88-115.

Huselid, M.A. 1995. *The impact of human resource management practices on turnover, productivity, and corporate financial performance.* *Academy of Management Journal*, 38: 635-672.

Ichniowski, C. Shaw, K., & Prennushi, G. 1997. *The effects of human resource management practices on productivity: A study of steel finishing lines.* *The American Economic Review*, 87: 291-313.

Jones, G. R., & George, J. M. 1998. *The experience and evolution of trust: Implications for cooperation and teamwork.* *Academy of Management Review*, 23: 531-546.

King, A. W., & Ranft, A. L. 2001. *Capturing knowledge and knowing through improvisation: What managers can learn from the thoracic surgery board certification process.* *Journal of Management*, 27: 255-277.

Klimoski, R., & Mohammed, S. 1994. *Team mental model: Construct or Metaphor?* *Journal of Management*, 20: 403-437.

Kogut, B., & Zander, U. 1992. *Knowledge of the firm, combinative capabilities and the replication of technology.* *Organization Science*, 3: 387-397.

Kogut, B., & Zander, U. 1996. *What firms do? Coordination, identity, and learning.* *Organization Science*, 7(5): 502-518.

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

Lawler, E. E., Morhrman, S. A., & Ledford, G. E. 1995. *Creating high performance organizations: Practices and results of employee involvement and total quality management in Fortune 1000 companies.* San Francisco: Jossey-Bass.

Leana, C. R., & Van Buren, H. J. 1999. *Organizational social capital and employment practices.* *Academy of Management Review*, 24: 538-555.

Leonard-Barton, D. 1992. *Core capabilities and core rigidities: A paradox in managing new product development.* *Strategic Management Journal*, 13(summer special issues): 111-125.

Leonard-Barton, D. 1995. *Wellsprings of knowledge.* MA: Harvard Business School Press.

Lepak, D. P., & Snell, S. A. 1999. *The human resource architecture: Toward a theory of human capital allocation and development.* *Academy of Management Review*, 24: 31-48.

Lepak, D.P., & Snell, S.A. 2002. *Examining the human resource architecture: The relationship among human capital, employment, and human resource configurations,* *Journal of Management*, 28: 517-543.

Levesque, L. L., Wilson, J. M., & Wholey, D. R. 2001. *Cognitive divergence and shared mental models in software development project teams.* *Journal of Organizational Behavior*, 22: 135-144.

Lewick, R., & Bunker, B. B. 1996. *Developing and maintaining trust in work relationships.*

In R. Kramer & T. Tyler (Eds.) *Trust in Organizations: Foundations of theory and research*: 114-139. Thousand Oaks, CA: Sage.

March, J. G. 1991. *Exploration and exploitation in organizational learning.* *Organization Science*, 2: 71-87.

McAllister, D. 1995. *Affect- and cognition-based trust as a foundation for interpersonal trust in organizations.* *Academy of Management Journal*, 38: 24-59.

MacDuffie, J. P. 1995. *Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry.* *Industrial and Labor Relations Review*, 48: 197-221.

MacDuffie, J. P., & Helper, S. 1997. *Creating lean suppliers: Diffusing lean production through the supply chain.* *California Management Review*, 39: 118-151.

Matusik, S. F., & Hill, C. W. 1998. *The utilization of contingent work, knowledge creation, and competitive advantage.* *Academy of Management Journal*, 23: 680-697.



Mohammed, S., & Dumville, B. C. 2001. *Team mental models in a team knowledge framework: Expanding theory and measurement across disciplinary boundaries*. *Journal of Organizational Behavior*, 22: 89-106.

Moreland, R. L., & Myaskovsky, L. 2000. *Exploring the performance benefits of group training: Transactive memory or improved communication?* *Organizational Behavior and Human Decision Processes*, 82: 177-133.

Nadler, D. A., Gerstein, M. S., & Shaw, R. B. 1992. *Organizational architecture: Designing for changing organizations*. San Francisco: Jossey-Bass.

Nahapiet, J., & Ghoshal, S. 1998. *Social capital, intellectual capital, and the organizational advantage*. *Academy of Management Review*, 23: 242-266.

Nelson, R. E. 1989. *The strength of strong ties: Social networks and intergroup conflict in organizations*. *Academy of Management Journal*, 32: 377-401.

Nonaka, I. 1991. *The knowledge-creating company*. *Harvard Business Review*, Nov.- Dec.; 96-104.

Nonaka, I. 1994. *A dynamic theory of organizational knowledge creation*. *Organization Science*, 5: 14-37.

Nonaka, I., & Takeuch, H. 1995. *The knowledge creating company: How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.

Nonaka, I., & Konno, N. 1998. *The concept of "Ba": The building a foundation for knowledge creation*. *California Management Review*, 40(3): 40-54.

Orlikowski, W. J. 2002. *Knowing in practice: Enacting a collective capability in distributed organizing*. *Organization Science*, 13: 249-273.

Osterman, P. 1995. *Work/family programs and the employment relationship*. *Administrative Science Quarterly*, 40: 681-701.

Parkhe, A. 1993. *Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation*. *Academy of Management Journal*, 36: 794-829.

Pennings, J. M., Lee, K., & van Witteloostuijn, A. 1998. *Human capital, social capital and firm dissolution*. *Academy of Management Journal*, 41: 425-440.

Peteraf, M. A. 1993. *The cornerstones of competitive advantage: A resource-based view*. *Strategic Management Journal*, 14: 179-191.

Pfeffer, J. 1994. *Competitive advantage through people*. Boston: Harvard Business School Press.

Portes, A. 1998. *Social capital: Its origins and applications in modern sociology*. *Annual Review of Sociology*, 24: 1-24.

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

Reagans, R., & Zuckerman, E. W. 2001. *Networks, diversity, and productivity: The social capital of corporate R&D Teams*. *Organization Science*, 12: 502-517.



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

Rowley, T., Behrens, D., & Krackhardt, D. 2000. Redundant governance structures: An analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strategic Management Journal*, 21: 369-386.

Schumpeter, J. A. 1942. *Capitalism, socialism and democracy*. Cambridge, MA: Harvard University Press. Scully, M., & Preuss, G. 1996. Two faces of trust: The roles of calculative and relational trust in work transformation. Working paper No. 3923-96, Massachusetts Institute of Technology, Cambridge, MA.

Shane, S., & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25: 217-226.

Sheppard, B., & Tuchinsky, M. 1996. Micro-OB and network organizations. In R. Kramer & T. Tyler (Eds.) *Trust in organizations: Foundations of theory and research*: 140-165. Thousand Oaks, CA: Sage.

Snell, S. A., & Youndt, M. A. 1995. Human resource management and firm performance: Testing a contingency model of executive controls. *Journal of Management*, 21: 711- 737.

Snell, S. A., Youndt, M. A., & Wright, P. 1996. Establishing a framework for research in strategic human resource management. *Human Resource Management*, 14: 61-90.

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

Szulanski, G. 1995. Unpacking stickiness: An empirical investigation of the barriers to transfer best practices inside the firm. *Academy of Management Journal, Best Paper Proceedings*: 437-442.

Talmud, I. 1999. Corporate social capital and liability: A conditional approach to three consequences of corporate social structure. In R. Th. A. J. Leenders, & S. M. Gabbay (Eds.), *Corporate social capital and liability*: 106-117. MA: Kluwer Academic Publishers.

Teece, D. J., & Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18: 509-533.

Tsai, W. 2001. Knowledge transfer in interorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*, 44: 996-1004.

Tsai, W., & Ghoshal, S. 1998. Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41: 464-476.

Uzzi, B. 1997. Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, 42: 35-67. Van den Bosch, F. A. J.,

Volberda, H. W., & Boer, M. de. Coevolution of firm absorptive capacity and knowledge environment: Organizational forms and combinative capabilities. *Organization Science*, 10: 551-568.

Walker, G., Kogut, B., Shan, W. 1997. Social capital, structural holes and the formation of an industry network. *Organization Science*, 8: 109-125.



Wayne, S. J., Shore, L. M., & Liden, R. C. 1997. *Perceived organizational support and leader-member exchange: A social exchange perspective*. *Academy of Management Journal*, 40: 82-111.

Wegner, D. M., Erber, R., & Raymond, P. 1991. *Transactive memory in close relationships*. *Journal of Personality and Social Psychology*, 61: 923-929.

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

Wernefelt, B. 1984. *A resource-based view of the firm*. *Strategic Management Journal*, 5: 171-180.

Whitener, E. M. 2001. *Do "high commitment" human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling*. *Journal of Management*, 27: 515-535.

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

Wright, P. M., & Snell, S. A. 1991. *Toward an integrative view of strategic human resource management*. *Human Resource Management Review*, 1: 203-225.

Yli-Renko, H., Autio, E., & Sapienza, H. J. 2001. *Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms*. *Strategic Management Journal*, 22: 587-613.

Youndt, M. A., Snell, S. A., Dean, J. W. Jr., & Lepak, D. P. 1996. *Human resource management, manufacturing strategy, and firm performance*. *Academy of Management Journal*, 39: 836-866.

Zukin, S., & DiMaggio, P. 1990. *Introduction*. In S. Zukin & P. DiMaggio (Eds.), *Structures of capital: The social organization of the economy*: 1-36. Cambridge: Cambridge University Press.

