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Inter-Organizational Learning in Technology Acquisitions: Procuring More Than Knowledge

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INTER-ORGANIZATIONAL LEARNING IN TECHNOLOGY ACQUISITIONS:

PROCURING MORE THAN KNOWLEDGE

Apprentissage inter-organisationnel dans les acquisitions de technologie : se procurer plus que de la connaissance

Research-in-Progress

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Abstract

The fifth wave of Merger and Acquisition includes an increasing amount of technology acquisitions. Large firms acquire small, technology-centric firms as an external source of knowledge and innovation. A major challenge in these acquisitions is to capture the knowledge of the acquired firm as well as to assimilate and utilize it in the acquiring company. We extend March's (1991) model of organizational learning through exploration and exploitation with an agent-based model allowing knowledge transfer across organizational boundaries from a target organization to an acquiring organization through (1) retention of employees from the smaller company into the large one or through (2) appropriation of the smaller target company's organizational code by incorporation of industry best practice or cutting-edge technology. Our preliminary results qualify and extend March's (1991) conclusions.

Keywords: Organization Theory, Knowledge Management, Organizational Learning, Exploration, Exploitation, Simulation, Mergers and Acquisitions, Technology Acquisition, Knowledge Transfer

Résumé

Nous prolongeons le modèle de March (1991) d'apprentissage organisationnel dans le contexte des acquisitions de technologie en proposant un modèle de transfert inter-organisationnel de connaissance par (1) la conservation des employés de la petite société cible dans la grande ou par (2) l'appropriation des codes organisationnels de la société cible via l'incorporation des meilleures pratiques du secteur ou d'une technologie d'avant-garde. Nos résultats préliminaires rejoignent et prolongent les conclusions de March (1991).

Introduction

March's model of organizational learning considers the balance of exploration of new possibilities and exploitation of old certainties (March 1991). Recent contributions to the stream of theoretical and empirical literature that extends and supports the original model include Bray and Prietula (2008) and Kane and Alavi (2007). Motivated by the call to extend March's model (1991) beyond a single organization (Miller et al. 2006) and the theoretical paradigm that knowledge underlying key capabilities does not reside at the firm level, but rather in the expertise of key individuals comprising the firm (Cyert and March 1963; Ericsson et al. 2007; Felin and Hesterly 2007; Prietula and Simon 1989), we examine inter-organizational learning in mergers and acquisitions (M&A).

M&A deals have been increasing over the past two decades, with U.S. deals totaling USD 2.9 trillion in 2005 (Brandel 2006) and USD 3.5 trillion in 2006 (Tarasovich and Lyons 2007). While the main motivation of these activities remains increase in organizational performance (Ahuja and Katila 2001; Chaudhuri and Tabrizi 1999; Ranft and Lord 2002), the desire to obtain valuable resources such as technologies or knowledge is increasingly driving the newest M&A wave (Bower 2001). We focus on the latter activities, termed *technology acquisitions*, which are defined as acquisitions of relatively smaller, technology-based companies by large companies, in which the large companies aim to add the acquired technology capabilities to their own capabilities (Puranam et al. 2006). The acquisitions of i-flex by Oracle Corp in 2005 (2005; Ferguson 2005) and Ayzxxi by Microsoft Corp in 2006 (Monegain 2006; Weil 2006) are recent examples of technology acquisitions, which resulted in the acquiring companies adding to their capabilities and deriving new or enhanced technology product offerings. Similarly, following a strategy of using acquisitions to gain access to new technologies, Cisco Systems went through 29 technology acquisitions between 1993 and 1998. Each of these acquisitions involved a specialized technology company, with hardly more than 100 employees (Tempest and Kasper 2000). Success of technology acquisitions is contingent upon the ability of acquiring companies to manage acquisitions "to both exploit their capabilities and technologies in a coordinated way and foster their exploration capacity by preserving their autonomy." (Puranam et al. 2006). Thus acquiring companies aspire to integrate the acquired technology-based companies in a way that retains their creativity, practices, and technical knowledge and ensures a high level of contribution to the acquiring company.

Knowledge (in the broadest sense) gained from an acquisition is of two general forms. First, there is an overall construct that reflects the operative and influential artifacts, beliefs, norms and practices of the acquired firms, such as preferred work practices, ways of interacting, tools to accommodate project development, and so forth. These are the operative, institutionalized forms (both formal and informal) that influence firm behavior and account for substrate underlying organizational success or failure. Second, there is the knowledge that is contained in each individual that is retained in the acquisition. This knowledge reflects the attitudes and beliefs that drive the substance of the first construct. Both influence, and are influenced, by the other. Firms vary in how flexible they are in adapting to employee suggestions for change (influence from exploration) and how influential they are getting employees to adopt current practices (influence of exploitation). Acquiring companies have to find the right degree of exploitation and exploration between and within themselves and the target organizations, which allows for optimal integration and future operation.

Prior academic studies have empirically explored how to ensure the integration of a small, innovative technology company into a large acquiring organization without the loss of its innovative edge (Christensen 2006; Lavie and Rosenkopf 2006). This research addresses recent calls to consider computational modeling in the creation of novel theories (Davis et al. 2007; Harrison et al. 2007), by extending March's model of organizational learning to investigate the implications of different levels of exploitation and exploration on the transfer of knowledge and the ability to maintain the innovation capabilities of the small company in a technology acquisition.

Specifically, we extend March's model by adding a second company to simulate the acquisition of a small technology company by a large technology company and explore aspects of organizational learning when the two companies are merged via retention of employees in the large company or transition of knowledge (transfer of beliefs, practices, and social skills) from the small company to the large company. The process of organizational learning through post-merger exploitation and exploration in the larger acquiring company will determine if the small company's knowledge is retained within the large company or lost over time.

Literature Review

Companies continuously innovate to maintain or increase their competitiveness. A major driver for creating innovations is the ongoing exploration and exploitation of resources (Benner and Tushman 2003; Brown and Eisenhardt 1997; March 1991). Previous research has discovered that acquisitions will expose companies to new ideas and in the long run will lead to broader knowledge in the acquirer firm (Levinthal and March 1993; Levitt and March 1988; March 1991). Graebner (2004) considers acquisitions as a "Critical Mean" for companies to gain technological capabilities in the competitive global environment. Ranft and Lord (2002) identify that acquisition of technology and knowledge is a business strategy especially prevalent in industries with high-speed innovations and increasing technical complexity. Christensen (2006) concurs that an acquisition strategy is a possibility to gain access to knowledge, resources and skills for innovations, but notes that this strategy can easily fail, as well.

Effective post-merger integration is crucial to the successful transfer and utilization of the externally acquired knowledge. This post-merger integration might pose a dilemma as Puranam et al. (2006) point out; the acquirer has to integrate the target company to commercialize the acquired technology, at the same time strives to maintain some degree of autonomy in the target company to avoid destruction of its innovation capabilities. Graebner (2004) identifies effective implementation and integration as essential for a successful acquisition, emphasizing the integration versus autonomy dilemma as critical in technology acquisitions. Ranft and Lord (2002) propose that integration might lead to destruction of the target firm's knowledge, based on employee turnover and disruption of organizational routines. In addition, they suggest that the acquirer might be unaware of where valuable knowledge resides within the target company, and thus risks the loss of key employees or mission critical organizational know-how during a fast integration. Walter et al. (2007) find evidence in the biotechnology industry that acquisition of scientific and technical knowledge fails because acquirers are unable to transfer and apply the knowledge. In a similar fashion, Kane and Alavi (2007) identify that organizational turnover which occurs during an acquisition, can lead to the loss of organizational knowledge as employees take their knowledge with them when they leave. However, if an organization engages a strong exploitation culture, it is less sensitive to turnover (Ton and Huckman 2008), but presumably also resistant to influences of acquired knowledge.

Maintaining the target firm's knowledge and successfully transferring this knowledge to the acquirer is a major challenge for M&A success (Felin and Hesterly 2007; Kozin and Young 1994). In the context of technology acquisitions, knowledge can be classified in two major categories: tacit and socially complex knowledge (Graebner 2004). Tacit knowledge is non-codifiable knowledge that resides within the individuals of an organization (Miller et al. 2006; Polanyi 1967). Thus, ensuring a high retention rate of these critical individuals becomes crucial for retaining tacit knowledge (Donahue 2001). Typically, the transfer of tacit knowledge begins with the retention of the individuals from the target company and continues with the incorporation of their tacit knowledge in the organizational learnings of the new company via exploration. For example, Cisco Systems, which acquired more than 57 companies in the eight years prior to 2001, considers employee retention as the first objective of its individual acquisitions and measures their success by its ability to retain key employees from the acquired company (Harding et al. 2004; Tempest and Kasper 2000).

Socially complex knowledge "resides primarily in specialized relationships among individuals and groups and in the particular norms, attitudes, information flows and ways of making decisions that shape their dealings with each other" (Badaracco 1991; Ranft and Lord 2002). The socially complex knowledge has to be identified within the target company and the appropriate beliefs need to be transferred to the acquirer firm. This knowledge can then become part of the new company organizational code and will be part of the long-term organizational learning via exploitation. Both tacit and socially complex knowledge are difficult to transfer, so a high emphasis has to be on the post-merger integration efforts to ensure both successful knowledge transfer and enable a successful technology acquisition. For example, during the acquisition of Compaq, HP faced problems in integrating socially complex knowledge and culture (Burgelman and McKinney 2006).

We posit that the knowledge transfer decisions taken by the acquiring firm during the acquisition process can have an impact on the organizational code of the acquiring firm. There are immediate changes in the organizational code of the acquiring firm if it decides to transfer knowledge through appropriation. Changes to the organizational code may also happen over time as a consequence of retention of employees. These gradual changes occur due to the process of the organizational code learning from the differing beliefs of the retained individuals. The importance of

these two knowledge transfer decisions is highlighted when juxtaposed with the level of exploration and exploitation of the acquiring organization. This juxtaposition leads to the rise of our two research questions:

Research Question 1: In an acquisition, does the appropriation of beliefs of the smaller target company, into the larger acquiring company, lead to an increase in the overall knowledge of the acquiring company?

Research Question 2: In an acquisition, does the retention of employees of the smaller target company, into the larger acquiring company, lead to an increase in the overall knowledge of the acquiring company?

Theoretical Model

Following the notion that building on existing theoretically-based computational models is a more effective way to validate existing work and developing cumulative research tradition (Bray and Prietula 2008; Kane and Alavi 2007; Prietula and Watson 2000; Prietula and Watson 2008), we consider March's model as the foundation for our computational model of technology acquisition. To consider the implications of a technology acquisition, we start out with two companies, one a large established firm and the other a small, technology-oriented company. The large company is the acquirer and the small company represents the target firm. Firms with a high degree of technology innovations exhibit a high degree of exploration whereas firms that refine existing technologies show a high level of exploitation (March 1991). As such, a technology acquisition would mostly represent an acquisition of an exploration-oriented target firm through an exploitation-oriented acquirer. This is a primary assumption in our model of organizational learning after technology acquisitions.

As identified in the existing literature, the major challenge in technology acquisitions is the knowledge transfer and organizational learning within the new company to apply and utilize the new knowledge and enhance the new company's competitiveness. In accordance with Ranft and Lord (2002), explicit knowledge, captured for example in written documents, is easily transferred. The challenge occurs when attempting to transfer the tacit and socially complex knowledge. As mentioned before, tacit knowledge is captured in the individuals' experience and skills (Grant 1996; Ranft and Lord 2002). On the other hand, socially complex knowledge exists within the interactions of a company and, as such, resides within the organizational norms or attitudes (Ranft and Lord 2002; Reed and DeFillippi 1990). To incorporate a technology acquisition into March's model, we simulate the transfer and integration of these two forms of knowledge. Knowledge that is tacit and resides within each individual of the target company is transferred via the retention of the employees from the target company. Knowledge that is socially complex and reflects the operative and influential artifacts, beliefs, norms and practices of the acquired firm is transferred via the acceptance of the target company's preferred work practices, ways of interacting, tools and routines within the organizational code of the acquirer.

March (1991) defined exploitation as inter-organizational learning from the organizational code to the individuals (organizational code shapes the individuals) and exploration as the learning from the individuals to the organization (organizational code is shaped by the individuals). In this regard, the integration of the transferred tacit knowledge (retention of acquired organization's employees) occurs via exploration of the individuals' knowledge within the new company and will, in the long run, influence the new company's organizational code and other individuals (March 1991). Socially complex knowledge (appropriation of the acquired organization's code) will influence and partly change the acquiring company's organizational code; the inter-organizational learning will occur via exploitation from the organizational code to the individuals over time (March 1991). The computational model will reveal if the knowledge transfer will occur (via retention and appropriation) and whether it is sustainable over the long run by showing an increase in the knowledge base of the new company.

Procedures

In March's original model, exploitation (as the effectiveness of socialization to the code) is realized in the parameter p_1. Similarly, exploration (as the effectiveness of influencing a change in the code) is realized in the parameter p_2. An external reality, which is independent of agent beliefs, has several orthogonal dimensions. In our extension of March's model, we introduce two additional parameters to reflect the knowledge acquisition *intent* of the acquiring organization. These are the acquiring organization's *intent to appropriate the beliefs* of the target organization and

the acquiring organization's *intent to retain the employees* of the target organization. Our model consists of the following features:

1. A common directly unobservable external reality of *m* dimensions.
2. Two organizations, Org_1 and Org_2, with n_1 and n_2 employees respectively. We assume that the number of agents in Org_1 is greater than the number of agents in Org_2 (n_1 is greater than n_2) as we wish to model the acquisition of a small firm (Org_2) by a larger firm (Org_1).
3. The level of exploitation in Org_1 is reflected by the parameter p_{11} and the level of exploitation in Org_2 is reflected by the parameter p_{21}. The level of exploration in Org_1 is reflected by the parameter p_{12} and the level of exploration in Org_2 is reflected by the parameter p_{22}.[1]
4. $P_{Appropriation}$, defined as the *intent to appropriate organizational beliefs*. The acquiring organization will alter a particular dimension of its code to match that of the acquiring organization with probability $P_{Appropriation}$, given that the two organizations differ in extant beliefs.
5. $P_{Retention}$, defined as the *intent to retain acquired employees*. The acquiring organization will retain an employee from the acquired firm with probability $P_{Retention}$. We assume (in this version) that the particular internal beliefs (knowledge) of an individual are not directly observable and reputation mechanisms are vulnerable to gaming, therefore uncertain. Consequently, this will introduce the possibilities (and consequences) of retaining those employees who were not confirming to the organizational code of the acquired organization. We also posit that the intent to retain acquired employees is independent of the intent to appropriate acquired organizational beliefs.

Our model runs consist of three phases, namely pre-merger, merger and post-merger phases. During the pre-merger phase, March's original model is run with two separate organizations, one representing a large acquiring organization and the other a small target organization, both sharing the same reality. After running the model for 100 time periods, the target organization, Org_2, is merged into the acquiring organization, Org_1, through stochastic appropriations of its organization code and retention of its employees. This is the merger phase of the run. In the post-merger phase, the model is again run for 100 time periods, according to March's original specifications, for only the acquiring organization. The steps that are followed in our model during the pre-merger and post-merger phases are derived directly from March's original model. The steps that are followed in the merger phase are a modeling of the acquisition process, and thus are based on the knowledge transfer decisions taken by the acquiring firm.

We constructed our computer model using VB.NET. The model ran for different combinations of the input variables, with each combination being run for 100 replications[2]. The results presented in this section are averages over the replication sets. We randomized the initial conditions for each run to ensure that the results were not due to specific initial conditions at the commencement of the run or at the commencement of a phase within the run.

We define knowledge level as the percent of dimensions across which the organizational code or individual's beliefs match the values of external reality.

Results

For our initial set of experiments, we focused on the qualitative effects of appropriation and retention strategies in a technology acquisition where, consistent with our definition of technology acquisition, the acquirer's organizational learning is characterized by exploitation, and the target organization mainly learns through exploration.

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[1] March defined $(1 - p_2)^k$ as the probability that the organizational code would remain unchanged for a specific dimension, where k is the number of individuals within the superior group who differ from the organizational code minus the number of individuals who do not. We follow the approach followed by Miller et al. (2006) and model the exploration process as p_2^k being the probability that the organizational code will change for a specific dimension. Also, in our model, if there is no majority view, then the code changes to 0, with a probability of p_2.

[2] Default values for each run of the model were $m = 50$, $n_1 = 200$, $n_2 = 100$, $p_{11} = 0.5$, $p_{12} = 0.5$, $p_{21} = 0.5$, $p_{22} = 0.5$, $P_{Appropriation} = 0.5$, $P_{Retention} = 0.5$, $t_1 = 100$ and $t_2 = 100$.

Experiment 1: Individual Effects of Appropriation and Retention on Knowledge Level

Figure 1 shows the effect of appropriating the beliefs of the target organization on the knowledge levels of the acquiring organization, represented as the average percentage of agent knowledge dimensions that match reality. For all conditions in this manipulation, the acquiring firm retains employees from the acquired firm with $P_{Retention} = 0.5$. The appropriation of beliefs of the target organization by the acquiring organization varied from 0.0 (no appropriation of beliefs) to 1.0 (full adoption of the acquired firm's organizational code). We observe an inverted U-shaped effect, with smaller and larger $P_{Appropriation}$ rates leading to minimal improvement in the knowledge levels of employees in the new organization, but 0.25 and 0.50 rates leading to greater increases. Figure 2 illustrates the effect of retaining employees from the target organization on the knowledge levels of the acquiring organization. We observe that larger $P_{Retention}$ rates lead to an increase in the average percentage of agent knowledge dimensions that match reality for the acquiring organization. This is a result of the infusion of new ideas, expertise of key individuals, and greater diversity in employee knowledge.

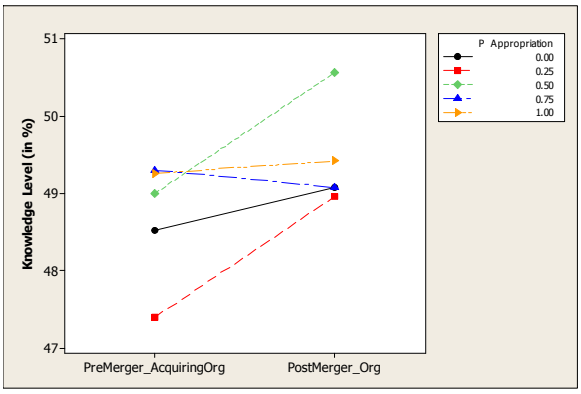

Figure 1: Effect of appropriation on post-merger knowledge

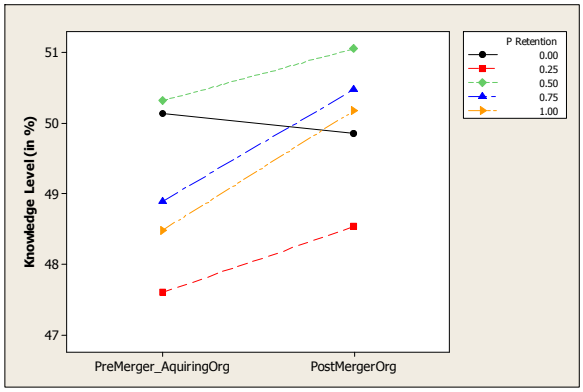

Figure 2: Effect of retention on post-merger knowledge

Experiment 2: Interaction Effects of Acquisition Strategies on Knowledge Level

To investigate the interaction effects of appropriation and retention, we first examine a mixed strategy where both $P_{Appropriation}$ and $P_{Retention}$ are set to 0.5 to establish a single comparative base line. Figure 3 illustrates the time period-wise changes in the organizational code knowledge level and average employee knowledge level for both the acquiring and target organizations. It also shows the changes in the organizational code knowledge level and average employee knowledge level for the new company after the merger, which occurs at $t = 100$. Before the merger, the knowledge of the acquiring organization reaches a lower equilibrium value as compared to the knowledge of the target organization. These results are consistent with March (1991) and illustrate the long-term higher benefits of greater exploration vis-à-vis greater exploitation. After the merger, there is an initial flux in the knowledge levels of the acquiring organization and it takes time for equilibrium to occur once again. In this case, a substantive increase in the knowledge of the acquiring organization is evident. However, post-merger equilibrium value is lower than the average of the value of organizational code knowledge and average employee knowledge immediately after the merger. Thus, a loss of knowledge occurs after the merger.

Figure 4 illustrates the effect of altering the knowledge acquisition strategy by engaging the extreme values of $P_{Retention}$, $P_{Appropriation}$ parameter space (0.0 and 1.0 probabilities). At this specific boundary condition of the model, the impact of knowledge appropriation is clearly evident. The increase in pre-merger to post-merger equilibrium knowledge levels for the acquiring organization is maximized when the acquiring organization attempts to maximize its appropriation of the target organization's beliefs ($P_{Appropriation} = 1.0$) *and* retain the entire set of acquired employees ($P_{Retention} = 1.0$). When the acquiring organization only maximizes retention of the target organization's employees, the increase in the post-merger knowledge levels is not substantive. These results demonstrate that the interaction of engaging in both appropriation and retention strategies clearly dominate either strategy alone.

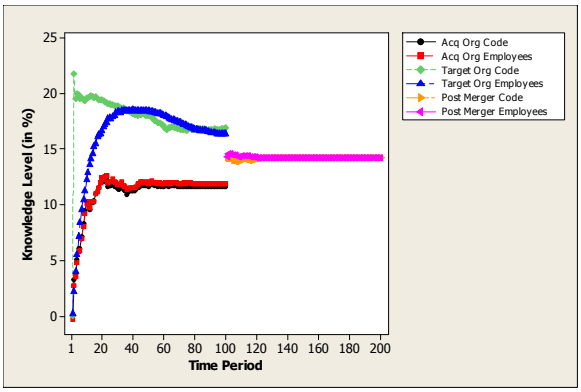

Figure 3: Technology acquisition baseline scenario

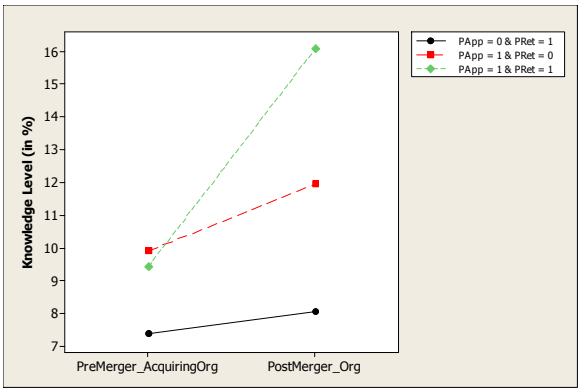

Figure 4: Variations of technology acquisition strategies

Experiment 3: Technology Acquisition Effects of Retained Employees' Knowledge Levels

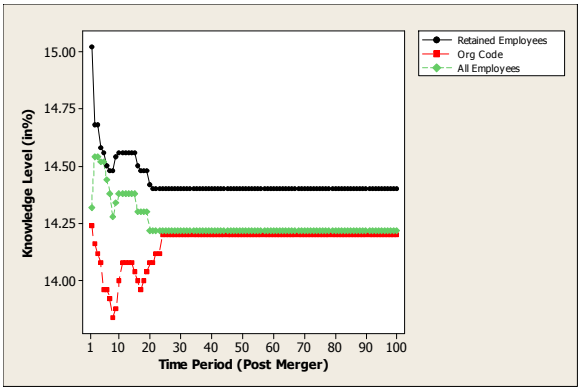

Figure 5: Technology Acquisition Effects of Retained Employees' Knowledge Levels

The last experiment investigates the beliefs held by employees of the target organization who are retained by the acquiring organization. Figure 5 illustrates the effect of the merger on the average knowledge level of retained employees in comparison to the organizational code knowledge level and the average knowledge level of all employees (including retained employees) of the acquired organization. Due to high levels of socialization in the acquiring organization, retained employees rapidly change their beliefs to reflect the beliefs of the acquiring organization. This leads to a sharp fall in the average knowledge level of retained employees and a corresponding fall in the average knowledge level of all employees. This drop in knowledge is seen for approximately 10 time periods, following which the organizational code and employee beliefs move back towards equilibrium. However, a significant finding is that the average knowledge level of the retained employees remains higher than the post-merger equilibrium knowledge level of the acquiring organization. This signifies that some retained employees have a higher correspondence to reality and thus have better expertise and are consequently better performing.

Discussion & Research Directions

Overall, our model showed consistent behavior of knowledge diffusion following the merger of two organizations. After acquiring knowledge from the target organization, through retention of employees or through appropriation of specific dimensions of the code or through a combination of these two processes, the average employee knowledge level and organizational code knowledge level of the acquiring organization would disrupt the knowledge equilibrium of the acquiring organization. This is consistent with the flux expected in the acquiring organization following acquisition of new knowledge (Birkinshaw 1999; Bruner 2005; Carey 2000; Harrison and Carroll 2006). The organizational learning process drives the acquiring organization towards a new equilibrium, the final value of which is dependent on the knowledge acquisition strategy and values of p_{11} and p_{12}. The time required to attain this new equilibrium is also dependent upon values of $P_{Retention}$, $P_{Appropriation}$, p_{11} and p_{12}.

Our model shows some other basic and consistent properties. First, the eventual post-merger equilibrium value of knowledge within the organization is different from the equilibrium value of knowledge that existed in the organization before the merger. This post-merger equilibrium value is not the weighted average of the equilibrium values of the acquiring and target organizations. The processes of knowledge acquisition and organizational learning

capture synergies or conflicts within the knowledge of the acquiring and target organizations and result in higher or lower post-merger equilibrium values. Second, greater complexity in the external environment (a greater *m*) results in greater variability in the success of technology acquisitions. With a greater *m*, even though the knowledge level of the acquiring organization may increase, there may be a decrease in the relative knowledge level of the acquiring organization. Thus, in complex environments, the acquiring organization may assimilate incorrect beliefs of external reality from the target organization. This may have contributed to Compaq's loss of its position as the largest seller of PC's to rival Dell, following its acquisition of Digital Equipment Corporation in 1998 (Kovar 2002; McWilliams 2001). Further, lesser complexity in the external environment (a small *m*) allows the acquiring organization to reach post-merger equilibrium after the merger, faster than more complex knowledge. Therefore, simple knowledge enables faster acquisition of a higher proportion of correct beliefs in a technology acquisition.

In this preliminary work we extended March's model to investigate organizational learning in the context of technology acquisitions. We modeled a closed system with no external sources of knowledge, containing two organizations, each having a fixed number of employees. March (1991) modeled learning from external sources of knowledge by introducing employee turnover in which new employees holding random beliefs of external reality replaced existing employees. Turnover only leads to a reduction in the average knowledge levels in the model and thus our basic findings will hold true in an open model as well.

We portray exploitation as a consequence of socialization and, following March (1991), view it as effectiveness of socialization or learning from the code. Similarly, we also depict exploration as the effectiveness of learning by the code. In our model, we look at effects of exploitation and exploration in combination with effects of organizational code appropriation and employee retention in the time periods after a knowledge acquisition. To model a technology acquisition, we posited knowledge acquisition occurs through two processes – appropriation of organizational code and retention of employees. We ran our closed model of two organizations for a large time period and then merged the smaller organization into the larger organization, based on parameters for appropriation of organizational code and retention of employees. We then ran our model with one merged organization for a large time period.

Our preliminary work regarding the effect of the merger on the beliefs held by retained employees is important in the context of technology acquisitions as it shows that employees retained by an organization with high exploitation during the acquisition of an organization with a high level of exploration go on to become high performers in the acquiring organization. These retained employees introduce divergent and superior beliefs into the acquiring organization and even though they change their beliefs due to socialization into the acquiring organization, they eventually retain beliefs that are relatively superior to the rest of the organization. This has been observed during the Compaq HP acquisition and during multiple technology acquisitions at Cisco (Burgelman and Meza 2004; Tempest and Kasper 2000). An implication of this finding is that acquiring organizations should attempt to control this degradation of knowledge and, where possible, attempt to codify knowledge that is gained through the merger. GE's Pathfinder acquisition model and Cisco's efforts at integrating acquired employees are past attempts in this direction (Harding et al. 2004; Tempest and Kasper 2000). Insight into this is given in research that suggests the loss of social status and centrality may contribute to drops in individual productivity after acquisitions (Paruchuri et al. 2006) and complicating issues of cultural distance or fit (Harrison and Carroll 2006; Stahl and Voigt 2008), and we are incorporating an interpretation of those constructs in the model to test their standing within the March framework.

Our study benefits from the strengths of developing theory through a computational modeling approach, namely, high internal and construct validity, strong specification of boundary conditions and systematic experimentation (Davis et al. 2007). However, it suffers from the limitations of our inability to model a larger scope or all the possible environmental parameters. Acquisitions which involve low levels of integration and hence lead to a high degree of autonomy in the acquired company are beyond the scope of this study. The sensitivity of our results to environmental turbulence, employee turnover, high exploration value for the acquiring company and relative size of the companies are key areas of further research.

This paper described preliminary research to examine the knowledge consequences of technology acquisition in the context of the March's model on a qualitative level. The results presented are descriptive in nature and only serve as an initial validity check of our theoretical approach. By following this approach, we endeavor to answer questions regarding the affects of retention of employees and appropriation of beliefs, during a technology acquisition, on the knowledge of the acquiring organization. The next steps in our research involve formalization of the theoretical extensions to March and generation of specific derivative hypotheses from additional computational experiments (Carley 1999).

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