

The Sociomateriality of IT Surveillance: A Dramaturgical Model of IT Adoption

Completed Research Paper

Joao Vieira da Cunha
Institute for Social and Political
Science
Rua A. Lessa, Lisbon, Portugal
jvrdenh@gmail.com

Andrea Carugati
Aarhus University,
Business and Social Sciences
Haslegaardsvej 10, Aarhus, Denmark
andrea@asb.dk

Abstract

Information technology adoption in organizations is a process where managers and employees attempt to use and adapt information technology to carry out their everyday work. Given the different requirements of managers and employees, these adaptations often generate tensions around IT uses. We outline an alternative model of information technology based on the theatrical idea of performance where people use information systems not to resist but to project an image of compliance. Thus doing, they are able to erect an electronic façade that hides the improvised information systems needed to achieve their goals. We specify this model from a sociomaterial perspective on information systems use to highlight the role that the material properties of IT artifacts have in the adoption of prescribed information systems. Our dramaturgical model of IT adoption contributes to this emerging stream of research by exploring the social dynamics in sociomaterial performances of information systems.

Keywords: Surveillance, sociomateriality, ethnography, work practices, improvisation.

Introduction

The adoption of Information Systems (IS) for work support and surveillance in organizations continues to be an important and controversial topic in IS research. On one side concise functional models like TAM (e.g. Davis et al. 1989) attract for their simplicity. On the other side interpretive approaches tend to present a more complete – and more complex – picture (e.g. Orlikowski, 1996, McGann and Lyytinen, 2008). While interpretive approaches go beyond the design-adopt-resist frameworks, they present an unresolved tension in how technology usage is perceived. On the one hand the everyday challenges that employees face at work are interpreted as to push employees to adapt their company's information systems to their situated conditions for action (Beaudry et al. 2005). On the other hand the surveillance capability of IT in organization induces a pressure for compliance with prescribed uses of prescribed information systems that should limit employees from improvising with and around the information technologies that their company provides (Ball et al. 2000; Irving et al. 1986).

Research has provided two alternative solutions for this tension. One argues that employees address this tension by accepting the pressure to comply with prescribed information systems. These studies argue that information systems allow executives enough surveillance over their employees' use of IT to preclude any of employees' attempts at deviating from the prescribed procedures imposed by prescribed information systems (cf. Zuboff 1988). In these studies resistance to use is the source of deviance from the norm. Another set of studies argues that employees are able to adapt information systems to their situated challenges at work or create their own information systems because their managers understand the need for these improvisations. These studies argue that managers are aware of the unprescribed work that employees need to carry out if they are to reach their company's goals. Managers trade leniency for flexibility and adaptation (cf. Orlikowski 1996).

Research on unprescribed work shows that neither of these two tactics alone is viable in the long term. Some studies show that when employees concede to comply with prescribed information systems, they face continuous pressure to adapt to situated conditions for action (Miner et al. 2001; Suchman 1987). Other studies show that when managers are lenient with their employees' use of information systems, they suffer considerable pressure from above to enforce prescribed uses of prescribed information systems (Doolin 2004; Gwillim et al. 2005). Managers' careers depend on their ability to impose goals, procedures and information systems on their employees (Jackall 1989). Managers can forestall this pressure temporarily but not permanently.

Taken together both sets of studies suggest that a functional approach to IT cannot fully resolve the tension between adaptation and compliance and instead IT adoption results from people's attempts to cope with the situated challenges of carrying out work while being monitored through IT. Both managers and employees face conflicting demands that are weakly theorized and that are difficult to integrate in practice. On these premises we seek to address the following research questions:

1) *How do employees and managers collectively perform a system of work and surveillance mediated by IT?*

2) *How can IT influence the boundary between front stage and backstage emerging from the social interaction of employees and managers?*

To answer these questions we introduce a *dramaturgical model* of IT adoption. We interpret the use of information systems as a (theatrical) performance through which a person presents itself to another based on cultural values, norms, and expectations (Goffman, 1959). A performance is a highly social act where the goal is acceptance from the audience through carefully conducted actions that communicate, if successful, a well defined self image. To do so, we draw on a 15-month ethnography of an implementation of Siebel (a leading customer relationship management system) in a desk sales unit of a global telecommunications company. This model suggests that employees need to complement their attempts at improvising with and around prescribed information systems with a set of tactics that create a *representation of compliance* (hence the dramaturgical model). We will show that this is not merely an additional burden of IT implementation. It is the main driver of how people scaffold their everyday work with IT artifacts.

The Sociomateriality of a Dramaturgical Model of IT Adoption

Recent reviews of research on use of information systems in organizations suggest that explaining how employees adapt and improvise information systems intended as means of surveillance, needs to take into account the material properties of information systems (Galliers 2006; Orlikowski 2006).

The sociomaterial approach to research on IT

Reviewing over 20 years of research on technology in organizations, Orlikowski and Scott suggest that research on IT and organizations needs to take a sociomaterial approach:

The notion of sociomateriality attempts to preclude the possibility of seeing the social and material worlds as distinct. By definition, they are constitutively entangled [...], there is no separation of the technical and the social. Rather all practices are always sociomaterial, and this sociomateriality is integral, inherent, and constitutive, shaping the contours and possibilities of everyday organizing (Orlikowski 2010: 137).

Sociomateriality specifies surveillance and people's attempts to escape it as material accomplishments (cf. Webb et al. 1998). This approach highlights that surveillance is both the result of the material properties of information technology and a social act. It also emphasizes that employees' attempts to adapt and improvise their own information systems depend on the material properties of the technologies that their company provides and those of the technologies that they improvise on their own in the social context in which they find themselves.

Taking a sociomaterial perspective to the adoption of information systems promises to extend current research on IT implementation to include the material properties of technology artifacts in the process through which prescribed information technologies are transformed into information technologies-in-use (Orlikowski 2006). However, because of the social dimension of surveillance, the current specification of the relationship between the material properties of information systems and people's work practices outlined by the fundamental statements of sociomateriality face a significant challenge when explaining how employees can adapt and improvise information systems under their managers' surveillance: it does not include the role of "others" in shaping people's performances of technology. Sociomateriality is, so far, not social enough to account for the role of managers in shaping employees' adoptions, adaptation and improvisation of information technology.

Where is the social in the sociomaterial approach to research on IT?

The few available statements of sociomateriality could be better described as specifying an individual-material theory of work. These statements invoke theoretical frameworks such as actor network theory and post-humanism to specify an entangled view of action and the material context where it unfolds. Sociomateriality models practices as an outcome of the entanglement of individuals and technologies. It does not explain how others participate in people's sociomaterial performances. Specified like this, sociomateriality is better equipped to explain how people make their work visible to themselves than to explain how people make their work visible to others. This limitation is problematic when dealing with systems aimed, or including, surveillance. Orlikowski and Scott (Orlikowski et al. 2008: 463) use sociomateriality to describe the practice of office work as:

inextricably, and at the same time, tied up with the social and material. [...T]he physical hub of a person's work practices composed of an array of materiality imbued with multiple logics and capabilities (programmes, reminders, sources, and connections) all poised to form part of the pattern of her work flow, ready to be actively configured into a situated work performance.

The focus is on how people perform information technologies and other material artifacts to scaffold their everyday work. Studies consistent with a sociomaterial approach (chapters in Heath et al. 2000; Hutchins 1991; Suchman 1995) emphasize the difficulties that people face when attempting to be aware of all the information necessary to carry out their everyday tasks. These studies show that to scaffold their work, people improvise information systems of their own making or adapt those provided by their company.

This research has yet to incorporate the role of others in people's sociomaterial performances. The individualistic nature of the theories that ground recent statements of sociomateriality has hindered, rather than help this extension. We suggest that this shortcoming can be addressed by drawing on the fundamental statement of practice theory that has grounded much of qualitative studies of information systems in the past two decades: structuration theory (Giddens 1986). Giddens's discussion of *spaces* and how people's performance of the material properties of *space* shapes their everyday action (Giddens 1986: 110-139) provides a profitable path to extend sociomateriality to incorporate the role of others in shaping people's sociomaterial performances while rescuing structural studies of information technology from their bias towards action.

A social sociomateriality for a dramaturgical model of IT adoption

According to Giddens (1986), the role of others in people's practices is an outcome of people uses of the material artifacts that make up their context of action. Specifically, he argues that people attempt to manage others' ability to shape their practices by engaging in material practices to shape how much others see of their action (Giddens 1986: 112). Specified like this, Giddens' account of how the material properties of contexts mediate the relationship between people's practices and those of others is a general statement of the problem that employees face when attempting to adapt and improvise information systems under conditions of surveillance.

Giddens argues that people perform material properties of their environment to reproduce some spaces as front stages and others as backstages (Giddens 1986: 121-125). Spaces become front stages when people use them to disclose their action to others, much like a CEO uses a conference room to announce the introduction of a new system to employees. Spaces become backstages when people use their material properties to hide their actions to others, like a CEO using his/her office to rehearse the announcement of the implementation of a new information system. By enacting some spaces as backstages and others as front stages, people are able to manage how much of their practice shapes the practices of others and how much they need to take into account the practices of others (see also Goffman 1959). When people perform the material properties of a space as a backstage, they are exempt from surveillance and from having to incorporate the action of others into their own practices. However, when people perform the material properties of space as a front stage, they are subject to surveillance and they need to incorporate the actions of others into their own, or at least pretend to do so.

Giddens (1986) and others (e.g. Goffman 1959; Turner 1977) suggest that the separation between front stages and back stages is a joint accomplishment between the actors of a performance and their audience. Others can help or hinder people's attempts to keep some of their action invisible from others depending on whether they comply with the norms that keep backstages private and front stages public.

IS research suggests that managers are unlikely to cooperate or even to tolerate their employees' attempts at using information systems to create a backstage where they can escape surveillance (Orlikowski 1991; Sewell 1998). Other studies show an active role of managers in implementing information systems to increase their surveillance capability in the organization (Ball et al. 2000). The decreased visibility that comes from employees' adaptations and improvisations limits the managers' ability to monitor their work for information about market dynamics and their company's position therein (Doolin 2004). It also limits the managers' ability to monitor their employees' compliance with prescribed goals and prescribed procedures (Pullig et al. 2002). Research has shown that managers are not only willing but able to use prescribed information systems to increase surveillance because the sociomaterial practices that employees perform to carry out their everyday work will leave a detailed evidence of every adaptation and improvisation in their company's information systems:

The devices that automate by translating information into action also register data about those automated activities, thus generating new streams of information. [...] The same systems that make it possible to automate office transactions also create a vast overview of an organization's operations, with many levels of data coordinated and accessible for a variety of analytical efforts. [...] Information technology [...] introduces an additional dimension of reflexivity: it makes its contribution to the product, but it also reflects back on its activities and on the system of activities to which it is related. Information technology not only produces action but also produces a voice that symbolically renders events, objects, and processes so that they become visible, knowable, and shareable in a new way. (Zuboff 1988: 9)

Together, these seemingly contrasting results on employee improvisation and managerial control suggests the need for taking a sociomaterial approach to the problem of adaptation and improvisation of information systems under conditions of surveillance. There is the need for a better understanding of how people use information systems to keep their everyday work in the back stage while their managers attempt to bring it to the front stage. This not only specifies a dramaturgical model of IT adoption but also extends sociomateriality to explain how people's performances of information systems are shaped by the practices of others. These are the theoretical challenges of this paper. We draw on a 15-month ethnography of a desk sales unit to make these contributions.

Research Setting

DeskSales is a desk sales unit that Mega Telecom (or M-Tel, for short), a global telecommunications company, created to complement its field salesforce. Desk salespeople were supposed to sell simple, low margin products such as private circuits. Field salespeople kept the complex, high margin products, such as call centers and corporate network infrastructures.

During the ethnography M-Tel implemented Siebel, one of the leading customer relationship management (CRM) system to help desk salespeople and field salespeople do their job and to monitor their compliance with prescribed sales targets and prescribed sales procedures. An internal presentation at M-Tel specified desk salespeople's job in the following way:

A [desk salesperson] is there for support[, which] may mean covering all [sales] for low medium complexity or all [sales] for a part of the account – whatever is required within a sales context for everyone to breach and reach their targets. ... Also, a [desk salesperson] being primarily a sales person and motivated by achieving success in this area, is not a [...] service, or fault expert, nor are they ever intended to be.

M-Tel implemented Siebel to help desk salespeople fulfill this role. Siebel is a sales automation system that is designed to help salespeople throughout the sales process. Siebel allows salespeople to store and access information about their customer contacts; keep track of their present and past saleswork and store and access information about open sales.

M-Tel is hierarchically organized around customer segments (fig. 1). Each customer has one account team headed by a field sales manager who supervises two to five field salespeople. To each account is allocated a Desk Salesperson who can be tied to max four accounts. Desk Salespeople work in teams of seven to thirteen under a Desk Sales Manager. They report to one of three Senior Desk Sales Managers in the unit who in turn report to the unit's General Manager.

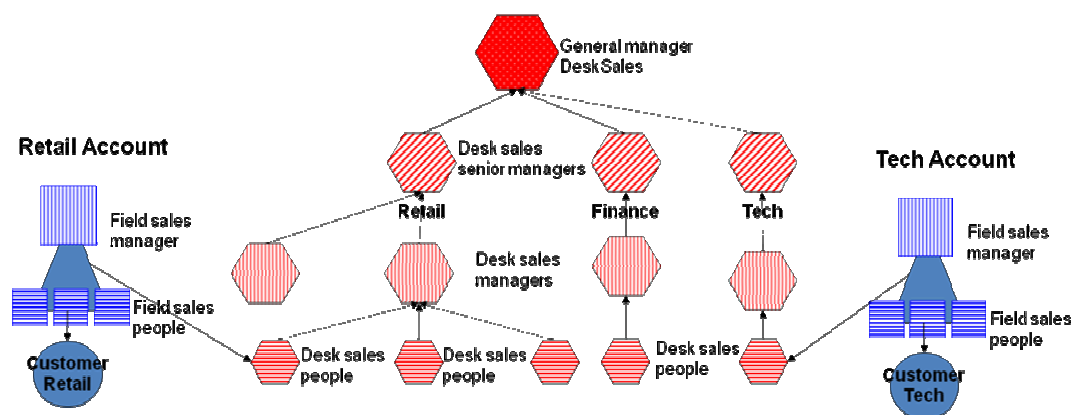


Figure 1. The structure of DeskSales (example shows Retail and Tech accounts)

Within this complex structure, Siebel is used as a management tool. It allows managers to scrutinize their salespeople's sales and saleswork. M-Tel's senior managers used Siebel to supervise, manage and measure

the work of the company's sales units. General managers of M-Tel's sales units relied on Siebel to forecast sales, to reward or discipline salespeople and to assess their unit's progress towards its target. Upper level managers relied on reports prepared by general managers based on Siebel to assess their organization's performance and to justify, if not create company policy and strategy. Siebel data were also used to calculate the bonuses and justify promotions and account assignments.

Desk salespeople, however, had little use for Siebel. They struggled to sell even the most simple of products, such as ADSL connections because most of them had very little, if any work experience. Their actual sales lagged behind their targets for the first few months. Worried with desk salespeople's underperformance, desk sales managers enforced service work upon desk salespeople. They told them that they should become "the first person your customer calls when they need something from [M-Tel]." They wanted desk salespeople to expedite customers' service requests so that customers began to rely on them whenever they wanted to report a fault and more importantly whenever they wanted to place an order. Desk salespeople could then report orders as sales and reach their sales targets.

At the end of DeskSales' first fiscal year, one in every two calls were service requests from customers and desk salespeople were involved in about two thirds of all service issues. Each sales team reported sales that matched or went beyond their sales targets but each desk salesperson did only a handful of sales. Desk salespeople needed an information system that supported their service work, not one that supported sales work. They did so by improvising on the prescribed Siebel practices and by augmenting and substituting Siebel with a collection of ad-hoc paper systems that kept their work off the management radar. The empirical challenge of this paper is to show how desk salespeople were able to improvise their own information systems with a variety of material artifacts while concurrently presenting an image of compliance in Siebel.

Data Collection and analysis

Our research focused on documenting Desk Salespeople's unprescribed customer service work and the information system they used to coordinate this work across time. For this purpose we conducted an ethnography during the first 15 months of DeskSales' existence. Our data collection consisted mostly of observing DeskSales' open space office. In addition, one author joined a group of Desk Salespeople for their month-long "induction" training when they first joined the company. We supplemented these observations with 55 interviews with Desk Salespeople, sales managers, senior sales managers, the unit's General Manager, Field Salespeople, and the unit's training staff. Our data collection procedures consisted of shadowing a Desk Salesperson for the duration of her or his working day and collecting all their incoming and outgoing communication (electronic mails, telephone calls and forms) and the material artifacts they used and produced as they engaged in service work. We interviewed each Desk Salesperson the week after they were shadowed and asked numerous questions during observation.

Analysis consisted in articulating the practices enacted by Desk Salespeople with and around information systems when carrying out their unprescribed service work, with an emphasis on the material resources that scaffolded these practices. Our goal was to articulate the relationships between the material artifacts that Desk Salespeople used to scaffold their service work and the practices enacted by Desk Salespeople to cope with managers' attempts to monitor compliance with the procedures prescribed by Siebel.

The Sociomaterial Performance of an Unprescribed Information System under Conditions of Surveillance

Desk salespeople were monitored on their use of two modules in Siebel. They had to report 35 calls to customers every week in Siebel's task management module. They had to report \$7,000 of sales every week in Siebel's sales management module. Desk salespeople adapted these two modules to their service work and added an improvised information system of their own.

Improvising with and around Siebel's task management module

Desk salespeople were able to report enough sales to reach, or at least come close to, their monthly sales targets. This revenue reported in Siebel were however not sales but orders that desk salespeople received from customers in the course of their unprescribed service work. Service work was the backstage that

allowed desk salespeople to present an image of compliance to M-Tel's senior managers. Desk salespeople performed most of their service work through an information system composed by improvised artifacts and an adaptation of Siebel's task management module. Desk salespeople used different artifacts to scaffold simple service requests and complex service requests.

The sociomaterial performance of simple service requests

There were three types of simple service requests: processing small orders, placing fault reports and finding how much progress service units had made in addressing customer problems. These tasks placed very little cognitive demands on desk salespeople. Processing small orders required desk salespeople to remember the product description and an order quantity and then performing a simple multiplication to calculate the total charge. Placing fault reports required desk salespeople to remember a single error code or a reference number, such as a telephone number or an IP address. Assessing the progress of a customer problem required desk salespeople to remember the unique reference that identified each fault report. Lena's efforts to change phone numbers for a customer highlights the sociomaterial performances implicated in these simple service tasks.

Lena received an email from her field salesperson saying that the mother of a senior executive at their customer was changing phone numbers and that the executive's mother wanted her old number to answer with a message giving her new number. Lena jotted the customer's previous and current telephone numbers on her notepad. She then called the number porting service unit. She was told the price and the requirements for this option. Lena jotted this information on her notepad. She wrote all this information on an email to her field salesperson and, after sending it, said that "our job, really, is to keep customers happy, especially at the top level so that when they want to do large purchases they come to [M-Tel] and so that the [field] salespeople can go in and deal with the big sales." She concluded, "we [desk Salespeople] are not here to dig big sales, that's the [field] salesperson's role, I don't even try because I'd just look silly."

Lena and most other desk salespeople scaffolded their simple service tasks in a notebook or a calendar that they kept until all the pages had been used. There were some desk salespeople that used a single page of paper that they threw away at the end of the day. There were a few desk salespeople who used a number of scraps, such as leaflets and supermarket receipts that they trashed throughout the day as they ran out of space. These three types of artifacts were instances of a sociomaterial performance that is best labeled as a running log. Desk salesman Scott performed his running log thus:

Scott received an email with an order for a set of virtual private circuits. He jotted down the details in his notepad and then went to the quick quote tool on M-Tel's intranet. He jotted down the prices in front of each circuit's details in his notepad. After he priced all of the circuits, he added them using his desk calculator and jotted the result on the same page in his notepad. He then copied the prices on the sheet of paper to an email message that included the site names, product and price. He sent this message to the customer asking for the term and for confirmation of the site details. Scott then said that he needed to call the billing department to find out how much the cancelled circuits were worth. He called the billing department and gave them the circuit reference numbers and jotted down on his notepad the billing values he was given. After he finished the call, he grabbed his calculator and added all this revenue. He jotted down this total next to the prices he was given during the call. He then opened Siebel and created a new opportunity titled "Virtual private circuits for Eastcorp." He copied from his notepad the total price for the new circuits into the "contract value" field. He copied the total revenue that was going to be lost by replacing the old circuits into the "substituted revenue" field in Siebel.

Scott's use of his daily running log shows that desk salespeople used their improvised information system artifacts to temporarily store information which was only needed for the duration of their current task, but which was difficult to commit to memory (e.g., phone numbers and addresses). It highlights that desk salespeople scaffolded their everyday tasks by improvising their own information systems to replace rather than augment or supplement Siebel's task management system when carrying out simple service requests.

Desk salespeople also replaced, rather than adapted or improved Siebel when dealing with complex service requests. However, as Scott's use of Siebel shows, Siebel was very much part of desk salespeople's

everyday work. It was the front stage where desk salespeople displayed the performances that they prepared in the back stages of their improvised information systems.

Simple service requests were only a small part of the service work that desk salespeople traded for reporting customer orders as sales. Most of it consisted of complex service requests.

The sociomaterial performance of complex service requests

There were four types of complex service issues: 1) processing orders for multiple products and services that required information on a wide range of parameters to be configured, 2) processing orders that for multiple products and services that were deployed in sequence throughout several months, 3) placing fault reports that included problems that were difficult to diagnose, and 4) assessing the progress on service requests that implicated multiple service units. These tasks placed a lot of cognitive demands on desk salespeople. Managing the delivery and installation of telecommunications equipment across several weeks required desk salespeople to remember multiple product descriptions, order quantities, applicable discounts for product bundles and applicable discounts for specific order quantities and then perform multiple calculations to decide on the final price and to specify a billing calendar so that the customer would only be charged by the products that had already been installed. Reporting faults that were difficult to diagnose required desk salespeople to remember a variety of symptoms, many error codes and the specific configuration of their customers' telecommunications infrastructure. Assessing the progress of service requests that implicated multiple service units required desk salespeople to remember what tasks had been assigned to each service unit and remember the multiple reference numbers that were provided to customers to monitor each of these tasks. Karin's everyday work to help one of her customers to move their headquarters highlights the sociomaterial performances implicated in this complex service work.

Karin spent two months working on the relocation of the core telecommunications infrastructure of a Big Six accounting firm that was changing its headquarters to a different building. One of the tasks that Karin managed during the course of this project consisted of porting her customer's telephone numbers. Her customer wanted to keep the same telephone number but it was moving to a different area code. Karin sent an email message to the number porting service unit that included all the telephone numbers that were to be changed. After sending the message, she printed it and added it to a pile of printed email messages that she kept on her desk. Shortly afterwards, she received a message with a service reference for her request and the name of the service representative that had been assigned to address it. Karin jotted this information on the margins of the email message that she had printed. Two weeks later, Karin came across this printed email message as she was going through a pile of printed email messages that she kept on her desk. She called the number porting service unit and asked for the service representative assigned to port BIGCORP's telephone numbers, finding his name on the notes that she had made on the margins of the printed email message that she first sent with this service request.

Karin and other desk salespeople scaffolded their complex service work with a variety of material artifacts that addressed specific types of tasks. Desk salespeople used a to-do list to remember the various tasks that they needed to complete to address their customers' service requests. To-do lists were compiled in notebooks or calendars. The following is a 10-minute slice of a day in Alexander's work that illustrates how Desk Salespeople used to-do lists.

Alexander got a call from a customer asking about an escalated order. Alexander said that he would call the person that was handling it and get back in touch with the customer. He jotted it down on his to do page "25) Paul – Circuit Escalation." He then looked at his to do list. Item 19, had a "4" in front of it, which reflected its priority. Alexander wrote "do later" in front of it. He then picked up a letter from UNICORP with a check from a pile of paper on his desk. He said that UNICORP sent it to the wrong person (himself). He called UNICORP's accounting department, and told them that they were sending their payment to the wrong address and that he had the correct address for them. He then got up and mailed the customer check and letter of payment to the correct billing address. He comes back and scratches another item on his to do list (24) Send UNICORP CHQ, "another one bytes the dust!"

Alexander's use of his to-do list highlights three aspects of Desk Salespeople's use of this type of artifact to keep a record of their outstanding tasks. The first is how they used this artifact throughout the work day. Desk Salespeople added and removed items from the list as they received and completed service tasks.

This allowed Desk Salespeople to be able to quickly assess the amount of service work that they had completed and the amount of service work that they had yet to carry out. The second aspect of Desk Salespeople's use of their to-do lists was the 'index' nature of this artifact. The description of each service task was very short – "Paul - circuit escalation" – which highlights that these artifacts were used to scaffold memory of outstanding service work, not to keep a detailed record of it. The third aspect of Desk Salespeople's use of their to-do lists was to enact a sense of progress through the large amount of service tasks that they received day in, day out. To-do lists were thus not only used to scaffold the memory of what needed to be done but also the memory of what had already been done.

Alexander accounted for his use of his to-do list as follows:

It's an on-going thing. Every morning I've got it there, so every morning I'll write a new one. There will be old stuff there that is ongoing and that I haven't done yet, which is kind of at the top. I will go through emails and messages that come in overnight. Add them to the list, then I'll prioritize the things that I have to do through the day. I then I go through it. Phone call comes in, add it to the list, email comes in, add it to the list, it's just kind of an always on-going never ending list.

Alexander's description of how he used his to-do list highlights that Desk Salespeople improvised a set of procedures to structure their use of their to-do list down to the position of records of tasks in the list. To-do lists were thus structured-in-use providing Desk Salespeople with a material resource to scaffold their progress through their service tasks.

Desk salespeople used to-do piles to keep all the information necessary to complete the tasks recorded in their to-do lists. One was that of a pile of annotated printouts kept in a folder or drawer in Desk Salespeople's desks. The other shape that a to-do pile took was that of multiple "piles" kept in a set of binders organized by account. The following vignette illustrates how Jeremy used his to-do pile:

As he sat at his desk, Jeremy turned on his computer and picked up a pile of annotated printed emails from the top drawer of the drawer box on his desk, "this is my to-do pile," he announced. Jeremy then opened his email software. He had an email from a customer asking for a quote for a complex private circuit. Jeremy spent a few minutes reading that email and then said that instead of scrolling up and down, he was just going to print the email so that "the products are easier to find." He went to pick the email up from the printer and, when he came back, he put the email printout at the bottom of his to-do pile. [...] He then went through all the printed annotated emails in his to-do pile, He put some emails to the side "I have to do that this afternoon," "this relates to that," "I need to find out what's going on about that," "I've dealt with that" (he ripped the printed email message it and put it in the trash can), "this is one I've done": "see I do go through my list and get it done, just not as quickly as I'd like."

Jeremy's use of this to-do pile illustrates three core features of this artifact as a resource to scaffold Desk Salespeople's self-coordination of their service work. One of the most interesting features of this artifact was its hybrid nature. Desk Salespeople used to-do piles to keep a record of all the information the needed to complete a task. This information was collated from multiple sources, including M-Tel's information systems, phone conversations with service representatives and with the customer, and electronic communication systems. To-do piles thus allowed Desk Salespeople to have an at-a-glance access to all the information related to each of their service tasks.

The second feature of to-do piles was that of being a task-specific, material cognitive resource. To explain, Jeremy's use of his customer's email to calculate ISDN prices suggests that Desk Salespeople needed material resources to scaffold some of their activities, such as calculating prices. Desk Salespeople used the printed email messages that constituted their to-do pile for this purpose. However, they did not do so indiscriminately. Each printed email message was only used to scaffold the activities pertaining to the task that each message referred to.

The third feature of to-do piles was to allow Desk Salespeople to keep track of their progress in completing their service tasks. As Jeremy suggests, the heights of their to-do pile allowed Desk Salespeople to keep track of how much work they had done and how much work they had to do already. In this sense, to-do piles were used much like a to-do list. To-do piles, however, fulfilled a self coordination task that to-do lists did not. To-do lists only allowed Desk Salespeople to track whether each of their service tasks was completed or not – enough to coordinate their simpler service tasks across time. More complex service tasks, however, often involved a number of activities that also needed to be coordinated across time. Desk

Salespeople's annotated the email messages that constituted their to-do piles to coordinate these activities. Desk Salespeople could keep track of the activities they had completed for a specific task by looking at the traces of their action in printed emails (such as calculations, in Jeremy's case) or by using notes to tag the completion of each specific activity.

Desk salespeople used Siebel's task management module alongside, running logs, to-do lists and to-do piles. However Siebel scaffolded an altogether different task than that for which M-Tel's managers implemented this information system. Desk salespeople used Siebel's task management module to present an image of compliance with the prescribed use of this information system to support their sales work. Some desk salespeople recorded enough of their calls to customers in Siebel to reach their target of seven sales-related calls per day.

The calls that desk salespeople placed to customers were related to their role as their customer's central point of contact for orders and service requests. However, desk salespeople such as Jeremy and Theresa reported these calls in Siebel using their own personal description. Jeremy reported a 15-minute call where a customer reported a fault in a set of private circuits that connected 37 stores to her company's headquarters as a "call to discuss upgrade of several private circuits." Theresa reported an email informing a customer about the installation date of 17 ADSL connections as a "call to discuss ADSL pricing." Other desk salespeople reported any call, including calls to service representatives as calls to customers. They misrepresented the target of the call in addition to misrepresenting the purpose of the call. Tom reported a call to report a fault in a network server as, "conversation on possible upgrades to private circuit network." There was another set of desk salespeople that struggled to establish a relationship with their customers. These desk salespeople such as Jeanne, reported false customer calls to reach their targets. Jeanne recorded a call to one of her customers in Siebel with the following description "Called Martin Henderson at Megacorp." She confessed, "most of these belong to the realm of goblins and phantasy, they're not real people."

Improvising with and around Siebel's sales management module

Finally, Siebel was part of few sociomaterial performances as well. Desk salespeople performed a small amount of their service work using Siebel. These were complex service requests that required desk salespeople and field salespeople to cooperate on pricing new or re-designed large-scale telecommunication infrastructures for their customers. These tasks required the same cognitive demands than other complex service work. However, they added the task of conveying to, and receiving from field salespeople a part of the information that was required to carry out these service requests. Tom's efforts to help a field salesperson set up a call center for one of his customers highlights the sociomaterial performances implicated in these joint service tasks.

Tom received an email from field saleswoman Deborah asking him to place orders for all the equipment necessary to set up a new call center for Northcorp. Deborah wrote that: "I created a 10% opportunity in Siebel to keep all the paperwork, [...] you can find all the information you need there. She asked Tom to "put all the AROs [order forms] there, instead of sending them via email." Tom opened the opportunity that Deborah had created in Siebel and printed a spreadsheet listing all the equipment that had to be ordered for Northcorp's call centre. He also sent an electronic copy of the file to the service unit that installed and repaired telecommunications equipment for call centers. He asked service representatives to "please confirm when each order is first billed" to the customer. Whenever Tom received a billing confirmation for Northcorp's call center. He updated the spreadsheet that Deborah had placed in Siebel.

There was little variation in how other desk salespeople used Siebel to help field salespeople in complex service tasks. The crucial element of this use of Siebel to scaffold service work was the low value and low probability attributed to the sales record that was used to store shared documents and information. Desk saleswoman Roberta explained:

1K [ie. One thousand-dollar], 10%, opportunities are not picked up [in management reports]. [...] It builds a picture [...] on Siebel that everything that happened with an opportunity

The most frequent and most important use of Siebel's sales management module was to perform a representation of compliance with prescribed sales targets. Desk salespeople recorded the orders that they received from customers much like John did after receiving an order for a private circuit. John used a

sheet of paper (his running log for the day, cf. the analysis above) to jot down the two telephone numbers that were to be connected through a private circuit. He sent an email message to a service unit asking it to “please raise the following order” and including the name of the customer and the two telephone numbers that he read from his running log. After sending this email message, John proclaimed “now, to make some money!” He used his calculator to find the price of this private circuit and jotted it down. He opened Siebel and created a new record in the sales management module. He entered the description of the sale opportunity as “Private circuit for Southcorp.” John added the price of the private circuit to the “Revenue” field. He then marked the probability of closing the sale as 100%, “it’s closed, ain’t it?”

Reporting orders using a printed email message in a to-do pile, instead of using jottings in a running log followed a similar process. Desk saleswoman Marilyn only reported orders as sales in Siebel at the end of the week, “sometimes they [ie. orders] get cancelled and I don’t want any black marks against my name.” Every Friday, she took out every customer order from her to-do pile and reported them in Siebel as sales with an 100% probability of closing.

Nathan attempted to improve his team’s reported revenue by using email to admonishing his salespeople:

Team, I need your support to close down the sales for this quarter one. At the moment our performance is on amber, as we are not on line to hit targets in P2 [the month of May]. PLEASE call in all those favors and get the deals closed in Siebel. I know we can go green, and keep pace with other team (who are both green in performance). I look forward to hearing of a last minute sprint to get over that winning line. [...] If you want to see me happy, lets make sure we hit target for Q1. I am absolutely committed to all of you, I hope you can see that, I need you to all now to go that extra mile. If your account teams are not engaging you then escalate this to your supervisor, we have to quicken the pace in Q2 in order to get the revenue on the books. Good Selling, happy hunting,

Nathan’s attempts to enforce reporting orders as sales are an example of how sociomaterial performances (with prescribed and improvised information systems) can create problems for managers. They also show how managers can perform the material properties of information systems to overcome these challenges and even take advantage of how employees use prescribed and improvised information systems to scaffold their everyday work.

Nathan and other desk sales managers struggled to monitor desk salespeople’s service work. Desk salespeople’s running logs and to-do piles were difficult to scrutinize. Desk sales managers could not easily assess how much revenue desk salespeople could report as sales from Siebel. Sales manager John complained:

I think if you see Siebel, because it’s not a measuring tool, because it’s not actually used, to actually get the report, to just get your those numbers, you have to get all the detail so you pull out every single opportunity out of [desk salespeople] and by the time you have figured everything out, it’s taken you a day to do a report.

Desk sales managers used a set of whiteboards of their own creation to scaffold their attempts at monitoring desk salespeople’s service work. In his team meeting of January 17th, sales manager Peter used his whiteboard thus:

Peter began his team meeting by addressing Tara: "Tara, shall I start with you girl". Tara described three orders that she had received from customers, including the contract value, "150 K [ie. \$150 000]". Peter added this figure to Tara’s sales to date that he recorded on a table on his team’s whiteboard. Judy said that she had Siebel training "and that's basically it", Joe added "I'm there with you". Peter kept Judy and Joe’s reported sales unchanged in his team’s whiteboard. John said that he had a probable deal with a restaurant "worth 200K" Michael said that he was "just catching up, really." Jeffrey said that he was working on "320 K deal". Peter nodded approvingly. He added John and Jeffrey’s reported sales to his team’s whiteboard. He told Michael Joe and Judy, "please, make sure you’re on top of your targets, I don’t want any black marks against my name!"

Desk sales managers used blue or green instead of red to record reported sales below targets. Sales manager Jeremy explained, you can never be too careful with all the visitors we’ve been having!”

Senior M-Tel executives paid occasional visits to the unit. In some instances they only took a walk around and had a meeting with the unit’s general manager. In these occasions, managers told their desk

salespeople to “remove everything from your desks and make sure that Siebel is open all the time.” Desk salespeople called it “painting the stones white when the general is coming.” Desk sales managers also had their teams rehearse these visits. A few hours before a visit from the head of Technology and Media Sales, Andy, a desk salesperson in one of the technology and media teams said, “you could read in their body language how afraid they were.” He explained that his team had rehearsed for the questions and answer period with the top management, “[our team] spent the past two days rehearsing so that it sounds natural”, Andy said. He added, “[managers] have been in panic for the past two weeks, but today, I’ve never seen so much panic in this unit.”

There were other instances when senior executives wanted to sit with desk salespeople and watch them work. Whenever this happened, managers attempted to have managers join a desk salesperson in a separate room and carefully rehearse their use of Siebel. Some even had other desk salespeople on the team calling their fellow salesperson pretending to be customers.

Together, desk sales managers and desk salespeople performed an unprescribed information system that allowed them to represent their service work as sale in their company’s prescribed information system. This grand sociomaterial performance extends sociomaterial studies of information technology by specifying a social account of the technologies, hi tech but also low tech as to-do lists and running logs, that people use to scaffold their everyday work.

A Dramaturgical Model of IT Adoption

The complexity and variety of behaviors highlighted in the study of IT adoption at M-Tel is far from the ease-of-use/expected performance duo characterizing TAM studies (REF). The way that desk salespeople and their supervisors reacted to Siebel suggests a model of IT adoption that cannot be captured by design-adopt-resist framings because there was no resistance to detect. Measures of the uses of the systems would provided shining results of success, but they would present the wrong picture nonetheless. Using the theatrical metaphor of front stage and back stage we highlight instead a model of adoption that takes onto account the multiple roles assumed by technology and people in staging sociomaterial performances. The dramaturgical model emerged from the analysis has three components: 1) the performance of information systems as front stage; 2) the performance of information systems as a back stage; and 3) the performance of the boundary connecting front stage and back stage. Information systems, prescribed and unprescribed, play an important role in this model because they blur the concept of space making it possible to perform as in the back stage while visible and as in the front stage while out of reach.

Performing information systems as a front stage

The central postulate of the dramaturgical model of IT adoption is that prescribed information systems are used first and foremost to present an image of compliance. Research on the implementation of management information systems suggests that the informing property of these technologies imposes work as the only possibility to create electronic traces of compliance with prescribed uses of prescribed information systems (Zuboff 1988). Desk salespeople’s ability to create a representation of compliance with Siebel without doing any work necessary to produce that representation points toward an alternative specification of IT adoption where the work of representing compliance is separate from people’s everyday work. We show that when people’s everyday work is different from that supported by the company information system, the additional burden of representing compliance produces and reproduces a façade that protects unprescribed work and the improvised information systems that scaffold it.

Desk salespeople’s attempts to present compliance with Siebel suggest that creating such a façade is a sociomaterial accomplishment scaffolded on improvised information systems. They show that this accomplishment can be scaffolded on the same material artifacts used to perform everyday unprescribed work. However, producing a representation of compliance can also require improvised information systems of its own. In extreme cases, such as DeskSales, unprescribed work can be carried out mostly to feed management information systems with the data they need to present an image of compliance. Research on managers’ political ploys such as “whipping the horse” (Jackall 1989: 235) suggests that these performances of prescribed information systems can extend to all levels of an organization. These studies (see also Watson 2001) join our research at DeskSales in emphasizing that The sociomaterial performance of prescribed information systems as front stages is a social, distributed accomplishment.

The ways in which senior executives scaffold their monitoring of their management information systems to make sense of their company's performance shows the challenge that employees and their supervisors face when performing management information systems to display an image of compliance. Senior executives at M-Tel monitored salespeople's sales work by counting the number of visits and calls to customers. They did not receive any data beyond the number of calls and visits that each salesperson, each sales team and each sales unit recorded in Siebel. Desk salespeople only had to report seven calls a day without worrying about being accurate regarding the person that they talked to and the subject of their conversation. However, M-Tel's senior executives received far richer information about sales opportunities and closed sales. Desk salespeople had to produce accurate sales records to present themselves as compliant with the sales processes prescribed by Siebel.

Our research at DeskSales further suggests that supervisors can join their employees in performing management information systems as a façade. Research on employee deviance (e.g. Anteby 2008; Hollinger et al. 1982) suggests that when managers collude with their employees thus, it is employees who persuade their supervisors to engage in misrepresentation. Our research at DeskSales shows that the opposite may happen. It was managers who enforced service work upon their employees, not employees who suggested it to their supervisors. As our research at DeskSales shows, supervisors' attempts to shape their employees' performance of management information systems thus requires a set of sociomaterial artifacts to scaffold it, much like desk sales managers used whiteboards and Microsoft Excel spreadsheets to scaffold their attempts to enforce the representation of service work as sales work in Siebel.

To succeed in representing a façade of compliance with management information systems that hides improvised information systems, people need to be able to separate the façade from the unprescribed systems that lurk in the backstage.

Performing information systems as a backstage

The improvised information systems that desk salespeople use to scaffold their service work suggest two different processes of sociomaterial performance in the two back stages. One is a process of appropriation and the other is a process of production.

By *appropriation* we intend taking advantage of how managers scaffold surveillance with information technology. At M-Tel, managers did not monitor sales opportunities below \$1000 and with less than 10% probability of closing. Managers' surveillance practices at M-Tel joins research on how managers use information technology in their everyday work (Mintzberg 1994; Walstrom et al. 1997) to suggest that the assumption of constant and minute monitoring implicated in the panoptical specification of information systems is an extreme of a continuum of surveillance practices. In all but the most controlling organizations, employees can find niches of invisibility in management information systems where they can take advantage of the functionalities of prescribed information systems without enduring scrutiny and surveillance.

The other information systems that desk salespeople improvised to scaffold their service work highlight the cost that employees pay when scaffolding their work using material artifacts that they improvised for themselves. Using Siebel allowed desk salespeople to keep all their information in a single technological artifact. Their network of to-do lists, to-do piles and running logs was convenient for simple tasks and offered some advantages for complex tasks, such as the ability to find information quickly. However, desk salespeople's sociomaterial performance of this network of artifacts shows that there is a coordination cost to pay for the invisibility that these improvised information systems offer. This cost highlights the extent to which the need to present an image of compliance can shape people scaffolding their everyday work with information systems. At DeskSales, employees were willing to incur in the effort of coordinating a network of unprescribed information systems to make sure that they produced an image of compliance in Siebel.

The sociomaterial performance of improvised information systems as back stages at DeskSales shows how things can be used instead of places (Giddens 1986: 122) and postures (Goffman 1967: 34) to hide everyday work practices from others. It suggests a mid-range theory where employees are able to keep their everyday work away from their managers in situation of co-presence when managers seek to monitor employees' compliance with prescribed procedures and prescribed goals. Material artifacts in general, and information artifacts in particular (Siebel but also to-do piles and to-do lists), can be used to produce and

reproduce a backstage in situations where people are visible to inquisitive audiences when they prepare their performances, much like desk salespeople were visible to managers that had a stake in their sales performance as they carried out their everyday service work.

The reactions of desk salespeople and the reactions of desk sales managers to the implementation of Siebel at DeskSales suggests that scaffolding the production and reproduction of back stages in improvised information systems is a social, not an individual accomplishment.

The possibility of hiding service work in opportunities below \$1000 and below 10% probability was based in a property of Siebel. It was only programmed to include records above these values in the monthly sales reports that it provided to managers. However, this property of Siebel was the outcome of a number of meetings where managers at M-Tel discussed with consultants and IT specialists the reporting rules to be implemented in Siebel as it was deployed throughout M-Tel. Ethnographic studies of IT implementation (Doolin 2004; Gattiker et al. 2005; Orlikowski 1993) show that the properties of management information systems that allow employees to obtain some level of invisibility while taking advantage of prescribed information systems are chosen and even specified by managers. These features sediment as people scaffold their everyday work over time on the technologies provided by their companies or on the ones they create ad-hoc.

The possibility of scaffolding service work on improvised artifacts such as to-do lists, to-do piles and running logs depends on managers exerting an effortful variation of civil inattention towards their employees' sociomaterial performance of their everyday work. The way in which desk salespeople and their managers joined in turning DeskSales into a bespoke service unit shows that the first condition for employees' ability to improvise with and around prescribed information systems is that managers are willing to allow the ostensive material presence of unprescribed artifacts in their workplace without forbidding it or questioning it. This suggests that improvised information systems can be compared to expressions given off by countenance and posture when they are inconsistent with expressions given through speech and dialog (Goffman 1959: 7). In such situations, others are expected to gloss over reasonable inconsistencies and accept people's expressions. Research on information systems has shown that some managers are willing to accept unprescribed information systems that improve their employees' effectiveness (e.g. Orlikowski 1996). Our research at DeskSales suggests that when managers do so, they need to incur on additional work. They need to improvise ways of monitoring their employees' work without having any access to any electronic traces of their performance. Our research at DeskSales shows that when managers are less understanding, then employees need to create a front stage of compliance that allow them to forestall scrutiny to improvise information systems that scaffold their everyday work.

Performing the boundary between front stages and back stages

The boundary between information systems performed as front stages and information systems performed as back stages is not a stable outcome of a small set of routine practices. Instead, this boundary is a dynamic response to the varying range of sociomaterial performances that senior executives use to insure their company's performance. Some of these performances can breach the mediated representation of compliance that management information systems afford. This requires employees and supervisors to erect and support a boundary between employees' front stage performances of compliance and their backstage performance of everyday work.

Our research at DeskSales suggests that this is a sociomaterial accomplishment. It suggests a continuum of performances of information technologies that conceal noncompliance while presenting an image of compliance. At the one end of this continuum are performances of information technology that hide improvised information systems. Whenever M-Tel's executives visited DeskSales, sales managers imposed a clean desk policy. Desk salespeople concealed their running logs, to-do lists and to-do piles and pretended to use Siebel. This is an instance of tactic to overcome the threats of co-presence to IT adoption that sacrifices people's ability to carry out their everyday work for their ability to present an image of compliance. It is a temporary tactic. It can be effective, but it commands too high a cost. It requires employees to forsake their everyday tasks to protect the information systems that scaffold their work. At the other end of the continuum of strategies to address the threats of co-presence are practices that show, instead of hide. At DeskSales these practices consisted of rehearsing interactions with senior executives and putting on an idealized performance of Siebel whenever they visited. This tactic is the opposite of concealing improvised information systems. It attempts to present an ostensive image of compliance that

affords few, if any opportunities to observe the other material artifacts that people used to scaffold their everyday work. Between these two ends lies a continuum of tactics such as sales managers using blue instead of red to mark poor performers in their team's whiteboard. Tactics such as this allow people to use their improvised information systems without risking exposure. Sales managers drew on senior executives' interpretations of color in performance tables to present an image of compliance with the prescribed uses of Siebel while using whiteboards to represent their salespeople's struggle to achieve those goals and attempt to help them reach them. Tactics such as these use meaning to separate front stages from back stages. They emphasize the opportunities that the mediated co-presence afforded by management information systems provide to employees during IT implementation. They highlight the threats that physical co-presence creates for people's attempts to improvise information systems that are better suited to their situated challenges at work.

The production and reproduction of these boundaries between front stages and back stages are a social, distributed accomplishment. M-Tel's executives enacted two different sociomaterial performances of surveillance during their visits to M-Tel. Some of these visits helped desk salespeople and their sales managers reproduce a boundary between the informal information systems and Siebel. These were visits where executives had only superficial interactions with desk salespeople allowing them to temporarily hide the notebooks and printed emails that scaffolded their everyday service work. These interactions are instances of sociomaterial performances of surveillance where executives only seek access to the most ostensive evidence of employees' compliance with prescribed information systems. The occasional account reviews performed by some M-Tel's executives were hindered desk salespeople's representation of compliance. They are an instance of a sociomaterial performance of surveillance where executives use co-presence to exert very close scrutiny over people's work. This sociomaterial performance of surveillance requires carefully rehearsed interactions where improvised information systems are hidden behind a contrived and idealized use of management information systems. Together these three processes specify a dramaturgical model of IT adoption where people's main goal is to produce a representation of compliance in their company's information systems.

Conclusion

The dramaturgical model of IT adoption introduces the insights generated by the sociomaterial view of information systems into the process of IT acceptance, adoption, and use. It goes beyond the classic IT design-adopt-resist model explaining how and for which reasons people incorporate prescribed information systems into their work practice and create improvised information systems to complement them or even substitute them. It advances research on sociomateriality by specifying a social model of what has been until now a rather individual account of the mutual entanglement of material properties of technology and people's everyday work practices. It advances research on IT adoption and implementation by providing a nuanced explanation of the effects of surveillance and monitoring upon people's use of prescribed information systems. Thus doing, the dramaturgical model complements the functional model of IT adoption and indicates to future researchers to look behind use and be mindful of the process of creation of façade of compliance. It highlights that the adaptations and improvisations documented by research on IT implementation can coexist with high levels of surveillance. This model of IT adoption and its instantiation at DeskSales shows that many successful IT implementations are dramatic failures hidden behind a façade of compliance.

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