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DIGITALIZATION AS A STRATEGY PRACTICE

What is there to learn from strategy
as practice research?

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Introduction

Information technology (IT) has caught strategy scholars' attention for over 50 years (Peppard et al. 2014). Because IT resources were initially costly to develop and implement, strategic uses of IT have historically been subordinated to the predominant business strategy (Galliers 1993). Information systems (IS) strategy scholars have therefore drawn extensively on strategic management theories. The influence of classic perspectives of strategy on IS strategy research is not the least palpable in notions of strategic alignment and positioning whereby organizational transformation is about control and planned implementations of simple sets of IT resources, carefully selected to grant the organization a competitive position within a stable environment. Around 25 years ago, the strategic promises of creating digital infrastructures within and across organizations started to render IT uses more socio-technically complex (Ciborra 1997). Because only senior managers have sufficient economic and political resources to undertake such a task, IT resources mostly remained subordinate to the business strategy; however, new IT use soon generated innovation and organizational change far beyond senior management's reach and control (Jarvenpaa and Ives 1996), making environments more uncertain. Today, IT enjoys a ubiquitous presence in organizations (Holmström and Robey 2005), but even as most contemporary IT resources are malleable enough to extend upon for actors on all organizational levels (Bygstad 2015), many organizations still visibly struggle to put new IT resources into good use (Tilson et al. 2010). Some organizations even seem blind to the strategic opportunities that already implemented IT resources afford (Arvidsson et al. 2014). Hence, it is high time for IS strategy scholars to step out of the boardroom and reveal how local organizational actors mobilize IT resources as entrepreneurial means for promoting digital business strategies (Jarvenpaa and Ives 1996).

In recent years, strategy-as-practice has emerged as an approach focused on strategizing and the doing of strategy. While the notion of strategizing entered the strategy discourse early on to make sense of why strategies rarely unfold as planned, strategy-as-practice focuses on the day-to-day actions that lead to strategic outcomes as they occur in context (Mintzberg 1973). This shift from a process-based to a practice-based view of strategy making grew out of frustration with classic assumptions regarding the nature and cause of change. For example,

Vaara and Whittington (2012) argued that as organizations' environments undergo socio-technical and economic transformations as a result of digitalization, we must rethink the notion of strategy. Strategy-as-practice can afford IS strategy scholars new insight into how IT promotes digital strategies, because to keep up with digitalization organizations must often build a new IT capability base from the ground up (Bharadwaj et al. 2013). This typically requires collective action by actors with distinct resource commitments, interests, and horizons (Henfridsson and Yoo 2014). To direct attention to how IT resources promote such digitalization processes by distributing innovation and localizing organizational change, this chapter charts out possible applications of strategy-as-practice in IS strategy research. In so doing, we extend on calls to examine how structures emerge, and how actors configure IT resources to undo information silos that block digital business strategies (Besson and Rowe 2012, Bharadwaj et al. 2013).

The chapter is organized as follows. First we argue that digitalization has expanded the scope of IS strategy research to the point where classic perspectives are stretched to their limits. We then propose strategy-as-practice as an alternative approach, and demonstrate its uses through three empirical vignettes that each reveals a facet of the challenges organizations face in using IT resources strategically. Finally, we discuss some ways in which strategy-as-practice offers IS strategy scholars insight into the digitalization practices of current strategic organizations.

From IT strategy to digital strategizing

IS strategy research has assumed many forms over the years. Peppard et al. (2014: 2) outlines five movements, each of which is influenced by strategic management theories albeit lagging some years behind (Table 15.1). These theories influence on IS strategy research is visible in the conventional assumption that IT resources come aligned with predominant business strategies and are implemented in organizations to achieve an *a priori* known goal that senior managers support. Because IT implementations associated with strategy change have carried a high cost and risk, this assumption is historically valid. However, it has also limited our understanding of the challenges organizations face in using IT resources strategically to mainly psychological and cognitive aspects of organizational inertia (Besson and Rowe 2012). Even as most IT resources are now malleable enough to extend upon for organizational actors on every level (Bygstad 2015), little is accordingly known of how local organizational actors can mobilize IT as an entrepreneurial means for overcoming economic and political inertia that block the materialization of digital business strategies (Besson and Rowe 2012, Bharadwaj et al. 2013).

Peppard et al. (2014) nicely summarizes how digitalization has caused organizations to embed IT resources and associated capabilities at an increasing depth, in effect blurring the boundary between IT and business strategies. For example, using IT resources to spot and locally act on new strategic opportunities is now vital for most organizations (Whittington 2014). Due to the low cost and high scalability of IT resources today (Bygstad 2015), we could therefore say that every employee is a potential champion of a digital business strategy. If digital infrastructures lower the bar for participation in strategizing, however, IS strategy scholars must re-examine the mechanisms and conditions that influence bottom-up organizational change – for example, how changes must be sequenced and staged for local innovations to scale (Jarvenpaa and Ives 1996), and how IT governance frameworks and architectures affect the coevolution of IT and business strategies by generating socio-technical, economic, and political inertia (Besson and Rowe 2012). In this chapter, we argue that completing this movement entails abandoning the assumption that IT resources carry a certain use, which

Table 15.1 Five movements in IS strategy and strategizing

<i>IS strategy movements</i>	<i>Praxis</i>	<i>Practitioners</i>	<i>Practices</i>	<i>Description</i>
Ad hoc bottom-up approach to determining IS	Ad hoc approach to determining EDP and computing requirements	IT staffs	Emphasis on building systems rather than determining strategy	Ad hoc, bottom-up, primarily driven by technology requirements. IS plan operational in focus, for the most part identifying individual applications (cf. Galliers and Sutherland 1991)
IS planning	Top-down approach to determining IS needs to meet business goals	IT staffs	Planning based on an informal network of a few key individuals	Formal top-down planning for IS. IS plans reactive to business plans.
Strategic planning for information systems (SPIS)	Team approach involving multiple stakeholders	Senior management and IT staffs	IS plans periodically reviewed to adapt to changing circumstances	Proactively seeking opportunities for competitive advantage from IT
Building an IS capability	IS capability embedded in fabric of the organization	All employees have a role to play	Influenced by organizational culture; and information orientation of organization	Acknowledging that having a strategy is only part of what is required. Ability to continually identify opportunities, deploy technology, implement change and use information and IT.
IS strategizing	Cognitive and intellectual dimensions	All employees	Co-evolution of business and IT strategies	IS strategy something that organizations do rather than have

Source: Adapted from Peppard et al. (2014).

senior management will support once it is rendered obvious. Although IS strategy scholars increasingly note that IT implementation is merely the beginning (Arvidsson et al. 2014), and that strategic responses to digitalization require organizational actors to develop, combine, and reposition IT resources in unexpected ways (Henfridsson and Yoo 2014), we believe that IS strategy research has only scratched the surface concerning the entrepreneurial means IT resources afford processes of innovation and organizational change, as well as their material nature. To investigate this nature is important because IT resources help to counter the fact that even good ideas that originate in the bottom tend to “die early and quiet deaths,” having failed to capture the senior managers’ imagination and attention (Jarvenpaa and Ives 1996: 119). But it is also required to account for the myriad of ways that digital infrastructures have rendered organizations socio-technically complex ever since IT resources were first introduced in organizations (Tilson et al. 2010, Zuboff 1988).

Today, CEO’s have learned that having an IS plan is only part of the strategizing process. The long-term success of most organizations is dependent on its capability to develop and promote increasingly innovative uses of IT resources over time, and to navigate associated uncertainty. These dependences stem from the need to strike a balance between the pace by which new IT resources can be developed and the rate by which IT uses can be reasonably replaced, and the unexpected opportunities digital infrastructures’ inter-generational (generative) effects create. If classic assumptions no longer hold, navigating digitalization will be hard; once a matter of control and planned implementations of simple sets of IT resources, carefully selected by IT staff and executives to grant organizations competitive positions, digitalization then requires distributed forms of innovation. Hence, organizations must create conditions for IT resources to be enacted as a part of multiple organizational practices, in pursuit of contradictory goals (Berente and Yoo 2012). Although IS strategy research makes evident that environments grow uncertain as organizations imbue their products and services with IT capabilities (Nolan 2012, Ward 2012), it is unclear how organizations transform as a result of rapid, openly distributed innovation processes, subject to many more or less digital organizing logics (Yoo et al. 2012).

For IS strategy research to explain how organizational actors use IT to overcome inertia built into prevailing information silos, and pave the way for digital business strategies (Besson and Rowe 2012, Bharadwaj et al. 2013), practice perspectives are needed. Examining IT resources as entrepreneurial means indeed entails recognizing the fact that if all operations have an IT component, IT resources are no longer subordinated to business strategies. Rather, they make up the generative substances and forms with which new digital business strategies are developed. Many scholars have argued for fusing IT and business strategy more comprehensively under the notion of digital business strategy (Bharadwaj et al. 2013, Grover and Kohli 2013), but we thus emphasize the need to take the digital for real. In the next section, we discuss how strategy-as-practice can offer IS strategy scholars such insight. While strategy-as-practice can grant insight into how IT resources constitute a nexus for collective action in numerous ways (Orlikowski 2013), we center our upcoming discussion on two key aspects of the relationship between IT and business strategy, which digitalization has transformed (Pepard et al. 2014).

- 1 Digital business strategy success is in everyone’s hands. IT resources are increasingly modular and layered, and therefore no longer possible to control by the IT unit or align simply with the will of the senior management. Thanks to standardized interfaces, it is always possible to combine and repurpose local IT resources in innovative ways. Yet, champions of novel IT uses are likely to run into heavy economic and political inertia. IS

- strategy research must thus admit the distributed nature of innovation, and theorize the scaling processes by which local organizational actors use IT resources as a means for mobilizing external allies to support the materialization of new strategic outcomes.
- 2 Digital business strategizing is emergent rather than planned. Strategic uses of IT now unfold in open and expanding environments, and tend to diverge from predominant IT resource commitments by cutting across information silos and functional units. Because IT resources can be easily modified, highly embedded work systems live long lives for economic and political reasons, but also come to create contradictory realities and user experiences. An important part of digital strategizing is therefore to admit that IT uses are ephemeral, and create IT governance systems that balance the needs to implement, maintain, and roll back IT resources to constantly pave way for new organizing logics.

Digitalization as a strategy practice

Strategy-as-practice examines the processes and contents of strategy making (Jarzabkowski et al. 2007). To bring organizational actors back onto the stage, strategy-as-practice scholars use verbs rather than nouns, but also recognize that different actors make different sense of shared situations, because they belong to different communities of practice (Chia and Mackay 2007, Jarzabkowski 2004). Because each community's resource uses are subject to its institutionalized logics, exploring strategy practices such as digitalization requires a framework of strategizing much different from classic approaches to strategic management (Jarzabkowski et al. 2007).

Because of the strong emphasis on strategy as a process that occurs in a context (Mintzberg 1973), strategy-as-practice shifts attention from rational accounts of IT use to rich accounts of how organizational actors rearrange messy organizational realities, in studies of digitalization (Ciborra 1996). Strategy-as-practice scholars work around three parameters: *practitioners* (the focal strategizing actors), *practices* (the historical, symbolic, and material processes that guide their activities), and *praxis* (the sequence by which activities unfold *in situ*). However, what truly unites the literature is a commitment to explain what actors do and why (Jarzabkowski et al. 2007, Jarzabkowski 2004), which in our context then entails attending to IT resources both as material means and utilities. Huang et al. (2014) accordingly adapted this framework for IS strategy research by expanding on the idea of praxis to direct specific attention to the *strategy site*. In light of IT resources' unique materiality (Kallinikos et al. 2013) and the unbounded nature of IT innovations (Yoo et al. 2012), a digital strategy site is here conceptualized as the environment where organizational practices and IT resources are bundled together as part of a *strategy praxis* (thus carrying the material means and resources for its own transformation). In this way, strategy-as-practice can help IS scholars capture digitalization as a material practice.

By isolating the strategy site (Table 15.2), Huang et al. (2014) showed that IS strategy research is conceptually ready to develop a material understanding of what it means for all employees to take part in digital strategizing. Specifically, they revealed how the employees "who perform and engage in strategy practices" promoted a digitalization outcome at a Chinese strategy site by using IT resources as means for ambidexterity (Huang et al. 2014: 30) – that is to say, to simultaneously exploit and explore the strategic opportunities that digital infrastructures create over time. As such, the authors showed that a strategy site can be conceptualized as different bundles of IT resources, organizational structures, and practitioner roles that constitute different alignments, and undergo change, as a new praxis for digital strategizing is established. This view renders evident how strategizing occurs both in and as a material arrangement of actors and resources.

Table 15.2 Definitions of key conceptual elements of the Huang et al. (2014) framework

<i>Key concept</i>	<i>Definition</i>
IS strategy practices	Institutionalized routines that guide IS strategic activity, based on traditions, norms and procedures that exist both within the organization and beyond its boundaries
Strategy practitioners	Those individual actors who shape and actualize IS strategy, including actors within a focal firm but also, for example, external policy makers, regulatory bodies, competitor organizations
IS strategy praxis	The actual activity of creating and enacting an IS strategy that may be more or less similar to the institutionalized routines because of the sensemaking/interpretation of the particular practitioners involved and because of unanticipated events that can disrupt routine practices
Strategy site	The social and relational space where IT-enabled practices are bundled together in particular ways by the practitioners involved and that can change over time as an outcome of praxis

We have argued that classic assumptions of strategic management have prevented IS strategy research from understanding digitalization as an (IS) strategy practice. In particular, we argue that the literature as a result has failed to account for the ways in which digital infrastructures change the conditions and mechanisms for innovation and organizational change (Besson and Rowe 2012, Tilson et al. 2010). As Huang et al. (2014) noted, this gap also presents itself in a lack of case studies that reveal how organizational practices and strategy sites are transformed over time as result of digitalization, rather than as the expected result of a one-shot, top-down IT implementation. In the remainder of the chapter, we expand on this claim to demonstrate that IS strategy scholars can build on the notion of strategy site to reveal what it means for all workers to participate in digital strategizing. In particular, we show that strategy-as-practice can open up three avenues for IS strategy scholars to investigate digitalization as a strategy practice: (1) how technologies-in-use at a strategy site act as material carriers of institutions that enable and constrain strategic outcomes when new IT resources are introduced; (2) how IT resources thanks to their material nature can be used as entrepreneurial means for digital business strategizing; and (3) how digital infrastructures and platforms moderate conditions and mechanisms for innovation and organizational change. To chart out these avenues, we next present three empirical vignettes. Because these vignettes only offer snapshots, they do not provide a complete description of all the actors and dependencies associated with digital strategizing processes. They do, however, provide solid illustrations of how digital business strategies differ due to the material role of IT resources, and consequently the need for digital strategizing practices to recognize the ways digitalization challenges existing boundaries.

Digital strategizing in practice

For IT implementations to prove strategic, IT resources must form a material nexus for novel assemblies of organizational practices, and generate associated resource commitments in use (Boudreau and Robey 2005). Counter to classic assumptions of strategic management, digital strategizing therefore requires more than senior management decree and strategically aligned IT resources; many successful IT implementations initially buttress existing information silos that must be undone for organizations to harness generative infrastructures. Indeed, rational

and common-sense uses of IT resources often reinforce predominant structures and norms by *digitizing* cow-paths (Tilson et al. 2010). By contrast, *digitalization* requires organizations to improvise in their use of IT (Orlikowski 1996) and enable power users and thought leaders to champion IT innovation (Boudreau and Robey 2005, Jarvenpaa and Ives 1996). Digitalization processes are thus visible in how organizations continually work to cultivate and reveal digital options in the existing base of social and technical capabilities with varied IS strategy success.

Papermill was among the last pulp and paper mills, owned and operated by an international conglomerate, to implement a new enterprise IT architecture. By standardizing three core IT systems at each mill, the conglomerate's global paper division intended to move upmarket and create new revenue. For example, the enterprise architecture was aligned to pave the way for a more agile paper production process, and to facilitate deeper product-service integration. In a recent paper (Arvidsson et al. 2014), we demonstrated how as the final system – the mill execution system, responsible for translating the sales division's replenishment requirements into reels of paper ready for shipment – was being implemented, Papermill persisted in using its paper-born production routines. Such persistence can initially be viewed as the result of a cognitive form of entrenchment that occurs as organizing logics sediment in routines and IT use norms, which the material arrangement of the strategy site then serves to maintain. For example, the enormous paper machine had over the decades anchored the idea that 'paper production has a certain way to it' – an organizing logic to which all other practices at the pulp and paper mill had to bend. Since then, we have analyzed this case in further depth to reveal how the paper machine not only was loud and trembling but in praxis also constituted fixed subject positions, IT use commitments, and organizational identities (Arvidsson 2016). Indeed, by creatively implementing the mill execution system around existing work systems, Papermill digitized a historical divide between workers and planners, inhibiting new IT use.

To illustrate, production planners worked in a pink building adjacent to the mill. They saw as their main challenge 'to minimize the trim' – that is to say, minimize the waste that occurs as combinations of paper reels of marketable quality, length, and breadth are cut from huge rolls of paper, several meters in width. For the white-collar planners, who worked in nice climate-controlled offices, the new mill execution system was welcome, but no occasion for change. Graphical user interfaces and drag-and-drop operations made it simple to tune and compare different paper production scenarios, but they saw no little need to transform how paper was produced. It was only a replacement (e.g., the old system had once been repaired using parts from a technology museum, and although highly efficient carried many known risks). In fact, even as the mill management was otherwise aware of the urgent need for new work routines, 'it was not part of the plan.' The production planners' stubbornness was a cause for cynicism at the production floor, where blue-collar shift workers operated around the clock to produce paper, in a massive hall packed with buzzing machinery. Because of paper-born routines, the workers could not adjust production plans despite local capabilities and skills. Many thus felt that the planners busted their balls – a sentiment many truck operators shared as reels arrived in a disorderly way from their point of view. Large-scale production processes frustrate downstream workers by default, but digitized cow-paths was also a source of frustration upstream. The regional sales office had to market many products of different kinds at short notice; one sales person with experience of working at the mill could not fathom 'why the production is still so rigid.' Because the mill had taken measures to ensure that all workers were represented in the system implementation, it is puzzling that the mill still saw the outcome as a success.

Examining why actors who could make a novel strategic choice often fail to recognize that a choice is present is a timeless avenue for IS strategy research. The Papermill vignette shows how strategy-as-practice can unpack such organizational dynamics. For example, it portrays

how the site's paper-bound and mechanic materiality constituted two types of masculinity – one rough, the other respectable (Horowitz, 2013) – which served to maintain the historical divide between blue- and white-collar workers by corrupting and constraining the use of IT. Strategy-as-practice research has observed masculinity to shape the discursive formation of organizational strategies and criticized its influence on strategic management, but can thus be extended to explain IT resources' role as material carriers of organizing logics (Gosain 2004, Vaara and Whittington 2012). Indeed, a practice view on digitalization *per se* directs attention to the alterity of those who must be managed (Zuboff 1988). Consider the production worker: if the production planners' response can be seen as corrupt (Stensaker and Falkenberg 2007), why did they also fail to 'pick up' the IT resources at hand? One reason is found in the way rough masculinities are steeped in resistance and so foster behaviors sustaining the idea that some men must be managed for their own good. Mastery is a cultured form of resistance.¹ It allows workers to one-up the management because skilled work entails resource delegation and knowledge dependencies that workers can exploit to enforce idiosyncratic routines beyond managerial control. For example, Papermill's executives were concerned that paper machine operators insisted on running the production process based on their gut (and embodied experience from working at the mill), as their idiosyncratic behaviors created 'visible' losses during work shifts; but the managers also knew that 'you cannot change their work routines using an IT system.' Because a masculine self-preservation underscored Papermill's blindness, it is likely that IT resources were left unused in part because they threatened existing forms of mastery.²

If IS strategy research is cast in classic, rational assumptions, strategy-as-practice can enable IS scholars to advance a more material and emotional (situated) understanding of the organizational dynamics of digitalization. As the first vignette shows, such understanding is crucial as strategy blindness is rooted in paper-born routines and information infrastructures, which material carriers must be transformed alongside their use logics for digitalization to succeed. As portrayed in our second vignette, strategy-as-practice enables IS scholars to examine how weak but resourceful actors can use IT to navigate this challenge (Besson and Rowe 2012).

Goldcity is the local administration of a Swedish city that in 2000 embarked on a decade-long digitalization effort. By launching a digital service center, the city hoped to catalyze IT-based service innovation and back-end process redesign. Like Papermill, however, the organization initially refused to put otherwise successfully implemented IT resources into good use. In an upcoming paper, we explain how strategy blindness occurs when organization's incumbents use IT as a façade to protect their resource privileges. For example, Goldcity's service units made only minimal changes to its service routines and used the document and workflow system implemented alongside the new service to digitize existing organizational structures. In fact, the new service center was eventually sidestepped completely when the service units struck deals with the IT vendors to deliver simple forms of IT-based services (limited to each IT vendor's proprietary information siloes and service processes that the units controlled). As organizations can so easily decouple legitimizing talk from their actual use of IT resources, it is likely that successful digitalization will often rest on champions to hide behind such facades until they can produce convincing economic justifications and gain support for additional IT investments needed to showcase innovative IT use logics in practice (Aanestad and Hanseth 2002, Jarvenpaa and Ives 1996). However, combatting strategy blindness may also require IT use manipulation. One reason for this is that IT resources can solve many different problems simultaneously and so foster multiple resource use commitments, which generates drift and surfaces contradictions that are not easily resolved (Berente and Yoo 2012, Ciborra 1997).

To illustrate, a skunk works team in Goldcity's periphery learned the hard way that strategic IT uses are not at all obvious in the near term. The centralized service strategy they pursued

was blocked for nearly a decade by incumbents, who refused to yield control over crucial IT and service resources because they saw the change as a threat to their privileged position in the city. To digitalize both the city's citizen-facing service routines and its back-end service processes based on a centralized organizing logic, the team thus had to learn how to exploit the organization's blindness. Unable to capture their unit managers' attention or imagination, they ultimately decided to deploy a new IT platform as a 'Trojan horse' that could push for digitalization from within by overloading the service routines that the units hoped to protect. The platform made this outcome possible because it on the one hand made it easy to develop rather sophisticated apps using mature web technologies, which reduced development costs and enabling component reuse. By leveraging digital infrastructures to reduce the economic inertia associated with digitalizing services, the skunk works team in this way paved the way for a distributed and periphery-driven strategic change of the city's service delivery processes. As such, strategy-as-practice can help IS scholars explore how IT resources can be configured and used to produce strategic change rather than blindness by scrutinizing why digitalization processes so often generate contradictions and unexpected events, which organizational actors must navigate to promote innovation and organizational change. For example, in Goldcity contradiction was a potent source of conflict, but thus also enabled the skunk works team to exploit the city's strategy blindness and digitalize its service delivery. While it is common that organizations lack capacity for digital strategy little is still known about how associated multiplicity can be harnessed in the configuration and use of IT (Robey and Boudreau 1999).

If the strategy practices that lead to successful digitalization comprise collective actions and entrepreneurial activities that are distinct but related as they must resonate for the implementation and use of IT resources to have a strategic effect (Besson and Rowe 2012, Lyytinen et al. 2009), it is time for IS scholars to forget about the boardroom and view digitalization as a strategy practice. For example, to explain how organizational actors can create conditions for bottom-up innovation and organizational change, and learn to exploit the mechanisms that digitalization affords. On the one hand, this process is well understood: successful bottom-up change typically relies on a local champion that enjoys the backing of the management team, who can provide necessary economic and political resources to push change through once a novel IT resource use logic has emerged (cf. Jarvenpaa and Ives 1996). On the other hand, however, little attention has been paid to how digital infrastructures and platforms influence such processes by rendering IT innovations open and distributed (Nambisan 2016), and why some organizations successfully reconcile contradictory organizing logics in novel forms of IT, materializing new strategies where others fail (Berente and Yoo 2012, Tilson et al. 2010).

To explore these issues, we are currently conducting a longitudinal case study of the design and implementation of a digital planning system at a Norwegian rehab hospital. The *Clinic*, our final strategy site, is located a short boat ride away from Oslo, and has entrepreneurship and innovation built into its walls. Digital planning systems and similar types of innovations were considered a strategic necessity at the hospital, as it helped the hospital board maintain autonomy despite its small size, and ward off increasing pressures for a centralized IT and health system governance (all hospitals in the region are decoupled around administrative and health-professional work roles, and almost all IT-related activities are furthermore the responsibility of a software company owned by the regional health authority). The new time planning system was enabled by a stand-alone application, originally developed by a Swedish company, that as a result of the trial underwent further development to become an integrated part of the regional health authority's IT platform, brimming with its own mechanisms and IT use conditions, which the local IT unit and a clinical team-coordinator (and champion) had to learn how to navigate *in situ* (e.g., the platform would grant security certificates needed to

put patient data into the application, but demanded compliance with regional architectures and standards). The decision to go ahead with the implementation was significant: the Clinic had sought to digitalize planning ever since the introduction of the PC, and yet had not succeeded to get rid of the paper-born routines that the chief of clinic herself devised in an early attempt to showcase the many clinical opportunities of IT use; moreover, even though the budgeted cost was less than 1 million NOK, the cost was still too big for the local IT budget (by comparison, IT systems designed to digitalize patient journals can have costs exceeding 1 billion NOK for a large hospital in the region). What impact then did the regional IT platform have?

To illustrate, the digital time planning project was instigated by the local IT unit and took off once an innovation officer found a clinical team coordinator willing to champion the system. During a routine follow-up interview, we found the project champion in distress. Although the trial of the new planning system proved positive – the coordinator’s department at the Clinic had many short-term patients with highly condensed trajectories meaning that planning was key but also that change of plans was normal and medically justifiable – and the application seemed capable to make planning more reliable – patient treatment plans were presently made using a Word template, printed, and then carried to a number of places in the hospital; based on the patient’s specific condition, this triggered another set of paper-born routines e.g., in the gym or the pool – and also accountable for – through complex cost per patient measures the system would ultimately grant the controllers with hard facts e.g., in case of patient complaints concerning the hours and types of treatments received, but the data would also allow Clinic to measure the effect and optimal intensity of their specialized rehab treatments, and cut back on their resource use – she expressed frustration. The outcome was highly uncertain, and she had little insight into or ability to influence the decision. Because local resources were scarce, the project was indeed fraught by the risk of the project getting stuck in the ever-growing backlog IT portfolio at the clinic. The platform in this way did not only enable an investment in the present, based on a future promise, but also imposed limits on the development, two of which were striking: whenever information was to be encoded into the system, it became accountable to a range of laws, norms, and regulations (e.g., the application could not integrate patient data during the trial, limiting feedback to user experience issues rather than local workflow issues); being on the regional platform solved this problem but required first passing a costly, lengthy, and uncertain review process that all applications go through to review their security classing. This meant funds had to be released before they could innovate around IT resources in use.

Digital infrastructures put IT resources in reach for actors on all organizational levels, but as the Clinic’s experience shows they also introduce new forms of inertia because of the growing complexity that digitalization brings to organizations. The implementation, planned for the beginning of 2017, will, indeed, not be straightforward at all. Once resources were freed the IT vendor finally secured the buy-in to make their application compliant with the IT platform: should Clinic succeed, the application can easily be sold and distributed to other hospitals in the region and allowed for local configurability by design. But the application is at the same time implemented in the dark, because the new system could not be tested without it first being redeveloped for the healthcare context. For example, nurses – who had a front-row seat to the patients’ frustration with uncertain information and knew the value of the time they spent with the physicians were all but excluded from the trial. The routine exclusion of nurses constitutes a great risk in IT development projects because they are coupled with patients *in situ*, and is not only indicative of a sexist development practice that fosters development conditions in which medically indefensible IT use decisions too often becomes the after-thought of white men in suits (e.g., during an innovation cluster meeting at the Clinic a member of the audience noted that the just presented strategic group for lightweight innovation only comprised

men), but also telling of the ways in which the local decoupling of administration and clinical work at all Norwegian hospitals has caused a situation where innovation is all but impossible, because the shared administration renders power to be both distant and concealed from local activities.

Boudreau and Robey (2005) showed that delayed strategic responses to new IT resources can be explained by the time it takes local power users to turn failed IT implementations around – mastery of new IT resources and manipulation of related IT use dependencies, for example, enforcing a specific workflow to help co-workers, can grant them the ability to make others comply with their IT resource logics. It remains to be seen whether such a process can accumulate at the Clinic and digitalize the existing workarounds and shadow systems that stops planning from being both reliable and accountable. IS scholars should in light of such uncertainties continue to theorize failures (e.g., uncover why users make limited uses of IT even when they are given considerable opportunities to learn; Cooper 2000), but we argue that also in studies of success it will be of particular importance to consider not only the ways in which platforms and digital infrastructures make new information visible, but also how they distance and conceal certain information (Leonardi 2014), and classify who/what matters (Cecez-Kecmanovic et al. 2014).

Concluding remarks

For over 25 years, IS scholars have known that IT resources often fail to create more strategic work due to “the rather disappointing outcomes in which automation, driven by the dominant elites and their will to control, erodes and undoes the promise of a transparent and multivalent workplace in which information could have played an enlightening role” (Kallinikos 2010: 2). The three vignettes offer some ways to appreciate the material role IT resources play in both day-to-day and entrepreneurial activities as they occur *in situ*. While *Papermill* exhibited the opportunities for materially grounded theorizing of complex digitalization outcomes (such as when organizations view smooth transitions into new IT use as successful because they are blind to digital options; Arvidsson et al. 2014, Cecez-Kecmanovic et al. 2014), *Goldcity* indicates that digital entrepreneurs can configure IT resources to leverage such blindness against those privileged by it. *Clinic*, in turn, revealed how digital infrastructures will render such activities increasingly distributed, emotionally complex, and politically challenging (Besson and Rowe 2012, Stein et al. 2015). The point of this chapter was accordingly not to make a clever point about how organizations should strategize, but instead to reveal the degree of complexity that a strategy-as-practice perspective can handle. However, we do suggest that those interested in exploring these issues think of ways to develop the idea of a strategy site (Huang et al. 2014); for example, by examining the physicality of paper-based routines and other material carriers, recognizing that even as IT resources promote certain interests, their impact on organizations ultimately depends on how they are fitted into the existing material arrangement (Arvidsson et al. 2014), which other self-interested actors will seek to maintain (Markus 1983, Sayer 1998).

Research into how local organizational actors pool scarce resources to undo inertia built into information siloes, and how to managers can better govern and support associated innovation and organizational change processes, could facilitate an encompassing agenda for strategy-as-practice and IS research (with ample theoretical and methodological support in Zuboff 1988). In recent decades, the proliferation of strategic IT uses in relations within and across multiple organizations (Tilson et al. 2010, Nolan 2012) have made organizations reliant on their ability to spot and act on digital options, and yet relatively little is known about

how existing IT uses (and other technologies-in-use) restrict organizations to exploit such options beyond the scope of the institutionalized work system (and related praxis). Such knowledge is vital if we are to teach students responsible and sustainable governance of digital innovation and organizational change; and to managers in organizations that struggle to turn information silos into powerful digital platforms (cf. Bharadwaj et al. 2013, Hanseth et al. 2006). It is known that digitizing of cow-paths often coincides with the use of IT as a means to streamline, procedurally optimize, and speed up organizational processes in search for efficiency (Zuboff 1988). Beyond the scope of this chapter, it is therefore the need to recognize that what is viewed as efficient is “the outcome of a particular social order and the interests it accommodates and renders legitimate,” an agenda which practice theories support (Cecez-Kecmanovic et al. 2014). Insofar as the three lessons strategy-as-practice teaches IS research all entail examining the impact IT has on life beyond the strategy site, scholars adopting such view would do well to also anchor their reference theory and concepts into the IS context (e.g., using ideas of digital materiality, or extending on the idea of IT as a material carriers of institutional logics (Gosain et al. 2004).

Notes

- 1 Mastery also influenced trim planners’ behaviors. Thanks to algorithms, mill execution systems can recommend advanced production strategies, but trim planners were always looking to beat the system.
- 2 While trim planners were blinded by control, no production worker wanted to be accused of ‘playing for the pink team’ (an allusion meant to render the trim planners’ unmanly, based on the color of their building), in large part because harsh working conditions required their compliance with rough virtues.

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