

## Chapter VI

# Knowledge and Change in Organizations

### INTRODUCTION

This chapter on the role of knowledge in the operation of organizations consists of two main thrusts: the effects of knowledge (accrual, dissemination, and implementation) on organizational change, and more specifically, the manner and effects of knowledge transfer within and among firms conducting innovative product design and development. We begin with Grant's (1996) view of the importance and processes of knowledge coordination within a firm's administrative hierarchy, and follow with Nonaka and Konno's (1998) concept of *ba*, or a shared space for the creation and emergence of knowledge. Greenwood and Hining's (1996) examination of the role of radical change on their theory of neo-institutionalism focuses on cognition and its relationships to operative procedures and behavior norms, as opposed to the more traditional view of institutionalism, with its fundamental goals of stasis and equilibrium. Leonard-Barton's (1992) article attempts an in-depth view and explanation of how one identifies and exposes organizational capabilities in the face of organizational structures that promote management practices that have the potential to stifle innovation rather than institute and nurture change.

Hagedorn (1993) begins the section on knowledge transfer by investigating the reasons for and processes by which competing firms exchange organizational knowledge, finding a range of distinguishing characteristics between the subject matter and substance of inter-organizational arrangements and the organizational structures and complexities of those firms. Mowery, Oxley, and Silverman (1996) provide a different dimension to this topic through their use of citation patterns of

partner firms' patent portfolios as a basis for comparison of allied firms' technological strengths and assets to their output capabilities. Powell, Koput, and Smith-Doerr (1996) take a focused look at the bio-technology industry to support the position that the more complex a field and dispersed its acknowledged experts, the more innovation will be found in the networks created by and for knowledge transfer than in specific individual firms. Olson, Walker, and Ruekert (1995) explain their determination that a firm's coordination structures, regarding the exchange of knowledge, are affected by how innovative a particular product being developed is. Their findings give credence to the positive value that a resource dependency framework for innovation has for understanding and promoting effective interactions among constituencies when developing new products. Sanchez and Mahoney (1996) look at the role of knowledge transfer and the product creation process to explain how concepts of modularity affect both product design and organizational design, as modularity promotes loose couplings among components that are conducive to an increased range of flexibility—obviously an advantage in environments characterized as radically changing.

Leonard-Barton (1988) describes the symbiotic relationship between technological innovation and its adaptation into the organizational environment as one that promotes the view that the initial implementation of a new technology is an outgrowth of the process of invention. Dasgupta and David (1994) employ an economics lens to explain how research is organized in science and technology sectors, pointing out how interrelated and complex their activities are. Both sectors create systems that, on the positive side, can reinforce and help each other, but are unfortunately analogous to fragile machines that have a propensity to become misaligned. We conclude with Moed, Burger, Frankfort, and Van Raan (1985), and their views on knowledge as an instrument of organizational change, and their focus on academic research production rather than the role of knowledge in innovative product and process development or the impacts of knowledge transfer on social and environmental conditions within an organization.

## **KNOWLEDGE AND ORGANIZATIONAL CHANGE**

### **Knowledge Application vs. Knowledge Creation**

Grant (1996) provides a brief literature review of contributions to the research of knowledge-based approaches to understanding “the nature of coordination within the firm...the implications of the knowledge-based view for hierarchy and the location of decision-making authority [and to] determine the boundaries of the firm.” Essentially, Grant approaches the firm as “an institution for integrating knowl-

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