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Resisting technology-enabled change within healthcare organization

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Resisting Technology-Enabled Change Within Healthcare Organization

ABSTRACT

Instead of the predominant view of resistance as one that occurs between the management and those lower in the hierarchy, we consider how acts of resisting would unfold between peer actors within a technology-enabled change project for a large university hosptial. Drawing on institutional politics, we highlight the importance of understanding organizational resistance as a set of interrelated skillful acts, where the actions of resisters are not only co-constitutive with actions of agents of change but also interrelated across resisters at different levels of the organization. This case also illustrates how resisting actions could play out across an entire change process. Furthermore, our study highlights that resisting actions are not only discursive acts but are embodied and intertwined with artifacts in the form of objects of resistance and boundary markers objects. More importantly, our study shows that in institutional battles involving peer actors, resisters are more assertive and may enact more adversarial and confrontational resisting actions to counter institutional agency actions. Our case study shows how such confrontations could ultimately lead to a forceful end to a project that was by all account well staffed and well run.

Keywords:

Organizational resistance, technology-enabled change, institutional politics

INTRODUCTION

Research on technology-enabled change[1] has focused on localized levels of resistance in the rank and file, notably from middle managers and users in response to decisions by top management. However, studies that looked at resisting such change efforts between peer actors are few and far between. This scenario, while less plausible, could arise, given the nature of contemporary organizational configurations where influential autonomous units could emerge in large, complex enterprises. When these powerful peer actors clash, how would the acts of resisting technology-enabled change unfold?

Here we have a revelatory case where the implementation of an enterprise electronic medical record (EMR) system in a large US hospital system was stalled by such organizational resistance. It resulted in an unlikely termination, despite having technically competent and experienced staff who engaged users throughout the rollout. The puzzle further deepens when the resistance actually surfaced after board approval and project initiation.

We use this rare case to build a theory of organizational resistance to technology-enabled change. We draw upon the emerging literature on institutional politics to understand the web of relationships among key and established actors and how antagonistic encounters at one level may seed, spread, and sustain other conflicts across organizational levels. Our paper proceeds as follows. First, we discuss in the literature review section how we assemble our theoretical toolkit, specifically to address the gap in research on resistance to technology-enabled change. In the same section, we also introduce literature on institutional politics, the theoretical base from which we draw several concepts to fill the research gap. Next, in the methods section, we elaborate on the context of our EMR case and our fieldwork. Following that, we present our

[1] By technology-enabled change, we refer to phenomena such as IS change and IT-enabled change. The change typically involves implementation of large IT systems, such as enterprise resource planning solution packages, and includes business process reengineering.

findings. We conclude with a discussion on the theoretical implications of our study. Similar to other interpretive studies (e.g., Berente & Yoo, 2012; Gioia & Chittipeddi, 1991), while we preface our findings with theory, the process through which our data and analysis engage literature on technology-enabled change follows a more iterative and emergent fashion.

ASSEMBLING OUR THEORETICAL TOOLKIT

Literature on resistance to technology-enabled change

Resistance at its most basic level is a co-constitutive act that involves at least two parties: the resisting (i.e., resister) and agent of change (Lapointe & Rivard, 2005). Resistance in technology-enabled change has been typically theorized as deviant behavior in organizational life and construed as something to avoid or at least to reduce. The aberration can be due to internal dysfunction (Lapointe & Rivard, 2005) and symptoms of misalignment in terms of tasks, structure, processes, or organizational values (see for example, Boonstra & de Vries, 2014; Leidner & Kayworth, 2006). Implicit in the literature is that resistance diverts attention and resources into activities that ultimately degenerate into dilapidating struggles that harm both the actors and organizations in which they occur.

Literature on resistance in technology-enabled change has also focused on actions from organizational members lower in hierarchy, such as creating workarounds during operational use (e.g., Ignatiadis & Nandakumar, 2010) and rooted in individual-level concerns, such as personality differences (Kim & Kankanhalli, 2009; Lapointe & Rivard, 2005; Meissonier & Houzé, 2010). Such studies tend to elide the contentious and adversarial potential in technology-enabled change. Impetus for resistance typically originates from economic considerations, such as high switching costs and uncertainty costs, and psychological commitment, such as bias toward status quo (Kim & Kankanhalli, 2009). What is less mentioned is that resistance does not

only occur at the individual level but also as group behavior that coalesces over time from individual action (Lapointe & Rivard, 2005) and may implicate IT artifacts during the process (Mòdol, Rezazade, & Sese, 2012). More importantly, by focusing on resisters' actions, they do not address how these actions may relate to the agents of change.

Resistance studies have also concentrated on specific stages of rollout, particularly pre- and post-implementation stages, hence offering at best a partial picture of the dynamics of change and resistance (Ignatiadis & Nandakumar, 2010; Meissonier & Houzé, 2010). As a result of what we highlighted limited, literature provides limited theoretical guidance on understanding organizational resistance in a case where resistance began during project genesis and initiation and later became full-blown during implementation phase and where resistance is co-constituted by actions of influential autonomous units pitted against one another.

Here, we turn to institutional theory, an established theory base in technology-enabled change for direction. Institutional accounts of technology-enabled change recognize such endeavors are fraught with challenges, especially in healthcare. Healthcare as an organizational field, while institutionalized (i.e., stable and recognized as distinct), has stubbornly remained fragmented. Hence, contestation becomes an inevitable feature where technology is widely accepted as a means to effect strategic change (Davidson & Chismar, 2007; Soh & Sia, 2004).

In the next section, we begin with an overview of institutional theory to understand the actions of agents of change in technology-enabled change. Then we introduce an emerging body of work on institutional politics as a promising lens to study resisters' actions in our case.

Institutional accounts of technology-enabled change: Changing the furniture

Institutional theory has been used to examine technology-enabled change, either in its entirety or in concert with other theoretical streams (e.g., sensemaking in Jensen, Kjærgaard, & Svejvig,

2009). Implementation of technology in organizations is often understood as institutionalization, under which a newly introduced system attains legitimacy, or social acceptance among its actors in a particular setting. Such accounts of how new technology fixtures become "part of the furniture," that is, when it is "no longer considered as innovations but as unnoticed and unremarkable tools that people take for granted in their work" (Silva & Backhouse, 1997, p. 2), form the bulk of literature using institutional theory in technology-enabled change.

Institutionalization occurs because of the agency or capacity of organized actors for "strategic action" to bring about change (Jensen et al., 2009; Nielsen, Mathiassen, & Newell, 2014; Oliver, 1991), including the gradual recognition of the role of nonhuman actors such as IT artifacts and material influence as triggers and carriers of change (Davidson & Chismar, 2007; Gosain, 2004). One prominent class of organized agents of change is institutional entrepreneurs (DiMaggio, 1988; Garud, Jain, & Kumaraswamy, 2002; Hardy & Maguire, 2008). Their role is most prominent during early stages of institutionalization, specifically the disrupting and creating aspects of institutional work (Wahid & Sein, 2014). In this respect, autonomous actors with resource and influence become especially critical, as either prospective institutional entrepreneurs or defenders of status quo, because they provide support and serve as the significant arbitrage between external pressures from the environment and internal concerns within their organizations on decisions concerning technology-enabled change (Baptista, 2009; Liang, Saraf, & Hu, 2007).

Studies have treated the institutionalization of particular technologies as either a process or outcomes (Covaleski, Dirsmith, & Michelman, 1993). Given the process focus in our study, we pay more attention to the stream of research on *how* institutionalization occurs in organizations. This body of work recognizes that institutionalization is dynamic and thus subject

to change during and after implementation (Davidson & Chismar, 2007; Nielsen et al., 2014; Soh & Sia, 2004). Such studies treat the process of institutionalization as a series of stages where each progressive step brings the new technology closer to successful implementation in the organization (Baptista, 2009; Mignerat & Rivard, 2009, 2012). Of particular concern are the acts of theorization that socialize and familiarize organized actors to the benefits and features of the new technology in order for the "new furniture" to be accepted in the organization (Mignerat & Rivard, 2012). While not explored in such studies of institutionalization, implicit in such discussions are acts of resisters – reactions that counter efforts at theorization (or counter-theorization) by proponents of change. Studies have also turned to examining how institutional logics, the broader cultural beliefs and rules that govern decision making, curate the attention of top management to specific concerns and solutions engender technology-enabled change (Yeow, 2013). This stream of work tends to be an extension of earlier work that treat institutionalization as outcomes, focusing on *why* organizations change and ascribing the impetus mainly to extra-organizational pressures emanating from other actors that cohabit the same fields, such as peer firms, professional/industry associations, or government (Currie, 2009; DiMaggio & Powell, 1983; Gosain, 2004; Liang et al., 2007). They follow a "diffusion of innovation" narrative, and as a result, tend to treat technology-enabled change as adoption that may require effortful correction to what are characterized as "misalignments," thus more benign than addressing conflicts and resistance.

Of late, studies in institutional logics begin to recognize the issue of power and politics by highlighting circumstances when multiple logics penetrate a field and its constituents (Purdy & Gray, 2009; Thornton & Ocasio, 2008). As a result of this gradual shift, issues concerning conflict and resistance have become more conspicuous in institutional accounts of change. For

example, the issue of power is first alluded to under discussions of "parochial interests" (DiMaggio, 1988) and now also has become more apparent in issues arising from "competing logics," which shows a stronger "flavor" of contest (Berente & Yoo, 2012; Yeow, 2013).

Recent work provides an even more explicit assertion on the relationship between institutional accounts of change and the dynamics of power. Multiple logics may coexist as hybrids of logics and practices, but there are also studies that present a clearer case of competition and even conflict. In the event that coexistence and "benign" conversion via persuasion are not tenable, actors may resort to the use of power to settle conflicts (Greve & Zhang, 2016). The emerging work on institutional politics within institutional theory offers a lens to situate such application of power to change or resist changing the "furniture".

Institutional politics framework: Resisting institutional agency and control

To guide our theorizing on power and organizational resistance, we draw primarily from Lawrence's framework (2008) which elaborates on how to study power and politics in institutional theory. In this section, we give a brief overview of the key components of the institutional politics framework and their inter-relationships: power, institutional control and agency, actors, and institutions.

According to the institutional politics framework, power is a property of relationships among actors, systems, and technology (Lawrence, 2008; Lawrence, Malhotra, & Morris, 2012). Specifically, power is exercised when the beliefs, behaviors, or opportunities of one actor are affected by another actor, system, and technology (Lawrence et al., 2012). This definition offers a productive lens to understand the EMR case, given the co-constitutive and dynamic nature of resistance (between resisters and agents of change). The emphasis on the activation of power and relationships also differentiates this definition from others which construes power as a resource

or a reserve that may lay dormant, waiting to be accumulated or depleted (see for example, French & Raven, 1959; Pfeffer & Salancik, 2003).

The framework argues that power is expressed through two channels: institutional agency and institutional control. When actors demonstrate institutional agency by attempting to create, transform, and disrupt institutions, they exercise episodic power. Such power is episodic as it relies upon the deliberate actions by interested actors to "mobilize resources, engage in institutional contests over meanings and practices, develop, support or attack forms of discourse and practice" (Lawrence 2008, p. 174). The stream of work on institutional entrepreneurship (DiMaggio, 1988), such as to create new standards (Garud et al., 2002) or install technological platforms (Leblebici, Salancik, Copay, & King, 1991), fall under the ambit of institutional agency. When institutions demonstrate institutional control, or simply "social control" (Lawrence, 2008), by regulating beliefs and behavior of actors, they exercise systemic power. "Systemic" underscores its ease of pervasive influence: it does not require actors to consciously "activate" their beliefs to guide their choices because this process would have become taken for granted. Early-day institutional accounts of isomorphic pressures (DiMaggio & Powell, 1983), where actors (e.g., organizations in a field) converge on a common set of structures, processes, and beliefs, as well as shared identity, belong to studies of institutional control.[2]

The framework highlights that resistance limits the efficacy of actors during their attempts at institutional agency and institutions when they exert institutional control. Resisting institutional control has been more fleshed out in the literature, particularly from a strategic action perspective (Oliver 1991), where the range of responses goes from fatalistic "acquiescence" to decisive "manipulation". In contrast, resisting institutional agency has been

[2] In this instance, the notion of power is more implicit, given that "pressures" do not convey the intensity and sense of antagonism typically present in analyses of power.

understudied. That said, given that the choice of response essentially rests upon the power differential between actors and institutions, we argue that the strategic action typology may be applicable in the context of resisting institutional agency, as the inter-relationships among actors are similarly contingent upon varied capacities to exercise power.

Along the same vein, literature on the range of actions available to institutional entrepreneurs when they perform institutional work could also inform us how actors may conduct institutional resistance (Lawrence & Suddaby, 2006). Similar to institutional entrepreneurs, resisters need to develop a compelling vision so as to motivate and mobilize others to join their coalition (Battilina, Leca, & Boxenbaum, 2009). They would have to use persuasion and their social skills (Fligstein, 1997; Fligstein & McAdam, 2012), and build common identities and meanings across disparate groups (i.e., a referent group that considers other groups as "others"). Other discursive actions include performing theorization (Strang & Meyer, 1993), articulating claims about causal relationships between putative problems and their solutions. Apart from such framing attempts, more discreet and nuanced actions could also engender indirect resistance, such as relying on third parties (e.g., professional bodies, mentors, alumni), counter-claims or alternative institutional vocabularies (Suddaby & Greenwood, 2005). In the context of organizational life, while the deployment of force is typically under-examined, it cannot be narrowly treated as "brute" physical violence. The use of force could refer to engendering retrenchment and resignation, where individuals had to leave organizations, as well as retiring systems and technologies. Taking these into account, the actions available for resisters thus extend beyond discursive actions, which are located on the plane of words and worldviews, to include embodied objects, where platforms could be shut down and individuals exit organizations.

Following the institutional politics framework, the episodes from which we observe prominent organizational resistance are construed as "institutional battles" (Holm, 1995). As battles, they highlight the forceful, even violent, re-alignments of the relationship among actors, systems, and technology. Power of established actors in such battles is contingent upon their founding positions in the social and hierarchical order, including conditions that allow them to use their formal authority to exert influence (Battilina et al., 2009).

METHODS

Case context and background

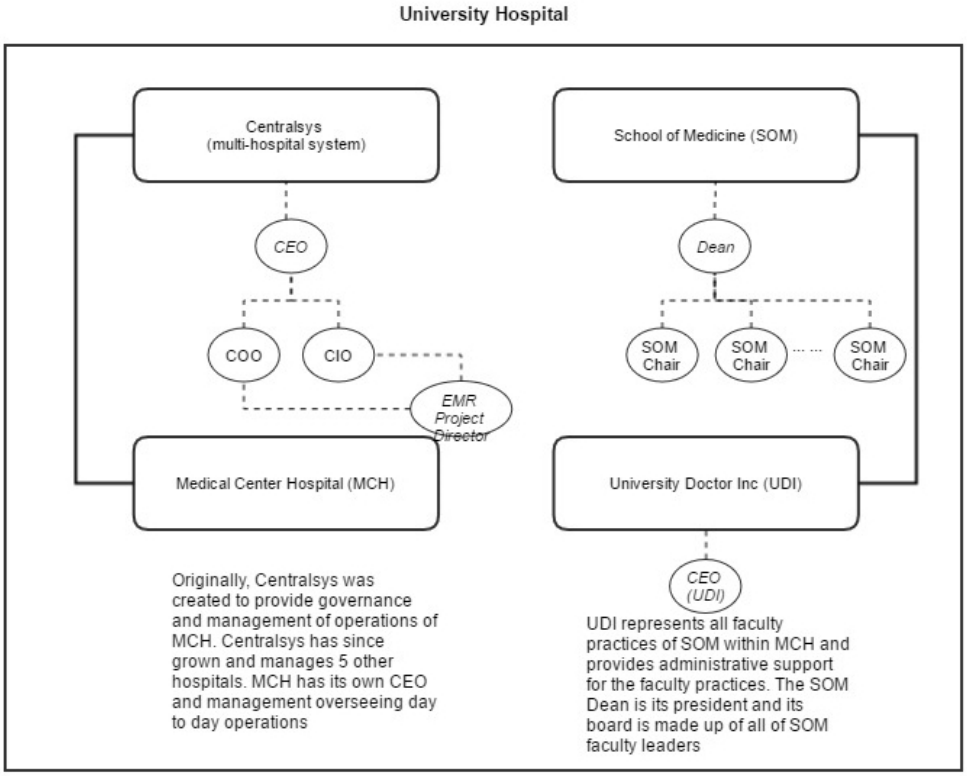

Figure 1. Structure of University Hospital

Our case study took place in a large university hospital located in a US metropolitan city. The university hospital comprises two closely linked yet autonomous entities: Medical Center Hospital (MCH) and School of Medicine (SOM). MCH is a 650-bed hospital that employs about 5,400 staff. It admits about 30,000 inpatients and sees 160,000 outpatient visits a year. MCH is

part of a private, not-for-profit multi-hospital system, Centralsys, which manages the hospital as part of a statewide hospital network. MCH draws its 1,000-odd medical staff entirely from the faculty of SOM. SOM is a public medical school with an enrollment of over 1,200 students. Its faculty practice and deliver patient care at MCH and another 20 private practices housed in MCH. SOM's subsidiary University Doctor Inc. (UDI) coordinates and supports the clinical activities of SOM faculty and manages the revenue and billing for SOM faculty private practices at MCH. (See Figure 1). The case study looked at a major change project that involved a new EMR system to support a strategic change initiative. Such technology-enabled change project in large healthcare organization provides an apt context to study the dynamics of organizational resistance as it often involves changes across autonomous actors with differing agendas and interests that tend to engender intense contestations (Bhattacherjee & Hikmet, 2007; Lapointe & Rivard, 2005; Yeow, 2013). Thus, technology-enabled change project in healthcare settings is a potentially rich site for our research study.

Data collection

We collected multiple sources of data including interviews, archival data from the project and media outlets, and observation data during the period of change. The first and third authors of this paper gained access to study the implementation of the EMR system from 2007. In total, we conducted three rounds of interviews in 2007, 2009, and 2010, completing 51 interviews with 22 interviewees from Centralsys, MCH, SOM, UDI, and EMR project team. The formal, semi-structured interviews and informal interviews focused on interviewees' experience of the events and decisions.

Table 1. Interviews Breakdown		
Level	No. of Interviews	No. of Interviewees
Project genesis and initiation		
Centralsys and MCH Management	11	4

EMR project management	10	5
EMR project staff	12	10
Sub-Total	**33**	**19**
Implementation phase		
Centralsys, SOM and UDI Management	8	6
EMR project management	6	6
EMR project staff	4	3
Sub-Total	**18**	**15**
Grand Total	**51**	**22**

In addition to interviews, the first author was also embedded in the EMR project team and experienced multiple phases of the implementation from 2007 to 2008. He observed and took notes at various meetings where key management players from Centralsys and MCH, SOM, UDI, and EMR project team interacted. These meetings provided insights into the politics and actions of power and resistance. We also collected archived minutes of other key meetings, documents from the project such as planning, internal reports, as well as media articles on Centralsys, MCH, and SOM to supplement our interview and observation data.

Data analysis

Following extant research methods for process research, we first constructed a chronological case narrative of the change project using data from the interview transcripts, field observation notes, and meeting minutes (Langley, 1999). We also presented the findings of the case to the management during the study period to verify the validity of our data (Eisenhardt, 1989). While we originally concentrated only on the implementation process, the concept of resisting organizational change emerged from our focused analyses of the management interviews and meeting notes, when we noticed how the EMR implementation project continued to face significant obstacles and failed to fully take off in spite of the highly competent project team and significant amount of organizational resources poured into the project. Also, what triggered our

interest in the actions of agents of change that led to actions of resistance and the salient role of SOM and UDI actors in influencing the overall outcome of the project.

Our next set of analysis was based on the institutional politics framework and realigned to two "focusing events" (Lim, Sia, & Yeow, 2009). These focusing events encapsulated the institutional battle where actors engaged in institutional agency and institutional resistance. The first focusing event triggered the institutional battle between Centralsys, SOM and UDI over the Ambulatory Care Center and the design of the EMR system. The second focusing event took place in the wake of the first institutional battle between Centralsys, SOM and UDI, triggering the second one, where significant operational issues with the EMR implementation in a MCH ambulatory led to battle over the overall EMR implementation rollout.

We analyzed the data by carefully reading the management interview transcripts and field notes to trace who, their actions, and how these focusing events occurred. The data analysis started with the triggers of the focusing events and the key actors involved in the battle. Using Lawrence's framework of institutional politics and Oliver's strategic action typology, we surfaced various actions: for actors involved in institutional agency we coded institutional work actions e.g., mobilizing resources, discursive actions, use of formal authority; for actors involved in resisting we coded strategic actions e.g., avoidance, compromise, defiance, and also relevant types of institutional work, e.g., counter framing.

Beyond the actors and actions involved in the institutional battle over the exercise of episodic power, we noticed that the actors and actions occurred at various organizational levels and these actions influenced the actors and actions across organizational levels. We thus began to theorize concerning the relationships across different actors and actions. Further, we noted from our data that these actions were enabled and constrained by the presence of artifacts. Keeping

with current sociomaterial perspective of institutional work (Feldman & Orlikowski, 2011; Oborn, Barrett, & Dawson, 2013), we also highlighted the role of artifacts in the ongoing actions of institutional agency and resistance at the different organizational levels. Finally, the first author conducted the fieldwork and initial data analyses while other authors acted as devil's advocate to clarify and provide alternative interpretations (Eisenhardt 1989).

FINDINGS

Project genesis and initiation

In 2003, Centralsys hired a new CEO, Mr. Alpha[3]. Mr. Alpha observed that MCH lacked an ambulatory care[4] strategy and an accompanying robust technology system to integrate registration, scheduling, and medical records. Drawing on his rich experience of building ambulatory care centers and networks in his previous job, Mr. Alpha started two interrelated initiatives: one, to develop a new MCH Ambulatory Care Center and two, to integrate MCH ambulatory care clinics through a new Ambulatory EMR system (referred to as "EMR system").

Table 2. Pseudonyms of main characters in institutional battles

S/N	Pseudonyms	Role	Entity
1.	Mr. Alpha	Chief Executive Officer (CEO) (Old)	Centralsys
2.	Mr. Replacement	Chief Executive Officer (CEO) (New)	Centralsys
3.	Mr. Ops	Chief Operating Officer (COO)	Centralsys
4.	Mr. IT	Chief Information Officer (CIO)	Centralsys
5.	Ms. Project	Director, EMR Project	Centralsys
6.	Dr. Kooperate	Dean (Old)	SOM
7.	Dr. Research	Dean (New)	SOM
8.	Mr. Stall	Chief Executive Officer (CEO)	UDI

However, MCH and SOM have traditionally focused mainly on inpatients (i.e., health care services for patients whose condition requires admission to a hospital) and built most of its expertise and reputation on that part of their clinical work. Moreover, Centralsys, MCH, and

[3] Due to privacy concerns and sensitive nature of the case, all actors were given pseudonyms. See Table 2.
[4] Ambulatory care is medical provided to patients on an outpatient basis i.e., outside hospitals.

SOM were related in a highly symbiotic but complex structure. Specifically, Centralsys as the hospital system runs the administrative and business aspects of MCH within which SOM's clinical faculty operates. Thus, Centralsys and MCH's management expects to have some "control" over how SOM's clinical faculty work and how their clinics should be run. On the other hand, SOM's faculty leaders ("Chairs") perceive themselves as the professional authority who should have autonomy over their clinical operations. Since they are the ones doing the clinical work, they expected entitlement to the financial resources from MCH and Centralsys. In order to gain support for his ambulatory strategy, Mr. Alpha began to work closely with the Dean of the SOM, Dr. Kooperate, to theorize and develop a joint vision of an integrated ambulatory care for MCH and SOM. In 2004, Mr. Alpha worked hard to mobilize political and regulatory resources (Lawrence et al. 2006; Holm 1995). For example, Dr. Kooperate agreed to transfer a SOM site to Centralsys to build its Ambulatory Care Center. In return, Centralsys would build a new SOM building on its campus. Mr. Alpha also approached the state government for federal funding of up to US$250 million to help build its Ambulatory Care Center (State Executive Budget Report 2006).

Once the Ambulatory Care Center project was agreed between Centralsys and SOM, MCH and UDI's IT team began groundwork for the new EMR system. In Spring 2004, a workgroup formed by physicians from SOM established a Clinical Systems Visioning Group to develop guiding principles for the EMR system. By middle of the year, the team had begun vendor selection and system evaluation. Mr. Alpha appointed a Chief Operating Officer (COO), Mr. Ops, for the Ambulatory Care services in Centralsys and MCH. Mr. Ops was in charge of both the Ambulatory Care Center and the EMR system. By end of the year, the final three EMR system vendors had been shortlisted and all MCH staff and clinicians were invited to attend

demonstrations by the three vendors. By the end of 2005, the state approved the EMR system budget and the EMR vendor was finalized.

Institutional Battle 1: Ambulatory Care Center and EMR design

Trigger. In 2006, even as the Ambulatory Care Center began to take shape, the push to implement the EMR began in earnest. Mr. Ops service hired a new CIO for Centralsys, Mr. IT, and a project director for the EMR project, Ms. Project. Although Mr. Ops continued be part of the project, he had begun to transition out from this project to ambulatory care in general. The trigger for the institutional battle however occurred in 2006 when the Dr. Kooperate retired and a new Dean was appointed in the Fall of 2006. The new Dean of SOM, Dr. Research, had been a Vice Chancellor and Dean of another large state university medical school. In that previous position, he had greatly expanded the medical school's research efforts both in terms of funding, recruitment, and center development. As the new Dean of SOM, Dr. Research's focus was on connecting world-class research with clinical practice and had immediately issued a series of open letters outlining his visions for medical research and development of more inpatient clinical programs in MCH. In fact, a press release noted that the Dr. Research's choice to come to SOM was its commitment to expand research.

Leadership level institutional agency and resisting actions. Dr. Research did not share the vision of the Ambulatory Care Center and ambulatory care strategy as much as Dr. Kooperate. In fact, quite soon after Dr. Research took charge, he challenged Mr. Alpha over issues of ownership, authority, and finances of the new Ambulatory Care Center. At the same time, SOM Chairs proposed counter-claims against the legitimacy of the proposed Ambulatory Care Center as they saw that it could potentially divert reimbursements from patients and insurers that they currently receive in their current private practice within MCH (Source masked).

SOM Chairs argued that MCH's main focus should continue to be inpatient care since at its core it is an academic tertiary care facility. Operationally and from a revenue perspective, SOM Chairs also pointed out that ambulatory care accounted for less than 20% of MCH's total annual revenue. In sum, there were significant attempts by Dr. Research and SOM Chairs to discursively resist the legitimacy and claims of Mr. Alpha's push for a new ambulatory strategy. By end of 2006, Dr. Research's actions resulted in a slowdown in the Ambulatory Care Center building project.

Mid-level institutional agency and resisting actions. The immediate impact of the leadership resisting actions on the mid-level institutional agency work was the loss of the Ambulatory Care Center as the EMR system implementation site. The EMR project team had to refocus their EMR implementation strategy back to the 40 over ambulatory clinics located in MCH instead.

At the mid-level, Mr. IT was one of two main actors involved in majority of the institutional agency actions. Mr. IT had a track record from his previous medical administrative experience for successfully integrating multiple information technology system across four hospitals into a single system. He had significant experience dealing with clinicians who resisted this type of standardization and integration project.

In order to push ahead with the EMR change, Mr. IT actively persuaded the SOM Chairs in charge of the ambulatory clinics in MCH by using various approaches to frame the EMR project in positive ways. For example, Mr. IT framed the EMR project as a solution to economic problems brought about by the lack of standardization of work processes in that EMR system would lead to consistency in work processes that not only would improve the clinic's operations but bring about cost savings. He gave the example where given the current situations of highly

customized work processes, if a front-line staff was out of action, the clinic may not be able to get someone from another clinic to cover that person. Instead they may have to either reduce their patient schedule or hire a new temporary staff. These options would reduce their bottom-line from one way or another. He appealed to these SOM Chairs that accepting the new EMR system with standardized flows would enable them to resolve such scenarios in a more efficient and cost effective way. Moreover, he pointed out that the current situation had created service problems as patients who moved from one clinic to another had to provide their information for each clinic and thus do not enjoy a seamless continuity of care.

Another discursive approach that Mr. IT used was to theorize the EMR system as a tool that will benefit the clinical faculty's research work. As he explained to one of the authors during an interview:

> "We are creating a database with millions of patients and millions of results. It will help expedite new opportunity for research grants. It is big bucks. (They are) frothing at the mouth. Now they have to abstract (from) paper records. But we can query patients, racial groups, disease groups, look for this and that and provide that pretty quickly."

Mr. IT also consistently theorized the EMR as the solution to the problem of reduce fragmentation and it would increase integration across the MCH and clinical faculty's private practices (Internal memo from Design Group Sep. 2006 and Kickoff presentation Oct. 2006).

At the same time, Mr. IT used his formal authority that came with his appointment to the Implementation Planning Committee to gain access to engage the SOM Chairs and Dr. Research. Through the committee, he was also able to enroll clinical faculty into specific project teams to take charge of different aspects of the EMR system design.

The SOM Chairs did not fully embrace Mr. IT's rhetoric of economic savings. Rather each SOM Chair has traditionally operated their private practices independently. As such, as one staff countered saying, "variability is ingrained in their processes; none of the processes are the

same." From their perspective, they reinforced their view that the EMR system is a clinical information system that would complement their existing scheduling, registration, and billing systems. They did not fully embrace the notion that the EMR system should help reduce the fragmentation of the current systems and processes across MCH. Thus with respect to Mr. IT's theorization, there were a lot of discursive counter actions from the SOM Chairs.

At the same time, UDI CEO, Mr. Stall, challenged Mr. IT in that the EMR system should not be coupled with the other business process such as registration and scheduling since they already have such systems in place. He counter-theorized that the EMR should be simply a clinical information tool to help "deliver high quality care, to generate the data for new research opportunities, and to really kind of move those new found discoveries from bench to bedside." This is more in line with their role as a university hospital whose mission is about clinical care, research, and education.

In sum, the mid-level institutional agency work by Mr. IT also experienced discursive type of resisting work from the SOM Chairs and UDI management. The ongoing tussle was mainly played out in the implementation planning committee meetings as well as one-to-one meetings between Mr. IT and the SOM Chairs.

Project-level institutional agency and resisting actions. At the project level, Ms. Project of the EMR project served as the main actor. She was hired at the same time as Mr. IT in April 2006. Ms. Project had recently successfully completed a similar EMR implementation in another university hospital system. Given her rich experience running such EMR implementations, Mr. Alpha, Mr. Ops, and Mr. IT relied heavily on her to drive the project. She was appointed to head the Project Planning Team that reported to the Implementation Planning Committee. As part of

the overall guidance for the EMR project, Mr. Alpha and the Dr. Kooperate had crafted a set of vision and guiding principles for the EMR system design. It stated that

> "The vision for delivery of care at the Centralsys and SOM enhances the experience of our patients; sustains the highest quality care, clinical research and education; and supports the continuity of care through seamless access to clinical information. The vision respects the unique character and distinct mission of each entity that makes up Centralsys and the SOM organization. Thus one of the key principle is patient experience."

Given this vision and mandate from the top management, Ms. Project approached the EMR system design from an integrated system perspective where the EMR system would not only include the modules dealing with clinical information system, orders entry, prescription, laboratory, and imaging but also patient scheduling, registration and billing. The goal was to design and implement the integrated design that would realize the vision as stated by the combined leadership of Centralsys, MCH, and SOM. In order to do this, Ms. Project had mobilized resources to build her EMR project team to develop the core EMR applications as well as to handle harmonization of the different insurers and patient databases in MCH and UDI so as to build an integrated database for the EMR. She also had a team to focus on developing interfaces to the two existing patient scheduling, registration, and billing systems – one that was managed by UDI's technical team and the other managed by MCH inpatient operations.

At the same time, Ms. Project had to develop a rollout strategy for the system across the different ambulatory clinics. Previously, Centralsys and UDI had appointed an external consultant to gather information of all the ambulatory clinics and build a readiness metric to score how ready each ambulatory clinic was for the EMR system. Ms. Project had adopted the phased rollout approach and agreed to focus on three ambulatory clinics in MCH for the initial pilot rollouts. The idea was to gain experience deploying the EMR in clinics that were supposedly ready for the EMR system before embarking on a single big-bang implementation

across all ambulatory clinics. The initial rollout plan called for three to four clinics to be completed every 6-7 weeks so as to implement the EMR across the entire MCH.

One challenge that Ms. Project had in running this project was the need to establish the project team from scratch. This was due to decision by MCH and Centralsys not to use the existing IT teams within MCH in order to keep this ambulatory system separate from its current systems. Ms. Project pointed out in an interview that the staffing and building of the team was a key task she had to accomplish even as she was implementing the system. However, this challenge was not the only problem Ms. Project had as she immediately experienced resisting actions from UDI and SOM.

First, Mr. Stall expressed unhappiness over the EMR system design and questioned the integrated architecture design. Mr. Stall said:

> "It's definitely something that needed to be evaluated whether we should decouple registration and scheduling from (UDI's) billing and financial systems or does it make sense to leave registration to the scheduling in place and then interface those messages relating to patient demographics, identifier, insurance, scheduling messages with the EMR system."

Ms. Project pointed out that UDI's team who were assisting the EMR project questioned her concerning the decision to use EMR as a "veneer" on top of UDI's billing systems via interfaces and to use the EMR's registration and scheduling modules to replace UDI's current registration and scheduling systems. She argued that this was the mandate and principles that was stated when she joined the project. It was also in line with what Mr. IT espouse in his communication with her and with the rest of the committee. She pointed that the Dr. Research and SOM Chairs had signed off on the vision and principle documents.

Beyond discursive actions, UDI's project team also openly defied Ms. Project by refusing to cooperate on the interface development aspect of the project even though UDI IT team and the EMR project team were supposed to work closely to build the interfaces between the EMR

system with UDI's billing system. Moreover, UDI IT team informed the EMR team that they would be going ahead to upgrade their system during the time period when the EMR team was actually building the interfaces. This decision to upgrade their system made it practically impossible to build the interfaces as the EMR team would be building interfaces to "to-be" implemented software. In such cases, the EMR team will not have actual live interfaces to test with and can only depend on software documentation. When asked by Ms. Project if they could delay their upgrading schedule, the UDI IT team replied: "No. We have to do what we have to do." Furthermore, UDI planned to have the upgrades done incrementally – one clinic after another, which again contradicted the EMR team's plan to rollout to the rest of the clinics in one run. In this way, UDI IT team's unilateral decision effectively manipulated the circumstances and created a huge barrier in the integration development efforts.

UDI billing team also resisted the EMR project team's efforts to harmonize the different databases. In this case, the patient advisory committee – a multi-disciplinary sub-team under the Project Planning Team – had made attempts to bring the team members from UDI and MCH billing departments together to work on standardizing the master files for insurance plans. The master files were the foundation of the billing database. However, the team quickly realized that UDI and MCH had very different nomenclature for similar insurance plans and that required significant modifications and interventions to either MCH or UDI's insurance plan database. As UDI's insurance plan had a larger list (1,200 compared to MCH's 300), most of the modifications had to be done on UDI's end. Despite the efforts of patient advisory team and the EMR project team, UDI's billing team was not forthcoming in their efforts to change or harmonize the insurance plans master files. As one EMR project team member pointed out:

> "We would observe more passive aggressive behavior where for example the group come together and they say let's paint the walls blue, and everybody agrees but after that everyone just leave and the walls don't get painted."

Such resisting actions by UDI teams created major obstacles in creating an integrated database of patient data across all ambulatory clinics.

Second, the SOM Chairs also resisted at the project level. Out of the original three MCH clinics selected for the early adopter implementation, two of 19 SOM Chairs decided to pull out. The first clinic pulled out even before the requirement analysis was conducted – the SOM Chair claimed that they were not ready in terms of their resources. The second clinic pulled out after the project team had begun their requirement analysis workshop with the clinic staff. The reason for the pull out was partly due to the unhappiness of the SOM Chair over the level of customization of the EMR and partly due to the lack of integration between EMR and UDI's billing system. The two early adopter clinics pullout created major rollout issues for Ms. Project.

Third, rank and file physicians also voiced their concerns over the readiness of the project. The senior member of the physician advisory group responsible for managing the physicians' readiness for the EMR reported that to the project team:

> "Senior leadership vision, project scope and timing for (EMR project) has not been communicated to the broad physician community and the 'system-ness' of MCH and SOM is not mature."

Ms. Project recognized that she had to manage the politics and the "real" project issues. She said that due to organizational politics, the project had a shared vision but "no shared buy-in." Her reactions to these resisting actions by SOM and UDI were opportunistic and pragmatic.

In order to deal with the resisting actions of UDI and SOM, she had escalated critical issues such as database harmonization to the implementation planning committee chaired by Mr. Alpha and Dr. Research. However, due to the impasse between the two senior leaders, limited actions were taken against UDI for their reluctance to cooperate in those areas. Given that there

was limited progress in that area, Ms. Project took effort to workaround them as much as possible in order to make progress with the EMR system.

In the case of pilot sites, Ms. Project managed to persuade three ambulatory clinics that were sited outside the main hospital campus. These three clinics were unique in that they were co-owned by MCH and SOM and had relied mainly on paper-based billing processes. As such, they were not directly affected by the lack of integration between UDI and the EMR system. Also, since they were off-site, they relied only on MCH's insurance plan database and thus were not affected by the harmonization issues. More importantly was the fact that the medical director in charge of these three clinics was a strong proponent of pushing for an integrated EMR system and had volunteer one of the three as an early adopter site. There was a strong buy-in from the staff and physicians for the EMR systems as they faced significant process challenges in providing continuity of care for their patients when they move from their clinics to MCH clinics. Their support was important for Ms. Project as a successful implementation would demonstrate the viability of the EMR system. As Mr. IT described Ms. Project and her team's approach:

> "We have to manage the politics. We just have to navigate the political minefield. … This is like a football game. The goal is to gain yardage, when you get hit, you roll off the tackles. To try to gain yards. The project team in a sense has to step out of the wall sometimes and can't accept a no for an answer. They may have to push, in fact, the project team is seen as a pushy group."

Outcome. The first main outcome of this series of actions was that the Ambulatory Care Center project became stalled as the senior leadership continued to disagree over its governance. At the mid-level, Mr. IT, Mr. Stall, and SOM Chairs were embroiled in constant tussle over the design and role of the EMR system vis-à-vis their current processes and systems. Beyond discursive actions, the resisters – Mr. Stall and SOM Chairs – chose to steadily reduce their support for the EMR system rollout as they began to question key aspects of the EMR design. On the other hand, Mr. IT and Ms. Project continued to push the EMR project forward in spite of

these ongoing multi-level resisting actions. With the resources from Centralsys and MCH, Mr. IT and Ms. Project was eventually successful in not only setting up the EMR system as a working system but also implementing it across three offsite ambulatory clinics by March 2008. However, by that time, the integration work between the EMR system and the UDI's billing system was still not completed. Also, the harmonization of databases continued to drag on with no clear way to resolve the differences. Thus the overall outcome of this round of institutional battle is a stalemate between Centralsys and SOM. See summary of actions in Table 3 below.

Institutional Battle 2: Stopping the EMR implementation

Trigger. In 2008, just as the first round of institutional battle had reached a stalemate, two things occurred that triggered the second round of institutional battle. First, around this period, Mr. Alpha formally announced that the Ambulatory Care Center project had been indefinitely shelved. In a way, Dr. Research and SOM Chairs had managed to successfully block one major component of the ambulatory strategy proposed by Mr. Alpha. Around the same time, due to his other actions unrelated to this ambulatory project, SOM Chairs escalated their concerns about Mr. Alpha to Centralsys Board of Directors. They claimed that under his leadership, Centralsys and SOM relationship has "deteriorated to a point where the future of both institutions is jeopardized." As result of such pressures from SOM and his own Board of Directors, Mr. Alpha announced that he would retire in August. His replacement was MCH's CFO, Mr. Replacement, who first served as an interim CEO and later appointed by Centralsys Board of Directors.

Project-level institutional agency and resisting actions. Even while the top leadership in Centralsys underwent significant changes, Ms. Project and the team continued to make progress in the EMR implementation. The fourth clinic was a multi-disciplinary ambulatory clinic—Diabetic Clinic—sited within the hospital system. For Ms. Project, this clinic implementation

was critical, as its success would provide a “true” proof of concept of the integrated EMR to the rest of the MCH and SOM since it would be an actual adopter on MCH. Ms. Project believed that when Diabetic Clinic is up and running, she would have a “voice” on in the hospital to speak for the EMR to other clinical faculty.

However, Diabetic Clinic was unique in that it only served diabetic patients and provided a one-stop multi-disciplinary clinic where all the needs of a diabetic patient could be attended. The main physician for the diabetic patient would be the endocrinologist but the patient could also make follow-on appointments with other specialty physicians e.g., podiatry, ophthalmology, psychiatry, and nutritional services.

While the requirements and actual implementation process for Diabetic Clinic was relatively smooth, the EMR project team experienced major setbacks in the months after the EMR system went live. First, unlike the first three off-site clinics, physicians in Diabetic Clinic practiced there only twice a week and spent more of their time back in their own practices. The physician who was appointed as the medical director of the Diabetic Clinic only managed these colleagues when they practiced in the Diabetic Clinic. At other times, these physicians were his peer at their respective practice. Due to this unique staffing arrangement, the physicians’ buy-in and commitment for the EMR system was not as strong. The medical director also did not push as hard for the physicians to participate in the requirement and customization workshops held by the EMR project team. Moreover, as the first multi-disciplinary ambulatory clinic, there were more tools that had to be customized that delayed training on some of new EMR tools.

As a result, the EMR system was not as well tailored to Diabetic Clinic’s workflow as it could be. Physicians at the Diabetic Clinic were not as well trained with the system as they had less exposure to the system during onsite training and after system go-live. Thus Diabetic Clinic

staff experienced greater difficulties using the EMR system to support their clinical work, which led to lower satisfaction and higher number of complaints against the EMR project team. This set of "collateral noise from the main clinicians" was the first to reach the Dr. Research's ears.

Second, and more significant, was the setback faced by the billing and operations team. As noted at the end of the first institutional battle, the EMR project team continued to face difficulties in building the interface to UDI's billing system. This meant that the interface between EMR patient data and UDI billing system could not be completed in time for Diabetic Clinic's implementation and that interface problem had severe implications for Diabetic Clinic.

Whereas the three prior offsite clinics could be supported by manual paper-based workarounds because it was only integrated to MCH's billing system and had only one billing office, Diabetic Clinic had a more complex billing setup in that it sent billing information to MCH and five UDI specialty billing offices – a total of six billing offices. All these billing interfaces had to be converted to manual paper bills due to the delay in interface development. The Diabetic Clinic did not anticipate the increased workload due to this workaround, especially when exceptions occurred in some of the patient's bills, and as a result there was significant increase in time taken to process patient bills.

At the same time, the Diabetic Clinic experienced several programming bugs found in the EMR system – in one case, the bug led to under-charging of trainees' work as their work were not captured in the system and in another case, patient data between the EMR system and UDI billing system were not synchronized and additional work had to be done to update patient data at both ends. All these billing and system issues led to Diabetic Clinic operational team to dismiss the EMR system, especially since the billing issues had negatively affected their monthly

revenue figures and the slowdown in work processes affected their patient satisfaction. As the operational director of Diabetic Clinic puts it:

> "I think provider satisfaction has gone down to some extent. That's the biggest bang. I think that we are still finding problems; even after testing all the billing charges, problems have risen. So there are revenue issues."

Whilst in the prior institutional battle many of the project level resisting actions came from SOM and UDI, in this particular battle many of the resisting actions now emerge from the actual implementation site due to their dissatisfaction with the system. However, these issues did not remain at the project level but surfaced to the next levels.

Mid-level resisting actions. After the departure of the Mr. Alpha, the EMR implementation planning committee and the sub-committees stopped their meetings (VP of MCH Ambulatory Operations). Furthermore, given the appointment of Mr. Replacement – who was keen to build and repair the relationship with SOM – and the poor economic situation, budget for the EMR rollout became much limited than the earlier phases. As such, there was no legitimacy and resources that Mr. IT could draw on to push the EMR project forward beyond seeing through the Diabetic Clinic rollout. In fact, Mr. IT admitted that by then, there was little he could do to persuade the SOM Chairs. He said:

> "The push to computerize (ambulatory clinics) got tied up in the battle (between the CEO and Dean); a casualty of the battle. The level of trust between Centralsys and SOM deteriorated to such a point that they don't trust anything that was coming from Centralsys."

Leadership resisting actions. The rollout and implementation issues at Diabetic Clinic reached the ears of SOM Chairs and Dr. Research. Drawing on the unhappiness of the clinical faculty, the frustrations of the operational staff, and the direct negative impact of these issues on the clinic's revenue, Dr. Research sent out a direct "cease and desist" order to Mr. IT and Ms. Project to stop further implementation of the EMR system in other ambulatory clinics.

As pointed out above, Mr. Replacement's main focus was to rebuild the fractured relationship with SOM. Moreover, as the former CFO of MCH, he was less supportive of the ambulatory strategy with its attending EMR system given that ambulatory care accounted for a smaller share of overall revenue. The fact that there was evidence that suggested the EMR system may negatively impact future clinics' potential revenue further reduced any chance of his support for the EMR system.

Outcome. Given the order to "cease and desist," Ms. Project of the EMR project asked her team to stand down from all EMR rollouts in 2009. At the end of this second battle, essentially the EMR project team only successfully deployed the system to three offsite ambulatory clinics and the Diabetic Clinic in MCH. At that point, neither the interfaces to UDI's billing system nor the databases harmonization was completed. In sum, Ms. Project and Mr. IT, with the departure of Mr. Alpha had been defeated. See summary of actions in Table 4 below.

Table 3 Summary of institutional agency and resisting actions in Institutional Battle 1

Change agent	Actions	Resisters	Actions
Leadership level			
Mr. Alpha	• Theorization of joint vision • Mobilized resources from SOM and State	Dr. Research	• Defy through challenging governance of project and vision of project • Manipulate by influencing the slowdown of building project
		SOM Chairs	• Counter-claims/theorization for inpatient focus • Counter-claims for EMR as only a clinical information system
Mid-level			
Mr. IT	• Persuasion through framing of problem to SOM Chairs and clinical faculty • Theorization of EMR as research and integration tool • Mobilized clinical faculty to join implementation project	SOM Chairs	• Counter-claims/theorization for variability • Counter-claims for EMR as only a complementary system
		Mr. Stall	• Defy by challenging the design of the integrated EMR system • Counter-claims for EMR as clinical information tool as per University Hospital mission
Project level			

Ms. Project	• Mobilized resources to setup project team and implement EMR system especially interface and database harmonization • Drew on vision and senior management theorization to support integrated EMR design • Attempted to manipulate compliance from UDI team by escalation of defiance (but not successful) • Enroll three off-site ambulatory clinics as pilot sites	UDI IT and billing teams	• Defy by questioning the design of the integrated EMR system • Manipulate by implementing incremental upgrade project that conflicted with EMR implementation so that integration efforts between the system were stalled • Defy by refusing to cooperate on interface development and database harmonization
		SOM Chairs and physicians	• Defy by pulling out from the early adopter implementation • Counter-claims that EMR project is not well communicated to physicians
Outcome: Stalemate between Centralsys and SOM			

Table 4 Summary of institutional agency and resisting actions in Institutional Battle 2

Change agent	Actions	Resisters	Actions
Project level			
Ms. Project	• Mobilized project resources to continue EMR implementation in Diabetic clinic in MCH • Ongoing pragmatic work with the UDI teams • Remedial actions to address clinical and operational issues	Diabetic clinic physicians and operational team	• Physicians not committed to training and complained about dissatisfaction with system • Operational team dismissed the system for negatively impacting revenue and patient satisfaction
		UDI team	• Continued to defy by refusing to cooperate on database harmonization and integration
Mid-level			
Mr. IT	• Limited actions except to support Ms. Project's ongoing EMR implementation	SOM Chairs and Dr. Research	• Manipulate by causing all EMR committee to stop meeting
Leadership level			
n.a.	n.a.	Dr. Research	• Had forced the resignation of Mr. Alpha and stopped the ambulatory building project • Use of force – directive to Mr. IT and Ms. Project to "cease and desist" all further implementation of EMR system
		Mr. Replacement	• Did not support Mr. IT and agreed with Dr. Research that the EMR system project should stop
Outcome: Centralsys' ambulatory EMR system implementation stopped			

DISCUSSION AND CONCLUSION

Literature on resisting technology-led change has focused on localized resistance, typically by operators and line staff against management (Ignatiadis & Nandakumar, 2010; Kim & Kankanhalli, 2009; Zuboff, 1988), but has remained relatively silent about resistance initiated and conducted by influential peer actors, especially in complex organizational configurations. We were presented with such an opportunity to observe in our case how various autonomous and closely connected units were enmeshed in outright conflicts over the introduction of a new ambulatory EMR system. While our context was the healthcare system, which is inherently fragmented and holds potential for conflicts, we argue that our theoretical insights are generalizable to other contexts, such as large, global conglomerates that have influential autonomous units embedded within its structure, which may face off one another in strategic change initiatives, such as during technology-enabled change (e.g., Berente & Yoo, 2012).

Broader literature on organizational resistance research has covered motivation and identities of the actors involved in such conflicts (e.g., Courpasson, Dany, & Clegg, 2012), but there are few studies that have looked at the range of actions that constitute resistance and their implications for the process of resisting. Our study adds to this small but growing body of research by focusing on actions of resisting, drawing upon strategic action and institutional entrepreneurship literature. In our study, we found that the resisters used a portfolio of actions that included discursive actions of counter-claims, defiance, manipulation, and force.

By using concepts from an emerging body of knowledge on institutional power and politics (Lawrence 2008), we are not only able to articulate the range of actions that animate the process of organizational resistance within a technology-enabled change project, but also tie

them to specific actors and artifacts across project genesis and initiation to the implementation phase. Doing so enabled us to develop the following insights.

First, our study found that the types of actions enacted by resisters who were peers to the agents of change within the context of performing technology-enabled change (i.e., institutional agency) were more adversarial and confrontational compared to the other types of strategic actions available (e.g., compromise). We argue that because actors are responding to other actors who are their peers and not to institutions, they are able to be more assertive in their actions, that is, more likely to defy than to acquiesce. For example, UDI IT and billing teams openly defied their Centralsys counterpart – Ms. Project and her team – by refusing to cooperate in the interface development and database harmonization efforts and by manipulating their system upgrades schedule to interfere with the interface development. In fact, under the right conditions, resisters' actions go beyond the most extreme choice of manipulation highlighted in strategic action literature. Resisters can resort to force to subvert and disrupt agents of change. For example, Dr. Research and the SOM chairs were able to force Mr. IT and Ms. Project to abandon the ongoing EMR implementation by issuing a cease and desist order.

Second, our findings provided a fine-grained understanding of the role of artifacts and sociomaterial aspects of organizational resistance. While literature identifies that IT artifacts are, in general, mediums for and outcomes of human action (Davidson & Chismar, 2007; Gosain, 2004; Leonardi, 2011; Orlikowski & Scott, 2008), we show that artifacts can also serve as objects and carriers of resistance (Courpasson et al., 2012; Mòdol et al., 2012). In other words, IT artifacts are not simply sites of institutional battles or boundary objects (Gasson, 2006; Star & Griesemer, 1989), which serve as the material means for channeling actions and reactions among actors. As objects of resistance they are political in nature in that they can support the cause of

the resisters (Courpasson et al., 2012). Whereas Courpasson et al. (2012) found in their study that objects of resistance as created by resisters could help make public their claims and help constrain the power of top management to bring them to the negotiation tables, our study highlights a different aspect and dynamic related to objects of resistance. From our study, we find that resisters readily used artifacts that maintain the status quo as objects of resistance to support their actions of resistance. Specifically we observed UDI team using their legacy systems, such as billing and scheduling systems as part of actions of resistance. Interestingly, these legacy systems were effective because they were critical in building the new integrated ambulatory processes across different ambulatory clinics. Thus while the agents of change worked hard to materially support their cause by implementing the new EMR system, they could not achieve the integrated design unless they had the help of the UDI team in connecting them to these legacy systems. In this way, objects of resistance become a counterfoil to the class of artifacts referred to as objects of motivation (Nicolini, Mengis, & Swan, 2012). Instead of becoming the trigger for motivating and sustaining collaboration like objects of motivation, objects of resistance become the trigger for motivating and sustaining resistance to collaboration. Whilst in our study, these objects of resistance were large legacy systems, we theorize that less obvious and basic sociomaterial infrastructure that Nicolini et al. (2012) referred to as secondary objects of collaboration may be enrolled as object of resistance if the opportunity so presents to the resisters.

In addition, we note that even as the artifacts become part of the action of resistance, they also became part of the battlefield of these institutional battles. Specifically, we observed strong efforts by agents of change e.g., Ms. Project to influence the UDI teams through her senior management to cooperate with their efforts of integration and harmonization, albeit she failed due to the interference by Dr. Research and the SOM chairs. In this way, we could conceptualize

artifacts in institutional battles as "boundary marker objects" in that they delineate the battlefield on which the institutional entrepreneurs and resisters confront each other.

Finally, our findings show how actions of resistance performed by different actors are interrelated to each other across different levels and across time. Whilst some studies have shown that group resistance emerge from individual actions (Courpasson et al., 2012; Lapointe & Rivard, 2005), little is known about the inter-relationships between actions performed by actors at different levels of an organization. Our studies show clearly on the one hand, outcome from actions performed by resisters at a higher level in an organization can provide the platform – in the form of resources, discursive tools, or even legitimacy (Creed, Scully, & Austin, 2002) – for those resisters at the lower to incorporate in their actions. For example, the ongoing action of resistance by Dr. Research as well as the SOM Chairs' counter-claims on how the EMR design helped strengthened UDI IT and billing teams' resisting actions in that they drew on the same rhetoric of counter-claims as the SOM Chairs. More pertinently Dr. Research's influence at the leadership level helped to counter Ms. Project's attempt to manipulate compliance from UDI IT and billing teams. On the other hand, this inter-relationship is not just top-down but can also flow bottom-up. In the second institutional battle, we observed that the problems faced at the project level led to the dissatisfaction of the Diabetic clinic physicians and operational team, which became the "evidence" and basis for Dr. Research to issue the directive and stop the project by force. Thus, the bottom-up relationship is one where lower level actions present critical opportunities that actors in the higher level could take advantage of for organizational resistance. This mirrors findings concerning the process of institutionalization where agents of change engender change through small wins (Reay, Golden-Biddle, & Germann, 2006). Here the opposite is true in that resisters could leverage on "small" failures to mount effective resistance.

Furthermore, actions by resisters could be interrelated across battles. Using the same example of the Diabetic Clinic's problems, we note that one of the underlying reasons for why they face operational issues was the ongoing lack of cooperation by UDI IT and billing teams over database harmonization and interface development. These ongoing resisting actions thus created the conditions that led to billing workarounds and subsequent implementation problems. Therefore in this example, we see that outcomes of actions of resisters became the basis for resisting actions in subsequent rounds of battles.

Apart from these insights, our study also contributed by raising the following issues. Firstly, because we use institutional theory as our base, we are sensitized during our analyses to consider the entire change effort and resisting not as a single event but a process of unfolding events. Related to the last point concerning the relationships between resisters and actions across levels and across time, we observe in our EMR case is a contiguous chain of events and activities from project genesis and initiation to its implementation and untimely demise.

Interestingly, we observed that understanding how founding conditions of the technology-enabled change efforts can profoundly shape early stages of a project that subsequently determine decisively its trajectory over time. Our study shows that understanding the immediate institutional biography of individual actors involved in institutional battles (Lawrence, Suddaby, & Leca, 2011), for example their success in previous change efforts and professional allegiance, helped explain part of their approach and conduct in the current case. For e.g., Mr. Alpha's push for a new ambulatory strategy could be traced to his prior success in using this approach to bring about growth. Mr. IT and Ms. Project, brought to bear their past project experiences to this organization in terms of how they attempted to deal with SOM Chairs and UDI. Dr. Research's focus and antagonism towards the Ambulatory project could also be partly

be explained by his focus to increase SOM's research efforts, which did not align well with ambulatory care activities. Therefore their immediate institutional biography, in addition to the organizing mechanisms and decisions, could be said to create "imprints" on the project (Stinchcombe, 1965).

Secondly, in our case, the battle lines on which such organizational resistance was also drawn along differences in occupational culture (Van Maanen & Barley, 1984). Apart from the observation that occupations can be considered institutions and negotiated order (Bechky, 2011), it also highlights that physicians have the requisite power and status in the medical hierarchy to resist change (Chreim, Williams, & Hinings, 2007).

In conclusion, our study highlights the new dynamics of organizational resistance to technology-enabled change among peer actors. Instead of the predominant view of resistance as one that occurs between the management and those lower in the hierarchy, we consider how acts of resisting would unfold between peer actors. Drawing on institutional politics, we highlight the importance of understanding organizational resistance as a set of interrelated skillful acts, where the actions of resisters are not only co-constitutive with actions of agents of change but also interrelated across resisters at different levels of the organization. This case also illustrates how resisting actions could play out across an entire change process where decisions that were seemingly settled during project genesis and initiation could unravel precipitously and in turn fueled organizational conflicts during implementation. Furthermore, our study highlights that resisting actions are not only discursive acts but are embodied and intertwined with artifacts in the form of objects of resistance and boundary markers objects. More importantly, our study shows that in institutional battles involving peer actors, resisters are more assertive and may enact more adversarial and confrontational resisting actions to counter institutional agency

actions. Our case study shows how such confrontations could ultimately lead to a forceful end to a project that was by all account well staffed and well run.

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