Managing a Stormy Change in IT Outsourcing: Antenarrative Analysis of Integrating Knowledge via Improvisation

Research-in-Progress

Maria Alaranta
Copenhagen Business School
IT-M, Howitzvej 60, 4th floor,
2000 Frederiksberg, Denmark
m.e.alaranta@gmail.com

Pauli Alin
Department of Industrial Engineering & Management, Aalto University
P.O. Box 19220, 00076 Aalto, Finland
pauli.alin@aalto.fi

Abstract

Changes in information-technology outsourcing (ITO) are often challenging. Critical to success is integrating knowledge efficiently between the client and vendor. Some of these changes are novel and unpredictable, “stormy” events where past knowledge offers little guidance, and existing practices lose value. Improvisation has been suggested as a complementary means for such situations. However, both the literature on improvisation and the practices identified in the existing ITO literature suggest a need for shared understanding. We present an empirical account of a stormy ITO change that was triggered when the client acquired a business and post-acquisition IT integration was needed. The client's and the vendor's story plots point to opposite directions and reveal a lack of shared understanding. Nevertheless, improvisation helped to integrate knowledge and complete the project. We draw on the metaphor of trading zones to understand these findings. Our future research will extend improvisation theory to stormy ITO contexts.

Keywords: IT outsourcing, stormy change, M&A, post-acquisition IS integration, case study
Introduction

Outsourcing arrangements are among the key mechanisms for orchestrating modern information technology (IT) activities (Sambamurthy & Zmud, 2000; see also: Dibbern et al. 2004). Following Apte et al (1997, p. 289), we define IT outsourcing (ITO) as “turning over to a vendor some or all of the IS [information systems] functions”. With the pervasiveness of IT outsourcing practice, however, also high levels of dissatisfaction are prominent; one in three managers experiencing dissatisfaction with IT outsourcing (Barthelemy, 2003).

Managerial and research attention have recently turned to managing the various changes the IT-outsourcing relationships experience, including major transitions such as entering an outsourcing or offshoring arrangement (e.g. Hawk et al. 2009) or maturing to a new level of the outsourcing relationship (Gupta et al. 2007) but also switching vendors (Kien et al. 2010; Alaranta & Jarvenpaa 2010) or back-sourcing (Dibbern et al. 2004) when expectations are not met. Managing these changes has turned out to a key issue (Kien et al. 2010; Alaranta & Jarvenpaa 2010). Critical to the success is integrating knowledge efficiently between the client and vendor (Cf. Kien et al. 2010; Alaranta & Jarvenpaa 2010).

Changes in ITO relationships range from predictably patterned “waves” to highly turbulent, “stormy” events (Pavlou & El Sawy, 2010). Much of current research offers explanations and guidance that rely on planning or shared understanding to integrate the client and vendor knowledge, thus fitting better with overcoming predictable “waves” of changes. Yet, in “storms,” past plans, procedures and experience lose value and become obsolete (Pavlou & El Sawy, 2010). However, the existing literature on knowledge issues during ITO changes suggests practices and tools that would require them. Then, how can firms integrate knowledge in stormy changes in IT outsourcing? Improvisation has been suggested as a complementary means for addressing such situations (Pavlou & El Sawy, 2010; Gallo & Gardiner 2007)); an insight that the ITO literature seems to have overlooked so far.

We study an empirical case in which an existing ITO relationship faces a challenging stormy change. The publicly traded client company grows by acquiring several small companies yearly and it has tried-and-tested procedures for quickly annexing the new units to the existing ITO arrangement. This time, it acquired a small company in a culturally and geographically distant location. The client’s and the service provider’s IT staff were expected to reconcile systems quickly, based on limited knowledge on other parties’ context. We apply an antenarrative deconstruction analysis method (Boje 2001). The analysis revealed that, at some points, the existing guidelines directing the collaboration between the client and the vendor actually hindered integrating knowledge and the shared understanding didn’t occur. When this happened, to adhere to the high-level process steps and ensure the completion of this integration, the actors engaged activities that allowed them to bypass the lower-level guidelines. This finding implies that improvisation can be an important complementary means for managing ITO changes. Our future steps of this research will also extend the theory of improvisation to dynamic inter-organizational contexts.

The rest of the paper is structured as follows: the next section reviews the literature on knowledge issues in ITO changes and discusses it in the context of stormy changes. Then, the methodological choices are outlined. Thereafter, the results of the antenarrative deconstruction analysis are presented; consisting of MachineCo’s and InfoCo’s story plots, denying both and resituating the story as inter-organizational improvisation. Finally, the findings are discussed and we briefly outline our plans for continuing this research-in-progress.

Managing Stormy Changes in IT Outsourcing

IT-outsourcing can be viewed as knowledge-based activity (Peppard 2007) and, integrating knowledge resources that are distributed between the client and vendor efficiently is key a challenge (Cf. Kien et al. 2010; Alaranta & Jarvenpaa 2010). Such integration is a social process in which is not enough to pool the different ‘pieces’ but instead, joint problem solving is required (Mitchell 2006, Peppard 2007). Thus, this manuscript focuses on knowledge integration in stormy ITO changes. Thus, the specific stream of ITO literature we focus on is also the one that focuses on knowledge issues during ITO changes.
Integrating Knowledge via Improvisation in Stormy ITO Changes

Whilst many changes in IT outsourcing relationships occur in predictable patterns (“waves”), some changes are “stormy”, that is, they are rapid, unpredictable and novel (Pavlou & El Sawy, 2010). Stormy changes may include, for example, changes to outsourcing arrangements during events of industry restructuring such as mergers, acquisitions and divestitures or, one-time switches of service providers. In addition, first-time outsourcing or back-sourcing may become a stormy situation if, for example, the client has lost the requisite peripheral knowledge.

In a stormy change, past procedures offer limited or no guidance (Pavlou & El Sawy, 2010). Stormy changes may render obsolete traditional practices for integrating knowledge as they require previous planning or preparation. Such practices include the use of technological artifacts like monitoring applications, communication systems, decision-support systems and collaborative application-development systems, as well as technologies that codify organizational learning (Cha et al. 2009; Oshri et al. 2008) as well as specific interfaces (Oshri et al. 2007). They also include large-scale training programs (Hawk et al. 2009), building, updating or transferring documentation (Hawk et al. 2009; Kien et al. 2009), implementing mirror organizations and knowledge-coordination methodologies (Oshri et al. 2007), and improving IT-supplier network structures (Rottman 2008). All these are based on the idea that integrating disparately held knowledge helps coordinate work (Oshri et al. 2008, Chua & Pan 2008, Ramasubbu et al. 2008).

Integrating knowledge across organizational boundaries is often difficult due to differing languages, cultures, norms, and practices across the boundary (Kellogg et al. 2006, Carmel & Agarwal 2002; Winter 1987). For similar reasons, integrating knowledge is difficult when an IT outsourcing relationship changes (Chua & Pan 2008; Oshri et al. 2008).

IT outsourcing literature has discovered a plethora of practices for overcoming the integration difficulties in various contexts, such as client-vendor relationships (Oshri et al. 2007), organizational, team and individual levels (Chua & Pan 2008), different types of knowledge (Chua & Pan 2008; Hawk & al. 2009), and different knowledge processes (Oshri et al. 2008). These practices largely concern developing a shared understanding among the firms involved in the IT outsourcing, and the literature emphasizes the critical role of understanding the other ITO parties’ context. Hawk et al. (2009) found that IT service provider needs to develop a shared understanding about the client’s technological context, and Kien et al. (2010) found that, in switching vendors, the new service provider should also develop a shared understanding of the old service provider’s context. Rottman (2008) emphasizes the importance of understanding IT outsourcing network partners’ local context. Developing these understandings requires practices that support this kind of learning-by-doing (know-how, operational learning) knowledge.

However, stormy changes may reduce the value of practices that support learning-by-doing even though they are generally more effective in environments where processes are less structured (Ramasubbu et al. 2008). So, these practices build or leverage shared understanding in IT outsourcing relationships become

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1 The literature documents a number of wave-like ITO changes; e.g., Zimmermann & Ravishankar (2014) describe an empirical case where the strategy was to continuously transfer offshore more IT tasks and a need for repeated - i.e. wave-like - knowledge-coordination efforts resulted and Gregory et al. (2013) provides another example.

2 Being rapid and unpredictable, stormy changes are fundamentally different than changes that occur in wave-like patterns and can be properly planned for (Holsapple & Jin, 2007; Pavlou & El Sawy, 2010:444). The stormy change metaphor does not necessarily concern the scope of the change. Thus, stormy change may or may not dismantle the deep structure (Gersick, 1991), i.e., the highly stable set of fundamental choices such as outsourcing a particular set of IT activities in a particular way.

We acknowledge that stormy periods may also take place at certain points during projects that are otherwise relatively predictable and can be supported by pre-planned knowledge and tools. E.g., in the cases reported by Gregory et al. (2013) and Huber et al. (2013), there seems to be indications of such periods within the projects. Such project sub-phase could possibly be conceptualized as a stormy change. However, in terms of clarity, we prefer to limit our discussion here to discrete events such as the annexation of AfCo in our case study; instead of trying to identify stormy events and their boundaries within a possibly messy larger project.
obsolete. A large number of such practices has been suggested, including observation (Hawk et al. 2009), site visits and other meeting opportunities (Rottman 2008, Hawk et al. 2009, Williams 2011), on-the-job training (Chua & Pan 2008; Hawk et al. 2009), inter-organizational work and teams (Rottman 2008; Hawk et al. 2009). Whilst these practices can work also during stormy changes, their power is reduced. For example, arranging opportunities for transferring tacit knowledge via observation and site visits may be hampered by the sudden nature of the change as it is difficult to build the trust needed for them and execute them quickly. In a similar vein, procedures prescribed in the contracts and manuals describing the governance and change management in ITO changes may be difficult to execute when sudden, unexpected events challenge some critical features; e.g., by appointing a wrong contact person or referring to a document that doesn’t suit the new context due to legal or other requirements.

Some authors have suggested improvisation as a complementary means for addressing such situations (Pavlou & El Sawy, 2010; Gallo & Gardiner 2007); an insight that, based on our literature review, hasn’t been incorporated in the ITO literature so far. Improvisation is a suitable means when individuals face time pressures, task ambiguity, and uncertainty (Vera & Crossan, 2004). It is unpremeditated, conscious (Vera & Crossan, 2005) and purposeful (Pavlou & El Sawy, 2010) collective action during which task design and task execution overlapped (Moorman & Miner, 1998; Ciborra, 1999). However, current theory suggests that, improvisation requires shared understanding e.g.; in the form of local jargon (Ciborra 1999; Cunha, Cunha, & Kamoche, 1999); a condition not possible in stormy inter-organizational ITO changes.

### Methods

**Collecting the Case-Study Data.** We chose the single case study approach as we were interested in developing theory on the process of ITO change within the context of the ITO relationship (Eisenhardt 1989; Langley 1999). Stories of changes in IT outsourcing always have two or more sides. Thus, we needed access to key personnel on both vendor and client sides. We also needed a clearly identifiable stormy change. With this requirement in mind, we negotiated wide access to a case of long-standing IT outsourcing relationship that experienced a discrete, stormy change when the client acquired a company in a distant, new region. In this specific case, we were able to gain access to all key actors from both client (MachineCo, including the newly acquired unit, AfCo) and vendor (InfoCo). (All firm, person and document names in this manuscript are pseudonyms.)

To gain a rich and detailed understanding of this stormy change, we carried out semi-structured individual and group interviews. We complemented these with notes from informal meetings with key informants and documents such as Governance Manuals for the ITO relationship and acquisitions and a standardized Integration-Request Template. In total, we conducted 14 in-depth individual interviews (7 from MachineCo, 1 from AfCo, 5 from InfoCo, and 1 from a network supplier; 48-80 min each) and two in-depth group interviews (one with each company; 4 hrs). We interviewed key individuals from all relevant firms, functions and organizational levels. We asked the interviewees about their background, how the IT integration proceeded from their perspective (e.g., How things went in general? Who did what? What went well? What problems were there? How were they addressed?), knowledge-integration patterns (i.e. Who did you interact with? How? How often?) and, lessons learned? We conducted separate group interviews with MachineCo and InfoCo to understand their particular activities and contexts.

We took field notes and recorded the interviews. The audio tapes of the individual interviews were later transcribed ad verbatim, leading to 640 pages of text. As collecting process data on cross-boundary knowledge processes is generally difficult (Osterlund & Carlile, 2005) and it is particularly difficult during stormy changes (Cf. Yoo et al. 2007), we contend that our broad access to rich data provides us with adequate empirical evidence for addressing our research question.

**Analyzing the Data.** To understand changes in IT outsourcing, it is useful to attend to “[w]hat is the other side of the story” (Boje 2001: 21). Our analysis was inspired by the antenarrative deconstruction analysis (Boje 2001), a variant of the postmodern method. By deliberately deconstructing (i.e. breaking into pieces) textual evidence and treating the two parties’ stories separately, the antenarrative deconstruction analysis allows to avoid one-sided readings of evidence. This is useful for identifying “complex movements, processes of change, and the play of differences and heterogeneity” (Boje 2001: 18). By avoiding one-sided readings, our study bridges and complements existing literature that focuses
Integrating Knowledge via Improvisation in Stormy ITO Changes

Thirty Fifth International Conference on Information Systems, Auckland 2014 5

largely on the client (e.g., Rottman 2008; Tiwana & Keil 2007; Tiwana 2008) or on the vendor side (Oshri et al. 2007; Chua & Pan 2008; Levina & Vaast 2008) or lumps both stories together (e.g., Hawk et al. 2009; Kien et al. 2010; Williams 2011; Alaranta & Jarvenpaa 2010). In this case, it helped us to; for example, get beyond the ambiguity caused by power structures of the deal. The vendor’s representatives often used more subtle and diplomatic language to avoid saying things that could offend the client. For example, when explaining that something was not the vendor’s fault, the vendor’s representatives almost never openly pointed at the client, even if the explanations they provided suggested that the client may have been at fault. These and other subtleties of the vendor’s story plots became visible when the vendor’s comments were analyzed separate from the client’s more assertive comments.

We use the following three features of antenarrative deconstruction analysis: first, we attended to both sides of the story (Boje 2001), i.e. client and vendor sides. We coded the data according to the perspective (client, vendor or other) and process phase (Preparing the Integration Request, Drafting the Local Sub-Contract). Within these, we identified the activities in which the actors engaged and coded them as planned or improvised. As the focus of this manuscript is on improvisation (and not pre-planned activities), we focus our empirical results around the identified key improvisation events. Writing the two firms’ narratives based on data collected from their respective informants enabled us to identify the one-sided stories and their distinct characteristics. Second, we denied the suggested story plots of the one-sided stories (Boje 2001) which enabled us to conceive collected evidence primarily as stories without attending to their truth value. Third, we re-situated the stories (Boje 2001) which enabled us to weave them together as a single inter-organizational story from which to make theoretical inferences.

The Antenarrative Deconstruction Analysis

Case Background: Annexing the Acquired Unit to the Existing ITO Contract

MachineCo is a mid-size European machinery firm that designs, manufactures and maintains heavy-duty lifting cranes for ports and industrial facilities. It also provides maintenance services to such cranes. It operates in over 40 countries mainly in Europe, Asia, Australia and the Americas. Recently it has begun to expand to the Middle East and Africa by acquiring around several local companies yearly. MachineCo has outsourced a portfolio of IT services to InfoCo, a global U.S. based IT firm. The outsourcing contract covered supplying employees with desktops and laptops equipped with MachineCo’s business application and communication software. Globally, MachineCo acquired around ten small, independent companies every year. The standard approach was to fully absorb these companies and annex them to the ITO contract with InfoCo. As this was a well-established ITO outsourcing relationship with experience from a number of acquisitions, these IT integrations normally constituted changes that manifested in “waves” in which existing know-how can be relied upon (Pavlou & El Sawy, 2010).

One of MachineCo’s acquisitions was the crane-maintenance firm AfCo to enter a new geographical region, Sub-Saharan Africa. At the time of the acquisition, AfCo employed 20 people. Although relatively small, AfCo was strategically important for MachineCo: to sell cranes in AfCo’s region in Africa, MachineCo had to be able to provide maintenance services. However, unlike in many other acquisitions, annexing AfCo to the the current IT-outsourcing contract between MachineCo and InfoCo turned out to be a rapid, novel and unpredictable – i.e., “stormy” - situation (Pavlou & El Sawy, 2010). As often happens with publicly traded companies, the IT personnel and vendor were only informed of the acquisition when the deal was made public. Yet, they were expected to rapidly integrate AfCo’s IT to the existing service agreement - despite not having much time for planning and preparation; a typical IT problem in acquisitions. However, neither company was aware of the specific details of AfCo’s local context; also a typical problem in acquisitions. In addition, MachineCo had not previously operated in the geographical region of AfCo, and thus the companies didn’t have existing local collaboration configuration in this culturally geographically distant region. This included the fact that, due to InfoCo’s federal structure, neither company’s key personnel at the European offices had previous personal experience from working with InfoCo’s African office.

To emphasize our visibility to integrating knowledge during stormy changes, we focus this study on the first phase of the change, crafting the Local Sub-Contract for AfCo’s services. The Local Sub-Contract was meant to specify the existing Master Service Agreement so that InfoCo could provide and charge for services to AfCo as an additional MachineCo office. The companies needed to integrate knowledge about
legal, technical, and sales aspects of the IT integration to produce this contract. Crafting the Local Sub-Contract proceeded via two steps: 1) Preparing the Integration Request, 2) Drafting and Fine-Tuning the Local Sub-Contract.

However, there were considerable delays. Andrew, MachineCo’s Chief Information Officer described the situation as follows: “Then there was the question of where are the computers [that were to be delivered to AfCo]? Well, we asked InfoCo what the situation was. We began to discover that the Local Sub-Contract had not been signed.” No actual IT-integration activities such as delivering computers could take place before both companies had signed the Local Sub-Contract. As these were needed for AfCo to efficiently serve as MachineCo’s in-house maintenance unit for its local clients, getting the Local Sub-Contract signed on time was crucial for MachineCo’s business interests.

**MachineCo’s Story Plot: Despite Standardized Procedures, InfoCo Can’t Coordinate**

**Preparing the Integration Request.** When MachineCo’s acquisition of AfCo was publicly announced, an IT-Service Coordinator, Lena, informed InfoCo about the coming IT integration so that InfoCo could start preparing the Local Sub-Contract. She used a standard document called Integration Request. Among other information, the Integration Request also needed a specific tax number (VAT number) before InfoCo could process it. Lena described acquiring AfCo’s VAT number as follows: “[Usually the VAT number] comes from our [information] system when our accounting department has given the [acquired] firm one. But the VAT number was added to this case [only later] because; originally, Liam hadn’t been able to figure it out. So, I got it from the local controller.” In other words, as Lena could not follow the standardized procedure, she came up with the idea to bypass it by finding out who would know the VAT number and contacting them directly.

**Receiving a Draft and Fine-Tuning the Local Sub-Contract.** It took some time until Hans, MachineCo’s General Counsel, received a draft of the Local Sub-Contract from InfoCo, including the specified pricing information. Lena complained that: “[InfoCo’s local lawyers and the headquarters] can then change it [the manuscript for the sub-contract] and send it back and forth. That stage always takes a long time.” Hans and InfoCo’s General Counsel Nathan iteratively revised the draft until Nathan could sign it. Then, MachineCo’s CIO, Andrew, signed it and the IT integration could finally be executed.

**MachineCo’s Story Plot.** Overall, MachineCo felt the process had been lengthy and too difficult. Lena at MachineCo complained that: “It is a routine change really because we do them all the time. But it isn’t routine for InfoCo, it is always so difficult for them.” MachineCo’s story plot suggested that InfoCo’s poor performance occurred because InfoCo was unable to coordinate work among its different units. The story plot suggested by MachineCo implied that the delays were almost all InfoCo’s fault and caused by InfoCo’s poor coordination among its different units and country offices. However, other evidence shows that, first, that the two companies successfully managed around ten similar post-acquisition integrations every year, suggesting that both sides were able to perform well. Also, as we will show next, InfoCo didn’t share MachineCo’s view on this. Second, this case had some sudden and unexpected events, such as changing the name of AfCo, difficulties to get the VAT number and not being able to draw on existing pricing for that country. Even though none of the interviewees said so, MachineCo’s story plot also suggested that the standard procedures were insufficient in integrating knowledge in such exceptional situations, so the individuals had to occasionally improvise solutions to overcome problems.

**InfoCo’s Story Plot: Despite Standardized Procedures, the Other Side Are at Fault**

**Receiving the Integration Request.** When an Account Manager, Hannah, at InfoCo received the Integration Request, she noted that some information was missing from the Integration request; for example, the company’s full name AfCo was not there. Despite this, Hannah forwarded the Information Request via email to Nathan, InfoCo’s General Counsel.

**Drafting and Fine-Tuning the Local Sub-Contract.** Using AfCo-specific information included in the Integration Request, Nathan drafted a Local Sub-Contract based on a standardized template. The price information was usually included in the Master Service Agreement. However, it did not include pricing information for AfCo’s geographical location. Pricing information was needed for signing the Local Sub-Contract. Hannah (InfoCo) described: “I know it [the pricing] has been a challenge. It has been a
country that MachineCo has not registered to be included under the [Master Service] Agreement --- so we have to create all these --- the pricing, and have it accepted by the client.”

General Counsel Nathan was not knowledgeable about pricing issues nor was he responsible for adding pricing information into the Local Sub-Contract draft. He suspected, however, that submitting a Local Sub-Contract draft without pricing information to MachineCo might cause delays. To speed up the process, he decided to find out the pricing information and fill it in the Local Sub-Contract draft. He obtained pricing information by searching for a suitable person in the company IS. He found Guido, a Sales Manager responsible for AfCo’s geographical region, and requested the information directly from him. Nathan was also able to obtain AfCo’s full name via similar ways. That is, Nathan thought up an unofficial procedure. Now, Nathan (InfoCo) and Hans (MachineCo, General Counsel) proceeded to iteratively fine-tune the document until both were pleased and the contract was signed. InfoCo was finally able to start ramping up the services AfCo needed.

**InfoCo’s Story Plot.** InfoCo’s story plot suggested that it was not responsible for the delays, at least not the InfoCo office who dealt with MachineCo. According to the InfoCo story plot detected in the interviews, the delays were caused by organizations, events, and persons outside anybody’s control. For example, Minnie (InfoCo, Account Executive) explained that some of the delays occurred – inevitably – because local bureaucracy in the South African country is burdensome: “I’m sure it’s been a long Local Sub-Contract [process] because things in that [South African] country do not go that fast.” This comment shows how, according to the InfoCo story plot, bureaucracy is sometimes slow, and by implication, nobody at InfoCo was able to do anything about it. On another occasion, she added: “We cannot do anything about these things.” This comment illustrates further InfoCo’s story plot: the issues causing delays were beyond anyone’s control. Thus, InfoCo’s story plot runs contrary to MachineCo’s story plot which suggested that the issues causing delays were InfoCo’s fault.

What is more, InfoCo’s story plot suggested that some of the issues causing delays were actually MachineCo’s fault. For example, Hannah, an Account Manager, complained that the Local Sub-Contract development process was delayed because MachineCo decided to change AfCo’s name mid-process: “We have had these issues before. We have had to change them [names of acquired firms] during the process. Or, for example, we have been asked to draft a Local Sub-Contract for a new firm, and a month later they [MachineCo] tell us that the new firm will be merged with such and such firm and that we don’t need the Local Sub-Contract we originally asked for but instead we’d like to have one for the merged firm instead. This means that the process doesn’t proceed: it begins from scratch.”

In addition to the actual delays being MachineCo’s fault, InfoCo’s story plot suggests that MachineCo had unrealistic expectations about the IT integration process – or sometimes no expectations at all. Minnie (Account Executive) complained: “The target timeframe, or the expectations of MachineCo, it hasn’t been ever discussed.” While the information content of this comment seems somewhat exaggerated (i.e. that MachineCo and InfoCo had never discussed the schedule expectations in the AfCo case), the comment illustrates how InfoCo’s story plot indicated that others than InfoCo were almost always to blame.

**Re-Situating the Story as Inter-Organizational Improvisation**

In sum, as existing literature predicts, the existing routines and procedures between the two firms supported integrating knowledge at some points; for example when the overall concept of need for a new IT-integration process following an acquisition was transferred from MachineCo to InfoCo by using the Integration Request template, and when the contract draft was revised iteratively between the two companies until it was ready to be signed. However, at other, crucial points the existing collaboration routines and standardized procedures also broke down and at some points, would have been dysfunctional. In particular, the existing information systems didn’t always provide the necessary know-what, such as the VAT number. In addition, the two sides offered story plots that, whilst pointing at different causes, indicated that the situation was exceptionally difficult. During this stormy change, delays occurred due to problems with knowledge-integration. Thus, managing the change became challenging. However, contrary to these predictions, the Local Sub-Contract was eventually developed and signed and later, the IT integration was successfully executed.

In order to describe and explain how the IT integration was possible, we had to deny the suggested story plots and re-situate them (Boje, 2001) by weaving both stories together and using all available evidence
from both MachineCo and InfoCo. This re-interpretation of our data reveals that improvisation emerges as an important mechanism for integrating knowledge in stormy ITO changes. In fact, improvisation was needed to solve specific problems during both steps in the contract process and much of the success in eventually developing the Local Sub-Contract could be attributed to improvisation i.e., experienced individuals quickly solving problems by designing tasks during the execution of existing tasks, as well as executing tasks during the design of new tasks (Miner et al. 2001).

This is in line with previous literature that suggests that knowledge integration occurs via improvisation when past procedures provide little guidance (Pavlou & El Sawy, 2010; Gallo & Gardiner 2007)). We observed unpremeditated, conscious (Vera & Crossan, 2005) and purposeful (Pavlou & El Sawy, 2010) collective action that allowed to initiate or complete process phases when existing guidelines failed. The improvisation activities built on IT tools that provided know-where, such as the information on who knows about pricing in AfCo’s region. Table 1 summarizes the key improvisation events.

<table>
<thead>
<tr>
<th>Process Phase</th>
<th>Activity</th>
<th>Standard procedure</th>
<th>Improvised procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing the Integration Request</td>
<td>Adding VAT number to the RFC document</td>
<td>VAT number comes from MachineCo’s IS</td>
<td>Lena (MachineCo) searched for a knowledgeable person and obtained the VAT number from AfCo’s Controller</td>
</tr>
<tr>
<td>Drafting the Local Sub-Contract</td>
<td>Adding price information to Local Sub-Contract draft</td>
<td>Price information comes from the Master Service Agreement</td>
<td>Nathan (InfoCo) searched the IS for a knowledgeable person and requests price information directly from a Sales Manager, Guido</td>
</tr>
</tbody>
</table>

Table 1. Key Improvisation Events

Discussion and further research

Trading Zones as Locus of Improvisation

Our case findings show that, occasionally, existing procedures broke and the firms had to reside to improvisation at lower-level activities to ensure that high-level process steps (e.g., integration request, sub-contract drafting) could be followed and the integration could eventually be successfully completed. Another prominent finding is that the largely different ex-post story plots show that the companies did not learn about each other’s’ practices and routines. Yet, existing literature predicts that shared understanding would have been requisite for success in ITO changes and improvisation. Then, how could MachineCo and InfoCo manage to annex AfCo to their existing ITO contract?

In order to understand these findings, we interpret this stormy change metaphorically as taking place in trading zones for knowledge (Galison, 1999; Kellogg et al. 2006) Trading zone is a place of knowledge exchange that does not require shared understanding among the knowledge exchangers (Kellogg et al. 2006; See also: Maglio et al., 2010; Winther 2011; Galison, 1999; Mäntysalo & al., 2011). As trading zone’s emphasis is on knowledge exchange under different meaning systems, it is a potentially useful concept to explain why knowledge integration via improvisation, despite the fact that MachineCo and InfoCo viewed the situation from their own perspectives throughout the integration episode. They were able to exchange and integrate knowledge at the trading zone because; despite the apparent differences, the trading itself was meaningful for both parties separately within their respective meaning systems. Our future research will use this concept to extend the improvisation theory to stormy inter-organizational contexts.

Initial Implications for Research

Our findings have three key implications for future research. First, ITO phenomena encompass events of change ranging from habitual change requests to major shifts in contract, some of which become stormy. Yet, the literature provides limited support for when events become stormy and past procedures lose their value or, as happened in our case study, even become dysfunctional. We present theoretical and empirical support for improvisation being one effective practice for supporting integration of knowledge during stormy changes (Cf. Ciborra 1999; Pavlou & El Savy, 2010; Gallo & Gardiner 2007)). Further research is
needed to find out, what existing routines and procedures stand the test of stormy change, and how firms can build improvisation capabilities to support their evolving ITO relationships.

Second, contrary to what the existing literature suggests, shared understanding is not always necessary for successful changes in IT outsourcing. Instead, the notion of trading zone suggests that parties with different knowledge bases can integrate knowledge if they can ignore their knowledge differences by exchanging knowledge of some value to each (Galison, 1999). A trading zone thus constitutes a locus of interaction where knowledge differences are present but not manifest enough to be harmful to integrating knowledge. Further research is needed to scrutinize when and why shared understanding is or is not needed and how can practices be aligned with the needs stemming from these situations.

**Implications for Practice**

A key implication of our empirical findings is that, organizations need to look critically into the gaps between their procedures for managing ITO changes and the real-life challenges these projects may face. They can try to identify in advance instances where lack of knowledge on other parties’ situation may break existing routines and procedures if they have access to prior experience or knowledgeable actors’ insights. These are may not be rooted only in unexpected external causes. Instead, some causes are internal to either of the firms in the ITO relationship even though they are external to the original IT outsourcing relationships, such as those related to the federal structure of InfoCo in this case. Both sides could also appoint experienced personnel to key roles as they have the requisite knowledge to improvise in a fruitful manner (Cf. Ciborra 1999) when necessary. These people are often experts with some tenure and good access to know-where via information systems or their personal networks, and, similarly to MachineCo’s IT Coordinator, Lena, they are not necessarily managers. As such, these experts should be vested with the power they need to improvise effectively.

**Future Research**

By studying how improvisation can emerge in an inter-organizational setting, we will expand the scope of improvisational activities to include contexts where knowledge is integrated across the organizational boundary during times of stormy change. We will use the metaphor of knowledge-trading zone to do this. In so doing, we will begin to address the recent call for research expanding the scope of improvisation to identify the dimensions of improvisational capabilities and activities (Pavlou & El Sawy, 2010:467). We provide an empirical account of a case where knowledgeable actors innovate to comply with the requirements and work around the shortcomings of procedures and the supporting IT tools (e.g., templates and databases). By analyzing how improvisation could take place this case despite the unfavorable conditions, our future research will extend improvisation theory to stormy ITO contexts.

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