ABSTRACT

Tacit knowledge attenuates particularly quickly in organizations that experience discontinuous membership: the coming and going of organizational roles or positions during a workflow process. Because knowledge flows enable workflows, and workflows drive performance, theory suggests that dynamic knowledge—particularly tacit knowledge—is critical for competitive advantage. This research seeks to extend established organization theory, through integration of emerging knowledge-flow theory, to inform the design of discontinuous organizations. Toward this end, we build a computational model based upon ethnographic study of an affordable housing project that experienced severe discontinuous membership. Analysis of this model reveals problematic theoretical gaps, and provides insight into how scholarly understanding of knowledge flows can extend organization theory to address discontinuous organizations. This research contributes new knowledge for designing knowledge-based organizations in discontinuous contexts.

Keywords: computational organization theory; discontinuous membership; information processing; knowledge dynamics; knowledge flows; knowledge management; organization theory

INTRODUCTION

Tacit knowledge does not flow well through the enterprise. It attenuates particularly quickly in organizations that experience discontinuous membership: the coming and going of organizational roles or positions during a workflow process. Because knowledge flows enable workflows, and workflows drive performance, theory suggests that dynamic knowledge—particularly tacit knowledge—is critical for competitive advantage (Nissen, 2006a). Indeed, our research elucidates how managing flows of knowledge may be as important to competitive advantage as managing project cost is.

For instance, qualitative research by Ibrahim and Paulson (2005) reveals how
incomplete knowledge flows can impact competitive advantage in the construction industry. Discontinuous membership surfaces regularly in property development projects, for example, as specific professional team members are employed only when and where their particular expertise is required to complete the tasks involved in a particular workflow process. As such, discontinuous membership involves an apparent tension between containing cost and promoting knowledge. On the one hand, limiting membership involvement to only those tasks requiring a specific professional expertise is helpful to curtail costs, which is important for financial success in this competitive industry. But on the other hand, moving different people and teams in and out of the workflow process inhibits the flows of knowledge through an enterprise, which in severe cases has been observed to cause a project to be abandoned entirely, and hence create a competitive disaster. The term discontinuity, relates to when an organization has to “switch” the mode of operation (for example, from tacit-dominant to explicit-dominant operating environment) that requires a totally new set of organizations to oversee the workflow. This term is used by Anderson and Tushman (1990) to describe the “break” that happens when technology advancement would force previous technology to discontinue hence forcing organizational change. In our context, the term explains the discontinuity of an organizational structure caused by the change in the workflow characteristics due to environmental influences.

Further, the impacts of managing costs are understood very well, and the kind of cost containment noted above in the property development context is heralded as textbook project management. Alternatively, the impacts associated with inhibited knowledge flows are neither understood well nor addressed by extant management theory (see Nissen, 2006b). Likewise, designing organizations with relatively stable membership has been studied extensively, and such stable membership is implied in most organizational design textbooks. But a dearth of research addresses designing organizations with discontinuous membership. Indeed, our established theories on management and organization seem to be relatively ignorant of knowledge flows and discontinuous membership, even though such phenomena are known now to be important, complex and problematic.

The research described in this article uses computational methods and tools to understand how discontinuous membership affects organizational design. Specifically, we seek to extend established organization theory, through integration of emerging knowledge-flow theory, to inform the design of discontinuous organizations. Toward this end, we build a computational model based upon ethnographic study of an affordable housing project that experienced severe discontinuous membership. Analysis of this model reveals problematic theoretical gaps, and provides insight into how scholarly understanding of knowledge flows can extend organization theory to address discontinuous organizations. This research contributes new knowledge for designing knowledge-based organizations in discontinuous contexts.

In the following section, we present a motivating background problem, and draw from organization theory to explain the affordable housing enterprise’s characteristics. Then we describe the computational model developed to emulate the complex housing development process. We present our analysis and results in turn, and conclude with discussion on integrating organization and knowledge-flow theories, along with recommendations for knowledge management design and future research in this challenging area of study.

MOTIVATING BACKGROUND PROBLEM AND LITERATURE

This section describes our motivating background problem, and discusses what current, diagnostic organization theory says about the situation. Several years ago, a San Francisco Bay Area property developer, using his accumulated tacit knowledge and experience, agreed with a town council board to maintain an oak grove at one corner of a property site planned for a new development. A few months into
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