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Unpredictable Reconfigurations: The Dilemma of the Post-Merger Information Systems Integration¹

*Dragos Vieru, École des sciences de l'administration, Distance Learning University of
Quebec, Montreal, QC, Canada*

*Marie-Claude Trudel, Department of Information Technologies, HEC Montreal, Montreal,
QC, Canada*

ABSTRACT

A merger is the result of a strategic decision aimed at creating synergy. Notwithstanding mergers' expected benefits, their outcomes are often beset by problems such as employees' high levels of stress, dissatisfaction and resistance. Research suggests that these problems are often related to the issue of boundary management during the post-merger integration phase (PMI), which refers to the degree of integration required among the merging parties and the degree of autonomy, that each must retain for the merger to achieve synergy. The literature identifies information systems (IS) as being a key enabler of successful mergers and suggests that during PMI, new ISs that span the boundaries of the previously independent firms need to be implemented to facilitate a specific level of integration. Yet, there is a paucity of studies on the issue of boundary management at the information technology (IT) level during PMI. Adopting a sociomaterial perspective and based on a qualitative study within a healthcare organization, the authors find that post-merger practices were the result of dialectic processes of resistance to, and negotiation of, the IS reconfiguration after its implementation.

Keywords: Agency, Assemblages, Information Systems (IS), Information Technology (IT), Materiality, Performativity, Post-Merger Integration (PMI), Practices, Reconfigurations

INTRODUCTION

Mergers and acquisitions (M&A) are a major strategic tool for achieving business growth (Schweiger & Goulet, 2000). At the end of 2011, global mergers investment represented approximately \$1,000 billion (Gestrin, 2011). Given the scale of this activity, it is crucial for organizations to actually achieve the expected

synergies – i.e., the actual net benefits in terms of reduced cost per unit and increased income – sought from combining the organizations (Larsson & Finkelstein, 1999).

PMI represents the process of strategic and structural combination of merging parties (Shanley & Correa, 1992). This process necessitates the post-merger reconfiguration the common use and sometimes the elimination of

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certain tangible and intangible resources of one or more of the merging entities (Karim & Mitchell 2000). The literature stresses the importance of the choice of integration approach as being one of the most important strategic decisions to make in mergers and represents a critical determinant of the post-merger outcomes (Pablo, 1994; Zollo & Singh, 2004). Different PMI approaches exist, which differ with respect to the extent of integration and autonomy among the merging parties (Ellis, 2004). Although a given type of PMI approach may be well suited to achieve synergy, it may also entail problems within the merging organizations, such as high levels of employee stress, job dissatisfaction, and resistance to the merger among employees (Larsson & Finkelstein, 1999).

Research on PMI reveals that when organizations try to manage differences among the merging parties, they face the *dilemma of integration versus autonomy* (Haspeslagh & Jemison, 1991). A number of researchers have addressed this dilemma by proposing four ideal-types of integration approaches based on strategic and organizational dimensions (Ellis, 2004). *Preservation* is deemed appropriate when there is a strategic need to maintain the sources of expected value-creation intact by preserving the boundary between the organizations. *Absorption* occurs when one of the firms imposes its work practices, norms and culture on the other parties. *Symbiosis* represents the approach in which the merging parties are gradually blended together by becoming increasingly interdependent. In *transformation* organizations are integrated by developing totally new, yet common, practices, culture and other organizational attributes (Marks & Mirvis, 2001).

The literature suggests that information technology (IT) is a key enabler of successful mergers (Henningsson & Yetton, 2011). A recent study suggests that 50-60% of the expected value from a merger is dependent on post-merger IT function integration especially the IT applications and data (Sarrazin & West, 2011). The integration of IT applications and data often involves the implementation of new ISs to span

the boundaries of the previously independent organizations (Henningsson & Yetton, 2011). The main purpose of these systems is to facilitate the implementation of new organizational practices. Modern large organizations usually choose to implement off-the-shelf software applications such as Enterprise Systems (ES) (Wagner, Newell, & Piccoli, 2010). However, misalignments between industry-standard practices or “best practices” embedded in these ISs and the local idiosyncratic practices have caused headaches to management and IT implementation project teams (Sia & Soh, 2007).

Organizations often realize that practice norms embedded in their ES are mismatched only after the system is implemented and users engage in resistance to adopt the system, as they can no longer perform their old practices. This constrains some organizations to engage into a lengthy processes of negotiation and may result in substantial customizations of the system (Wagner, Moll, & Newell, 2011). The practitioner literature on PMI suggests that when significant post-merger IS-assisted changes in practices are intended, it is more difficult for users to adopt the new ISs, which makes the integration task most challenging. For example, when Nokia merged with Siemens in 2007, the upper management realized that reaching post-merger synergies relies on the implementation of a common set of IT applications (Accenture, 2011). The new ISs needed to sustain a new set of practices based on one common backbone and one value chain system. At the outset of the merger the two organizations were using non-standard systems. Facing significant changes in practices, organizational members built up resistance at the beginning of the PMI phase. The management was able to successfully implement the new ISs only after employees were encouraged to take initiatives during the PMI process. While Nokia-Siemens merger was successful, some firms, fearing great cost and complexity, never integrate their ISs, such that the actual synergy gain is minimal. Others focus on the potential synergy gains and, without much planning, implement an absorption approach by choosing one information system

over another, often frustrating both customers and employees (Aberg & Sias, 2004).

Although these reports bring to the fore the challenges of implementing ISs in a PMI context, the academic IS literature on PMI does not mention the existence of a dilemma of integration versus autonomy at the IT level. Instead, research focuses on identifying strategies for aligning the post-merger IT resources with the business needs (Giacomazzi, Panella, Pernici, & Sansoni, 1997; Johnston & Yetton, 1996; Tanriverdi & Uysal, 2011).

Our study seeks to provide an in-depth examination of the relationship between the dilemma of IS integration versus autonomy and the ES adoption in PMI settings. Therefore, our two research questions are:

1. Is there a dilemma of IS integration versus autonomy in PMI settings?
2. How do post-merger practices emerge after the ES implementation?

To achieve this goal, we adopt a sociomaterial perspective (Orlikowski & Scott, 2008b) to illuminate the outcomes of an ES implementation project in a healthcare organization resulting from the merger of three previously independent hospitals by investigating the practices that this ES was supposed to facilitate after its implementation.

THEORETICAL BACKGROUND

Post-Merger Dilemma of Integration versus Autonomy

Researchers have addressed the issue of boundary management in PMI by proposing integration approaches based on the extent of change in the merging parties' business processes and structures (Haspeslagh & Jemison, 1991; Marks & Mirvis, 2001). While most of the extant empirical studies on the PMI phase provide interesting insights into post-merger success factors, they tend to offer "either/or"

solutions: that is, for one given pre-merger type of combination, there is only one type of integration approach (Ellis, 2004). However, other researchers have observed that in some mergers, the combined organization adopts a mix of different ideal-types of integration approaches, called a *hybrid* approach (Ranft & Lord, 2002; Schweizer, 2005). For instance, in a study of a merger between a pharmaceutical firm and a biotechnology firm, (Schweizer, 2005) found that the merging organizations chose to apply different integration approaches to some of their business processes. The author identifies two different approaches (*preservation* and *absorption*), implemented at different paces (slow and fast) but simultaneously, to integrate competencies from both merging companies in order to accomplish the short- and long-term motives for the merger. On one hand, the general biotech non-R&D knowledge and business processes were rapidly absorbed by the pharmaceutical firm in order to strengthen its market position. On the other hand, decision-makers realized that in order to keep its value for the merger, specific biotech R&D knowledge needs to retain its contextuality; therefore, total organizational autonomy for the biotech R&D department was granted.

This line of research emphasizes the fact that PMI is a complex and delicate process that cannot be fully understood by considering single integration approaches in isolation. These studies promote two main ideas. The first is that the issue of boundary management should be dealt with by simultaneously providing different multi-level integration approaches that will ensure a certain degree of organizational autonomy for some business units, yet provide an environment that enables the sharing of work practices and knowledge with other business units, if required (Ranft & Lord, 2002). The second is that the boundaries to be managed should be defined not only in terms of the differences between organizational structures, but also in terms of the differences in information systems (Yoo, Lyytinen, & Heo,

2007) or work practices (Ranft & Lord, 2002; Schweizer, 2005).

A Sociomaterial Perspective on Post-Implementation IS Adoption

As mentioned earlier, PMI must be supported by ISs to enable a specific level of integration. However, implementing ISs is not a straight-forward task and it tends to be even more difficult in a merger context, considering the different objectives and cultural identities of the combined organizations. While initial use is an important indicator of IS success, the desired managerial outcome is not attained unless usage continues (Kim & Malhotra, 2005). In the literature, this phenomenon has been termed post-adoption usage, IT usage, IS continuance, or post-implementation IS adoption, to name a few. To complicate things further, not all usage are created equal and it has been said that IT, even when suited for the task at hand, can be used as to circumvent the initial objectives of the implementation (Griffith, 1999) and in non-conformity to the original spirit of the project (DeSanctis & Poole, 1994).

Research on post-implementation presents it as part of a stage maturity model (Holland & Light, 2001), studies the critical factors that lead to its success (Holland & Light, 1999; Zhu & Li, 2010), the way to maximize benefits from, and continuous improvement of implemented ISs (Shanks, Seddon, & Willcocks, 2003; Yu, 2005), and the effects of post-implementation behaviours (Ahuja & Thatcher, 2005; Karahanna, Straub, & Chervany, 1999). This research has been mainly concerned with large and complex systems such as enterprise resource planning (ERP) systems and, according to (Kim & Son, 2009), has been mainly conducted in intra-organizational settings.

In recent years, post-implementation studies have mainly adopted an organizational imperative perspective, focusing on human agency, viewing technology as a *social* production and overseeing its *material* element (Orlikowski & Scott, 2008b). This is possibly a sign of

the time as many organizations are now going through system upgrade or replacement (Shanks et al., 2003) and academics and practitioners are now aware ISs are in no way silver bullets (Orlikowski & Scott, 2008b). Whether they are using causal models, case studies or contingency models, most articles consider the actions and decisions of stakeholders within organizations as mainly responsible for the observed effects, a perspective also known as organizational determinism (Markus & Robey, 1988).

A number of researchers have recently been calling for a new perspective in which the material and the social intermingle to form IT-enabled practices (Orlikowski, 2007; Wagner et al., 2010), described as sociomaterial. Following this line of reasoning, in this study we adopt the view that the IT (material) and the social (human) agencies can be reconciled by conceptualizing them together instead of separately (Orlikowski & Scott, 2008a). A sociomaterial perspective provides a way to understand how meanings and materialities are indistinctly associated and have an impact on practices (Orlikowski, 2007). The concept of *sociomaterial assemblage* (Orlikowski & Scott, 2008a) illustrates this constant agency shift between the material (IS) and the social (practices performed by the organizational members). In this view, an IS represents a sociomaterial assemblage or arrangement that “emerges from practice and defines how to practice” (Wagner et al., 2010: p.279). Here we consider the term *practices* as referring to “coordinated activities of individuals and groups in doing their ‘real work’ as it is informed by a particular organizational or group context” (Cook & Brown, 1999). Through practice, agents formalize their membership to a certain field of practice and, at the same time differentiate themselves from agents from other fields. A *field of practice* may represent business units, departments or goal-driven groups, in which individuals who share practices are in pursuit of a joint interest (Levina & Vaast, 2005). In order to make sense of their practices, members of these fields of practice develop sociomaterial arrangements

that would reflect their shared understandings within the organizational context (Orlikowski & Scott, 2008b).

The introduction of an enterprise system designed to cut across pre-merger boundaries between merging entities alters the existing sociomaterial arrangements within those entities. Enterprise systems are developed based on the belief that “they represent a rationalization, encoding and abstraction of ‘best practices’ that, while being congruent with the logic of certain functional areas of some organizations, can be in conflict with others” (Berente, Yoo, & Lyytinen, 2007: p.14-15). However in PMI context, the business rules underlying ESs cannot take into consideration all of the local practice idiosyncrasies. In terms of the sociomaterial practice perspective, the dynamic relationship between organizational actors and ISs is reflected in practices and is referred to as *performativity*. This is a dialectic process of resistance and accommodation that produces unpredictable *reconfigurations* of the sociomaterial assemblage (Wagner et al., 2010). Despite the fact that professional-based communities are usually considered global, they tend to promote practices that have a local character based on an organizational context (Knorr-Cetina, 1999). This is to emphasize the fact that there are always differences even when organizational members are supposedly engaging in the same practices. Thus, by focusing on performativity, we are able to examine how ISs are reconfigured to create agreed upon post-merger material and social arrangements.

METHODOLOGY

In this study we seek to understand how and when new practices emerge in the context of ES implementation during the PMI phase. Therefore, our research methodology was designed to analyze sociomaterial arrangements through the collection and interpretation of language and artifacts (Klein & Myers, 1999). We chose a retrospective case representing a successfully implemented ES within one organization that

was engaged in the process of post-merger integration. The selected organization was the MQ Health Centre (MQHC), a large Canadian hospital. The fact that the first researcher, as a member of the organization for more than 10 years, had knowledge of the organization’s norms and practices compensates for the possible research strategy weakness of using retrospective cases. In this way he had an insider view that allowed him to understand MQHC norms and values.

Consistent with a sociomaterial practice perspective, we analyzed practices over time to identify how material and social assemblages were produced and reproduced during the implementation of the ES. To this end, we interviewed 15 key stakeholders, mainly project implementation committee members (i.e. department managers, IS professionals, project managers, clinicians) who participated in the implementation of the system. The identification of the interviewees followed a snowball sampling procedure. The semi-structured interviews were supplemented by archival documents, which offered a source of triangulation for the themes that emerged from the interview data. Interview questions focused on understanding, from the participant’s standpoint, the history of the ES implementation project, episodes of resistance, negotiations, and practice accommodations and differences in ES’ functionalities between the initial and the post-implementation phases of the project. When no new information was revealed during interviews, data collection was terminated. Archival sources included post-mortem project documentation (system support documents, final reports, and team members’ emails) and other organization documents (strategic planning presentations).

The case narrative (interview data) was analyzed in an iterative process (Eisenhardt, 1989) by cycling between data, emerging themes, and relevant literature. During case analysis, themes emerged from the data. Coding was a two-phase process. In Phase 1 we built a provisional list of codes prior to the interviews. Most of the initial coding categories were based

on the three theoretical constructs introduced in the previous section: practice, performativity, and reconfiguration. In Phase 2, the interview transcripts were introduced into a database, read carefully and relevant portions were marked as evidence. This allowed us to identify episodes of resistance, followed by negotiations from which the new ES was reconfigured to accommodate practices at MQHC. The final ES configuration reflected a mix of industry standards and local idiosyncrasies.

FINDINGS

The MQHC is the result of a ‘merger of equals’ of three large independent teaching hospitals: the Community, the Riverside and the Eastside. While the term ‘acquisition’ refers to the purchase of a target organization for absorption into the acquiring organization, in a ‘merger of equals’, merging parties are considered full partners and when PMI approaches do not reflect the pre-merger promises, the result may be dissatisfaction and distrust (Marks & Mirvis, 2001). The MQHC merger was initiated in 1998 with the clear goal of creating a mega-hospital that would provide outstanding health care services by implementing a business model for care management based on industry best practices. Because of the expected magnitude of the business process redesign, keeping legacy systems was considered to be an ineffective cost option. In the pre-merger context, the MQHC hospitals developed their own sets of applications, both for the clinico-administrative and administrative application portfolios. Also, each site had its own medical patient index (MPI) and patient ID card, used several and separate patient scheduling systems, managed beds and emergency rooms according to the internal site perspective, operated its own and distinct order entry and result reporting system and produced statistics specific to the patient stays within the specific sites. The site-specific approach was also present for the functionality of the IS providing clinical and volume data such as pharmacy, labs, radiology, operating

rooms, etc. In this context, the implementation of new work practices could only be accomplished with a single set of IS. Thus, in 1999 the management identified a list of prioritized integration projects among which was an enterprise solution for the laboratory system that would integrate the services across the three hospital sites. According to archival strategic documentation, the planned MQHC approach at the outset of the PMI phase was consistent with a *transformation* approach.

Laboratory Information System (LIS)

In 2002, upper management decided to acquire an ES to provide common best practices for its unified laboratory departments. The system, developed by company LabSpec (not the real name), was based on industry standards and provided flexibility to accommodate, to a certain degree, idiosyncratic practices. The role of an LIS in a hospital is to automate laboratory clinical, financial and managerial processes and to enable lab staff to maintain accurate tracking, processing and result recording, while avoiding lost and misplaced specimens. In order to better supervise the implementation work of the project team, a Clinical Advisory Committee (CAC) was set up. Its role was to make key decisions regarding the project scope and direction. The CAC included representatives from the upper management and lab physicians. Prior to the start of the system implementation, the three lab services were asked to standardize their practices (lab request workflow). Even though the typical lab workflow (scanning barcodes that include laboratory number, patient identification and test destination – hospital department/physician) seems to be forthright, each of the three lab services was using different sequence steps and different legacy ISs.

After almost three years of development, testing and finally implementation, the new LIS was put into production at the Community hospital in 2005, followed by the Riverside and Eastside hospitals at the beginning of 2006. The management decided to have both the new and

the legacy systems running in parallel for six months until lab workflows get adjusted to the new practices embedded in the new ES. While the initial design was based on best practice standards, after the six-month adjustment period, the post-implementation system configuration revealed a blend of industry standards and local contingencies. Therefore, the final LIS functionality reflected a mix of *transformation* and *preservation* PMI approaches.

Theme 1: Resistance and Accommodations.

At the outset of the project were the same three site-based set of practices: Community, Riverside and Eastside:

There were three different databases for each site. There were just so totally different, you know, order entry, the way they process, even in the way that they did the basic workflow. (Riverside-Lab Tech)

The need for a unique set of lab practices was clearly conveyed by the upper management to the laboratory clinicians:

Not only do they [management] count they're going to start using the same system, but the system will work the same way for all of them. Suppliers are not going to develop a specific need for a specific site. (IS-Manager)

The evidence suggests that resistance emerged right after the new LIS was put into production due to the new ES imposing a new sociomaterial assemblage upon the lab clinicians. This set up a need for negotiations and adaptations if the new LIS were to be adopted and used by the labs user community. During the six-month period when the new and the legacy systems were running in parallel, the mindset of the clinicians reflected site-related

work norms as a result of the existence of the three sets of practices for each laboratory unit. This situation is described by an interviewee:

There was very little cooperation from the physicians that were on that committee [CAC]. So you would have physicians from the Community and Riverside coming to visit us and try to get their feet in the system and put their mark. (Community-Lab Tech)

I knew that there was going to be some resistance from the various departments. Just like you know the people that are in the department, and who want to be the 'top dog' and who wants to have the last say. (Eastside-Physician)

The evidence shows that while clinicians tried to preserve their pre-merger practices, the upper management started to put a constant pressure on the lab physicians to adopt and use the new ES. Thus, the Lab technicians and physicians realized they had to agree on common standard procedures. A process of negotiations followed and compromises ensued:

There would be some shouting matches and sometimes we would have to say let's try it for six months and then see what happens [...]. So there have been times when you're trying to get a site to change and there were heated discussions, and sometimes we decided to leave it alone, depending on how important it was to change. (Riverside-Physician)

In a post-implementation meeting of the Clinical Advisory Committee, some members of the committee complained the fact that every task performed was taking more steps and time to complete than before with the old system. Workload had increased, secretaries and technicians were working a maximum amount of overtime, and doctors were not receiving reports

in a timely fashion. Other members of the committee also complained that the LIS system has increased their department's daily tasks.

Our data analysis suggests that the negotiation process resulted in accommodations that enabled emergent sociomaterial assemblages. While trying to bring a closure the implementation project, the physicians from the Clinical Advisory Committee were showing commitment to the lab user community:

We do syphilis tests, about 100 a day. So this is just one test in a typical day a microbiologist has to sign out. So at the beginning, I'm laughing because they would have to click each individual syphilis results. I was getting calls, 'this is impossible!' because you could be here until eight o'clock at night doing the results. Finally I called one of the IS specialists who figured it out that we could verify it without doing a hundred clicks. So what normally would have taken about two hours of signing, it took ten minutes now. (Community-Physician)

Theme 2: System Reconfiguration and Resulted Practices.

While neither the upper management nor the lab user community reached their goals - the former to impose new practices and the latter to keep its pre-merger workflows - the new sociomaterial arrangement gained enough support from both sides to reach a stable environment. On the management side:

What we did is that there are some different clinical practices we allowed, but we tried not to make too many because it's too difficult to keep on with quality. (Riverside-Physician)

However, on the lab user community side, the lab technologists struggled for a while and only after finding that their needs could not

be entirely met through the ES design, they engaged in innovative ways to using the LIS:

We thought that there was one way of working with the system, common to all the sites. [However], we found out that some people [lab staff] were expressing their concerns about the functionality and we found out that they resolved it. So we found out that there were some different practices ... workarounds depending on the problem. (Community-Lab Manager)

DISCUSSION

Planned PMI Practices, Resistance and Accommodations – Our case analysis revealed that the PMI approach adopted by the MQHC (*transformation*) involved the imposition of new practices and shaped the context of the ES implementation project. Upper management made it very clear that a unique LIS was a key technology in helping MQHC to implement new industry-based practices. The evidence shows that at the outset of the projects there were three different fields of practice, each defined by historical and patent information management-based norms. Therefore, significant differences were between the pre-merger site-based practices on one hand and between these practices and the new planned practices on the other hand. The case data suggest that different pre-merger sociomaterial assemblages based on common interests, organizational values and identities were at stake. This situation triggered resistance from the lab user community that was followed by negotiations with the management. The resulted arrangements: (1) created the bases for new sociomaterial assemblages around IS-enabled negotiated practices; and (2) undermined the planned outcomes of the adopted PMI approach. Taking into consideration the above argumentation we propose a first research proposition:

P1: A post-merger ES implementation triggers the creation of new sociomaterial assemblages embedded in post-merger practices that emerge through a process of dialectic of resistance and negotiation.

System Reconfiguration and Negotiated Practices – The case analysis revealed one main observation: the final configuration of the ES was different from the initial planned/proposed system configuration. The initial design was supposed to reflect practices related to a transformation PMI approach (new practices). The members of the CAC negotiated common interests with the labs staff by trying to adapt best practices to ‘local’ requirements when possible. The LIS was reconfigured to enable workable new practices (mix of *transformation* and *preservation*) that were different than the industry standards proposed by the manufacturer in the initial configuration (*transformation*). Our study shows that succeeding to respect industry-based practices and preserve some pre-merger (legacy) practices can help successfully pass the post-roll-out phase and avoid failure. Based on the above argumentation, we advance a second research proposition:

P2: In a post-merger implementation of an ES, the less emphasis on an ideal PMI approach, the more likely it is that the negotiation of new practices will be successful.

A PROCESS MODEL OF ES IMPLEMENTATION IN PMI

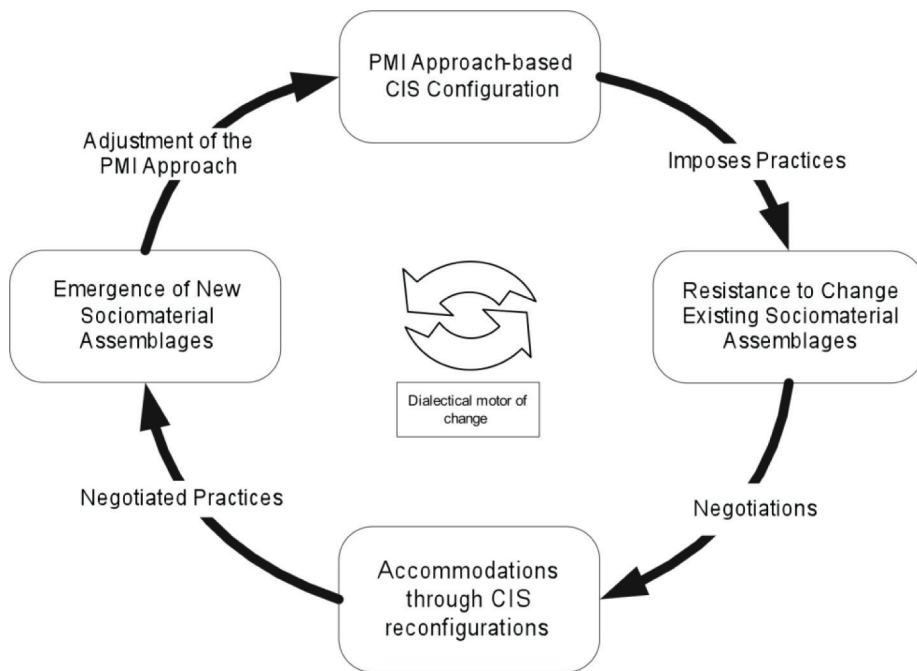
Our model is based on two premises. First, ES-enabled change of existing organizational sociomaterial arrangements is met with resistance and the new ES will be accepted and used only through negotiations followed by arrangements. Second, ES do not have pre-defined structures of their own and can only be defined in relation to the practices of prospective users, or to the business processes and institutionalized values of the organization implementing the technology (Orlikowski, 2000). We posit that major change

processes in organizations, such as PMI, can be explained alternatively or complementarily in a processual manner by four different motors of change: life cycle, teleology, dialectic and evolutionary (Poole & Van De Ven, 2004). In this viewpoint, implementation of an ES can be illustrated as a process that entails a sequence of individual and collective events and activities unfolding over time. The resulting view of the process tells a rich story by explaining how the dynamics of performativity generate new sociomaterial assemblages, which collectively lead to future action.

The analysis of our case study led us to consider the process of a post-merger ES implementation project from a single-motor perspective: *dialectical*. Organizations are complex entities usually comprised of goal-driven individuals whose personal agendas might be incompatible with their organization’s. As opposing individuals interact in an effort to impose their respective goals, organizations may change in response to resolutions of conflicting interests. We therefore infer that the means for driving change is dialectical as change is the outcome of the interaction between opposing forces.

Our model, presented in Figure 1, illustrates the operation of the dialectic motor of change during the process of a post-merger ES implementation. First, we posit that the integration approach decision will reveal existing pre-merger practice-based organizational boundaries. We conjecture that users affected by the ES-enabled changes in practices, will resist system’s implementation. In this context, team members will negotiate and propose accommodations through reconfigurations of the ES after the implementation. Thus, the initial functional design of the ES may be different from the final functionality once the ES is considered workable and start being used by the user community. The resulting dialectic leads to an iterative process of resistance and negotiation of common interests at the boundary, followed by a change of the existing sociomaterial assemblages which reflects a PMI approach different from the planned one.

Figure 1. A process model of ES implementation in PMI



In our case, management decision to implement a common LIS caused resistance from the three lab services clinicians (struggling to come up with a standardized lab workflow). The subsequent negotiations resulted in a workable ES that enabled a common set of lab practices and accommodated some pre-merger practice idiosyncrasies (mix of practice transformation and preservation). Moreover, the lab technologists were able to use the new LIS in unintended ways which proved to be beneficial to them.

CONTRIBUTIONS AND FUTURE RESEARCH

It has been argued that IT-driven organizational change is a social process (Orlikowski, 2007), and that a theory of change is best framed as a process theory rather than a variance theory (Mohr, 1982). In the case of a radical change such as a merger, process models can handle

more complex causal relationships than variance models, and they can provide an explanation of how the inputs and outputs are related at different levels of analysis rather than simply identify the relationship as variance models do. From this point of view, implementation of an IS represents a process that entails a “sequence of individual and collective events, actions, and activities unfolding over time in context” (Pettingrew, 1997: p.337). The resulting view of the process tells a rich story of the events taking place within a given situation by explaining how influential factors interact, how they collectively lead to future action, and what constrains them. Thus, we adopted a sociomaterial perspective because when this theoretical lens has been used, it has allowed for the development of a temporal, process-based theory (Wagner et al., 2010). While the main constructs used by the sociomaterial perspective – such as assemblages, performativity and reconfiguration – are clearly defined in the literature, we do not have

an in-depth understanding of the relationships between these constructs in the context of IS implementation and adoption in PMI settings.

The results confirm the existence of a dilemma of integration versus autonomy at the IT function level in PMI settings that can be explained by the emergence of unexpected new sociomaterial assemblages during the PMI phase. The MQHC management realized only after the implementation of the new ES that the planned PMI approach did not take into consideration the pre-merger sociomaterial arrangements in the three fields of practice. The literature on PMI suggests that while value creation results from an organization's ability to integrate practices across the previous organizational boundaries (Larsson & Finkelstein, 1999), excessive integration may render some of those practices useless due to their social and material arrangement context (Ranft & Lord, 2002). At the outset of project, the MQHC management opted for an overall ideal integration approach (*transformation*) for the new organization by planning to impose IS-enabled new practices. Yet, during the system post-implementation, it found no choice but to engage in a process of negotiation and trade-offs with the stakeholders of the ES, and in time realized that a *hybrid* integration approach (Schweizer, 2005) might be the appropriate path to take.

Our research makes a number of contributions. First, it introduces the issue of boundary management in the PMI IS literature and explains this dilemma through a dialectical motor of change. Second, by adopting a sociomaterial perspective we illuminate the outcomes of an ES implementation process by examining the practices that this system was supposed to facilitate. Third, it contributes to the IS strategy literature in presenting an ES implementation model that is neither technologically nor organizationally determined, adopting instead a sociomaterial perspective of ISs. Fourth, it demonstrates that negotiated practices are part of a normal course of action in enterprise systems implementa-

tion during PMI. This is an important insight for practitioners even though at odds with the popular best practice ideal associated with the packaged software such as enterprise systems. Finally, the theoretical explanation offered here through a field study, albeit a single case, has the potential for exploring more in depth some of the more complex processes associated with the dynamic relationship between the social and the material in the context of organizational change.

The main limitation of this study might be that it attempts at generalizing only from empirical statements to theoretical statements in developing a process model from a case study (Lee & Baskerville, 2003). However, it has been shown that statistical, sampling-based generalizability may be an unsuitable goal for qualitative studies (Denzin & Lincoln, 2000). The MQHC case is built on strong historical foundation and deal with issues of central importance to our research which makes it purposeful (Patton, 1990). Learning from this case will now be transferred to other contexts for further refinements that eventually will offer statistical generalizability. MQHC was a unique setting in many respects and it would be fruitful to continue building the theory developed in this study based on data from other PMI settings in different industries. Looking at industry level data and data from other settings may help overcome this limitation and provide new insights.

The dynamic approach of a process model seeks a holistic explanation of an organizational process. We strongly believe that a processual approach is a fruitful choice when viewing IT as an open and dynamic artifact (Orlikowski & Iacono, 2001) and when drawing on theories such as sociomaterial practice perspective. However, in adopting this approach, the IS researchers should rigorously adopt and define out-of-discipline concepts and take into account methodological issues, such as the analysis of the process data, implied by a process theory approach.

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ENDNOTES

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Dragos Vieru has more than 15 years of IT project management experience in the healthcare industry. He is an Assistant Professor in information technology governance at Distance Learning University of Quebec and holds a PhD degree in Information Technology from HEC Montreal and an MSc degree in Management of Information Systems (MIS) from Concordia University Montreal. His main research interests include strategic alignment of IT, emerging organizational forms and IT, knowledge sharing, IT outsourcing. He has already presented his research at various international conferences such as ICIS, AMCIS, HICSS and ASAC.

Marie-Claude Trudel is an Assistant Professor in information technology at HEC Montreal. She holds a PhD in business administration (MIS) from the University of Western Ontario in London, Canada. Her research interests include health information systems, information systems for cultural organizations, IT education and research methods. She has published articles in the International Journal of Medical Informatics, Health Care Management Review, BMC Health Services Research, and the Journal of Information Technology in Education.

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