

Automating to control: The unexpected consequences of modern automated work delivery in practice

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Abstract

This paper explores how automation efforts with the intent to control work in modern work places can unfold. Building on a longitudinal study of a governmental agency's efforts to implement automated work delivery technology to enforce work guidelines, I show how aspects of work might become more automated but the rationale of automation might fail to manifest as originally intended. Technology and the formal structure inscribed into it to control work might conflict with the demands of work practice. Moreover, the findings show how automated control can be resisted by workers through subversive organizing in teams to reacquire work discretion. Through an analysis of automated control in practice, this paper contributes to discussions of technologies of control and how pragmatic resistance can emerge to counteract such technology.

Keywords

Automated control, automation, formal structure, practice theory, qualitative research, resistance, sociomateriality, technologies of control, work

Introduction

A classical and ever-relevant topic of organizational studies is the use and effects of technology in the organizing of work. Ranging from past studies that explored machine automation and its effects on blue-collar work (Blauner, 1964; Faunce, 1958; Susman, 1970) to studies of computerized technologies of control in modern white-collar work (Knights and McCabe, 1998; Taylor and Bain, 1999; Zuboff, 1988), scholars have extensively studied the role of technologies in the transformation of work (Badham, 2006; Leonardi and Barley, 2010). As new technologies steadily emerge so do the prospects that the relation between technology and work is in need of new assessment by organizational scholars (Colbert et al., 2016; Zammuto et al., 2007).

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The focus of this paper is a specific aspect of the relationship between technology and work, and how technologies might reconfigure work itself, namely *technologies of control*. Such technologies do not necessarily constitute tools of work but rather tools of managing work. These tools exist in two guises in relation to the control of work (Zuboff, 1988): as means to inform management about work and as means to automate aspects of work to reduce work discretion. The former has been extensively explored in modern studies of workplace surveillance (Ball, 2010; Manley and Williams, 2019; Sewell et al., 2012). The latter, automating technology of control, has been shown to be an integral part of modern electronic assembly lines, for example, call centers (Taylor and Bain, 1999) but has in comparison to workplace surveillance received far less attention by scholars. As an example, recent and well-cited commentaries on the modern role of technology in organizations do not discuss or consider the role that automating technologies might have today (Colbert et al., 2016; Zammuto et al., 2007). While scholars have begun to explore the potential of new automating technologies in work (Shestakofsky, 2017), and to discuss these conceptually as means to control work (Kellogg et al., 2020), there is curiously little contemporary attention on automating technologies of control. Hence, issues such as the workplace dynamics that can follow from such technologies, and how workers might consent or resist these, remain empirically understudied.

In this paper, I seek to contribute to the study of technologies of control by exploring the automated control of modern work. Automated control is defined as a process of attempting to inscribe formal structure into automating technology with the intent to directly control work. Rather than replacing work, this kind of automation manifests a rational ideology of management (Barley and Kunda, 1992) that conceives of work as technically malleable.

Drawing on a case study of the automation of work delivery in a governmental agency, this paper highlights the sociomaterial challenges in organizing automated control in practice as well as the limitations of rationalizing organizations through such technology. Moreover, the findings show how automated control can displace teamworking as a means of controlling work (Vallas, 2003) and how workers might pragmatically resist (McCabe et al., 2020) by reclaiming manual processes of work individually and through a covert return to teamworking.

The disposition of the paper is as follows. I begin by accounting for the theoretical framework of this study and how it relates to technology and formal structure. Thereafter, I present the research design of this study. From there, findings are presented and contributions are discussed.

Studying automated control in practice

To study automated control and treat both technology and formal structure, this paper draws on practice theoretical reasoning. While multiple ways of describing practice theory are possible (Nicolini, 2012; Reckwitz, 2002; Schatzki, 2002), proponents of practice theory share an interest in analyzing practices and how they are organized to explain social phenomena and events (Gherardi, 2019; Sandberg and Tsoukas, 2015; Schatzki, 2001).

Drawing on practice theory, I argue, is relevant for a study of automated control for two reasons. First, practice theory provides a sensitizing framework fit for grasping how organizational practices unfold, how they are organized, and the material entities they are entangled with in organizations (Sandberg and Tsoukas, 2015). As such, it helps to focus on the practical manifestation and consequences of the idea of automated control. Secondly, practice approaches have open-ended understandings of social processes and activity (Schatzki, 2010) and an analytical interest in covering trajectories of change (Schatzki, 2019). Rather than emphasizing the outcomes of automated control in deterministic terms this study engages with understanding how automated control emerges over time. These two reasons are relevant for the study of technology and formal structure in relation to work practice as will be elaborated next.

On technology. Explanations of the effects of technology in organizations have generally gravitated towards two opposite positions (Leonardi and Barley, 2008, 2010). One side, the determinist materialists, posits that the outcome of technology is largely inevitable and up to its material properties. The other side, the voluntarist idealists, posits that the outcome of technology is more indeterminate and up to its users and how they socially construct it. As contemporary scholars of technology argue, both positions produce one-dimensional accounts of change (Badham, 2006; cf. Barad, 2003). Instead, they argue, one ought to balance aspects of both positions simultaneously and pursue what has been termed sociomaterial theorizing (Leonardi, 2012; Orlikowski, 2007).

Sociomaterial theorists argue in favor of a voluntarist materialist understanding; materiality is conceived as being necessarily entangled with the social to constitute the sociomaterial. Moreover, the sociomaterial entanglement is indeterminate. To reflect these propositions in research, these theorists further posit an analytical interest in agency. However, not only are human actors understood as having agency, but so do material entities in the sense of having capacity to affect states of affairs and events (Callon, 1986; Latour, 1993; Pickering, 1995). To assess agencies in play, sociomaterial theorists argue – as practice theorists do – that practices ought to be studied (Gherardi, 2016; Orlikowski, 2007). It is in practice that human and material agencies necessarily manifest as entangled, revealing their capacity to affect and be affected together.

The interest of this study is to show how the intents and designs of automating technologies face the demands of work practice without considering such encounter as necessarily predetermined nor that it is only social or only technical in nature. As such, a sociomaterial sensitivity is warranted.

On formal structure and control. Having briefly covered technology, what is necessary is to consider such a phenomenon alongside another that constitutes the possibility of automated control: formal structure.

A common starting point in discussions of formal structure is the notion of bureaucracy. Understood as formal organizing principles reigning over social actions and relations between individuals, bureaucracy has been important in explaining the rise of procedure, hierarchy, rationality and impartiality in society (Weber, 1978). The ideal-image of bureaucracy has also had an important role in defining the formal and rational design of organizations (Selznick, 1948) as organizations have classically been treated as bureaucratic entities with formal schemes that reflect how these ought to operate. Importantly, these schemes and designs define how workers ought to behave. As Labor Process theorists have claimed, formal structure functions as a managerial means to bureaucratically control and discipline workers (Edwards, 1979). More than simply being for the sake of rationality and efficiency, formal structure is intrinsically related to the power dynamic of an assumed antagonistic relationship between managers and workers (Burawoy, 1979) and is thus forcefully put into place.

Despite the assumed functions of formal structure, scholars have noted that the relationship between formal structure and organizational practice is complex. Formal structure has been understood as generally dependent on informal structures of organizations to function at all (Selznick, 1948). Despite its assumed rationality it has also been argued to produce unintended consequences and inefficiencies in practice (Merton, 1939) that go beyond managerial intent. Moreover, the link between formal structure and practice has been critiqued as scholars have demonstrated the loose or non-existent associations between formal structure and actual organizational practice (Meyer and Rowan, 1977; Weick, 1976). This has led practice-oriented scholars to theorize that the relationship between formal structure and practice is dynamic and flexible (cf. Feldman and Pentland, 2003).

This paper draws inspiration from a practice-based understanding of formal structure in organizational contexts. Formal structure is defined as the formal schemes and specifications that define what ought to be done in work. Importantly, these formal schemes reflect managerial intent in

relation to work rather than what is the case in practice. As practice theorists would argue, explicit rules such as formal schemes reflect the propositional terms that actors might consider in their activities but do not necessarily define practice alone (Schatzki, 1996). To capture the open-endedness of the actual role of formal structure in empirical terms, I direct my interest to another kind of agency: disciplinary agency (Pickering, 1995). Formal structure in practice is thus further understood in terms of its disciplinary agency in practices, that is, its actual capacity to discipline people. The disciplinary agency of formal structure manifests in relation to the unfolding complexities of practice, implying further that the actual disciplinary agency of formal structure might change and matter differently in practice over time.

Summary of the framework. The framework of this study has been chosen due to it providing a useful set of sensitizing concepts to understand how automated control can take shape in work organizations. It is attuned to sociomaterial considerations (Gherardi, 2016) while having an open-ended stance on formal structure. Three kinds of agencies are thus assumed to determine how automated control can take shape: human, material, and disciplinary (Pickering, 1995). These are conceived of as entangled in interrelated organizational practices. The manifestation of automated control in practice is seen as unfolding, as the result of continuous mangling (Pickering, 1995) in practice that reflects the interrelations between practitioners, technological artifacts, and formal structure over time. Through mangling agencies can shift and alter over time, revealing the practical issues of automated control as it manifests.

Empirical setting

The Swedish Social Insurance Agency (henceforth referred to as SSIA) is one of Sweden's main providers of social benefits with roughly 13,800 employees in over 90 locations in Sweden. The total payment of remunerations from the SSIA is roughly 228 billion SEK a year, approximately 5% of Sweden's GDP. This total sum is paid in various forms, reflecting different kinds of social insurance that the SSIA provide. These range from health insurance, to remuneration for care of sick family members, to social benefits for young adults, and so on. The SSIA is organized into different divisions that cover different kinds of social insurance, for example, health and sick insurance cases are dealt by one division while remunerations directed for young adults and families is dealt by another. Each division is in turn composed of various offices located in various regions of Sweden.

Most employees engage with a kind of clerical work known as caseworking. Caseworking at the SSIA can be described as practice that entails the processing of applications for remunerations, that is, cases. Describing this group of workers, two things can be noted. First, caseworkers often have varied educational backgrounds and there is no direct academic body of knowledge that all workers relate to in contrast to traditional professions. Secondly, most caseworkers are women. During my study I only met a handful of male caseworkers.

As a form of clerical work, the work itself can be understood as standardized. The act of determining eligibility for remuneration is formalized by the rule of law and extensive manuals exist that caseworkers are expected to take into account in their work. The work itself is tightly bundled to sets of computer systems, for example, one system to access information on clients and another that contains past applications for remuneration from clients, and another where the pay of remuneration is processed and so on. While caseworking used to be paperwork, it is today fully digitized computer-mediated work. In addition to the act of actually deciding whether a certain applicant is eligible for payment, caseworking also implies a set of additional tasks. Cases are not always complete and fully ready to be processed, hence caseworkers often engage with tasks such as contacting applicants or other third parties to collect missing information. As will be described, additional tasks are important for caseworking as practice.

The empirical study that I present in this paper focuses on a setting primarily dealing with so-called family related remuneration, covering parental leave, benefits for the care of sick family members, and the like. Located in an office complex shared with other divisions of the SSIA, the studied setting had its own share of the larger building with its own adjacent office spaces for each worker, a coffee room, and meeting rooms. In the setting there were roughly 60 caseworkers, organized in small teams, and four local managers who were tasked with overseeing the “production of casework,” an expression used by the managers in the setting. The automating effort that sets the stage for events covered here concerned the automation of work delivery.

Methods

The empirical material of this study comes from a 27-month longitudinal case study (between 2014-2017) at the SSIA. My research efforts had two aims. On one hand, I wanted to understand the rationale behind the automation effort and how it was organized. On the other hand, I undertook periodical visits to the settings where the technology was introduced to see how things would unfold. Three work settings were visited in total but only one of these will be covered here as it turned out to be chosen for a more extensive implementation of the automating technology. As the data was collected in real time, the issues of determining where emphasis was to be placed proved difficult as implementation plans were altered over time. To counteract this problem, I relied on the project group and informants from the work settings to determine where to direct my attention.

The study can be described as having ethnographic sensibilities common of practice research (Miettinen et al., 2009). I conducted interviews inspired by ethnographic method (Spradley, 1979), have observed work activities, and have gathered organizational documents. During my study, a total of 35 interviews were conducted and eight project group and workplace meetings were observed; five of the meetings turned into group interview situations. Six interviews were conducted with members of the project group (n=3), 12 interviews were conducted with local management (n=4) and 17 interviews were conducted with caseworkers (n=31). The interviews include interactions one-on-one and with groups and were done periodically. All interviews were audio recorded except four during which I took notes to compensate. The rest of the interactions were transcribed in Swedish, and quotes used below have been translated by me.

Observations were critical to understand work, in particular to understand the subtle traits of work that were not evidently spoken of and the way material artifacts were utilized (Barley and Kunda, 2001; Czarniawska, 2007). The ethnographic aspect of the interviews entailed that interview situations could blurred into observations of work (cf. Spradley, 1979). Workers and managers talking about their work led to instances in which they would show me what they were talking about. The possibility to ask questions during observations were important to understand which tasks were undertaken, why they were undertaken, and how. In addition, I observed and participated in both formal organized interactions, that is, meetings and seminars, and informal gatherings, that is, lunch and coffee break, at work settings and with the project group.

Another important source of material was access to documentation from the project itself, that is, pre-implementation/design material, and from work settings, that is, manuals and schemes of work. In addition, I gained access to internal mail correspondence between parties at the studied settings.

Treatment of the material and interpretation

Following its collection, material from my empirical work was treated in the form of text. Observations resulted in field notes, collected documents were arranged, and interviews were

transcribed. This data was in part examined and coded with the use of Data Management software (NVivo) to sort and categorize the data. My impressions of the empirical material changed during my cycles of collection as my sense of familiarity with the settings grew, resulting in re-evaluation of past experiences and my re-arrangement of collected material.

An important part of going through the empirical material was to infer upon the state of case-working and how it was performed. Rather than considering different observations or parts of data as separate occurrences, the purpose of going through data was to gain a more cohesive grasp of what was going on to grasp the general context (Holstein and Gubrium, 2004). The analysis of the collected material was of interpretative kind (Silverman, 2001), informed by a practice approach (Nicolini and Monteiro, 2016). This resulted in an effort to produce accounts of work practices, how they were organized, how they were materially constituted and so on.

Due to the longitudinal aspects of the study and its focus on how automation unfolded practically, the material collected qualifies as process data. My chosen approach to analyze and present the material is narrative-based (Langley, 1999). Using a series of vignettes, the material is primarily oriented towards presenting illuminating moments during which human, material, and disciplinary agencies treaded forth. In stating this, I have had no intent to give an exhaustive view of all that occurred during the time of study nor do I present detailed description of all aspects of case-working or other conjoined practices in this paper.

Automated control and caseworking

Within the SSIA, the ambition to automate work resulted in a variety of efforts. Two of these will be treated in this paper. The one most extensively covered here related to an effort to automate work delivery within the computer systems of the SSIA. The other one, which covered the actual processing of simple cases, will be introduced later.

From pre-study to the design of automating technology

Before illustrating the issues of automated control, it is worthwhile to cover what preceded the automation effort. The idea of automating work delivery primarily took shape during the undertaking of a pre-study. Written by a group of upper managers and IT-technicians with the intent to explore the potential to automate and make work more efficient, the report suggested a process fit to be automated. The process in question was manual case selection, that is, the task of manually collecting case files. As things were, caseworkers were tasked with selecting case files from the work directory by inputting a search query. The search was intended to follow priorities, meaning that workers were expected to start with highly prioritized cases and subsequently do less prioritized ones.

The criteria for prioritized cases were dependent on the remuneration tied to applications, the expected time for processing a case, and how long a case had been left unattended in the system. While these priorities existed as national guidelines, local managers at work settings were tasked with translating priorities to fit local, temporary needs and communicating these to caseworkers. As the amount of cases that were lingering in the system could differ from time to time, largely due to the varying influx of applications, it was commonly so that general priorities could shift when placed in practice. A common task for local managers was thus to update how priorities were placed in practice, something which occurred on a weekly basis. While general guidelines were translated into a weekly list of priorities made by local management, said list had to be manually taken into account by a caseworker in turn.

Manual case selection was seen as problematic by the writers of the pre-study. While there were no clear indications that caseworkers avoided to heed priorities, the very possibility that they could

was deemed an unwelcome aspect of the organizing of work. One chief reason for this was that there was no established sense of overseeing whether priorities were heeded unless local management manually examined the total pool of work to spot left-over cases. More so, there was no way for upper management to ensure that national guidelines were truly taken into account on a local level. The disciplinary agency that formal schemes attained in practice was unknown by management. While local alterations were expected, these were only deemed acceptable if mandated by local management and alterations were always understood as minor and temporary.

Further reasons for upper management wanting to reconsider manual case selection was due to, on one hand, the extensive organizing by local management and teams of caseworkers to coordinate work delivery through the manual searching function and, on the other hand, that the manual process itself was too frequently undertaken by workers. Regarding the former, if any spikes in the volume of cases would occur, making slight and temporary alterations in priorities and having to communicate changes of priorities for caseworkers was deemed a wasteful activity. Regarding the latter, upper management considered that the time workers spent manually searching for cases would be better spent on doing more qualified work, for example, processing cases.

After the report, upper management chose to automate work delivery by introducing a new system within its web of systems. The design of the new system entailed the possibility for management to set the kind of work that caseworkers were expected to do, and then allow all work delivery to occur along set priorities. Rather than communicating priorities and hoping these would be heeded, formal structure was to be inscribed into technology (Joerges and Czarniawska, 1998) to gain disciplinary agency in a managerially controlled sense in work practice. Three years after the report was written a new system had materialized and was ready to be implemented.

The stage of reception

The new technology was first put to use through brief controlled tests. For local managers, a process of learning how to translate priorities into the new system ensued. Following this translation, workers were told to access work through a new option within the system that would automatically deliver case files to workers for processing. The option to manually collect work was still available but workers were told not to use it. Removing the possibility of manually selecting cases was not technically possible as it was a core function of the work directory system. Moreover, managers also actively used the possibility to search through cases manually to browse the directory of work to examine the total amount of work.

At the stage of reception, the inputting of priorities of work in the system was not as simple as stating only which cases would appear but also to sort out for whom these would appear. As work used to be organized, workers were responsible for an individual pool in their teams (of 5-6 workers per team). After the implementation, the total pool of cases was instead divided among caseworkers so that they would only be delivered their own cases in accordance to set priorities. At this early stage there was little indication of any problems. Even workers who participated in the pilot testing had little to say about the change. However, issues emerged as time went on.

Inability to share work

At first, workers thought that manual case selection was a peripheral task to that of actual processing. However, shortly after the implementation of the automated work delivery issues were noted and workers began to re-evaluate the role of manual case selection. Before, workers were used to share work between themselves on occasion. This was commonly expected in the teams of workers whenever a colleague was absent (e.g. due to illness) or when someone required assistance in assessing the

eligibility of an application. After the new technology was introduced, the possible absence of colleagues became problematic as cases that were automatically delivered were issued so as to only be delivered to one worker. To access a colleague's case files, workers could not rely on the new system and had to return to manual case selection.

The prospect of helping colleagues was hindered by the way the automated work delivery was designed and functioned, affecting also the way in which caseworkers who lacked familiarity with certain kinds of cases used to receive help. While experienced caseworkers could process most kinds of cases, novice colleagues struggled in doing more advanced kinds of cases without some assistance. In the past, this was easily manageable as workers could manually search for one another's work pool to access case files when they had the time to help each other. Workers who struggled to do a specific case could then instead do other cases while waiting for help.

However, after the automated work delivery system was implemented neither of these options were easily available. A reason for this was that the system always delivered the most prioritized case and closing it to get a new case would always deliver the same case – even if said case was too difficult to process and a caseworker required assistance. This was a conscious design choice by the project group. As a member in the project group said: *“If you let workers skip cases in the system some might skip doing difficult cases and let others pick up their slack.”*

The issues of not being able to share work using the new system collided with the manner in which teamwork was understood and practiced at the setting. Instead each work pool existed as its own, inaccessible by others. As the critical voices of workers were heard during local meetings, the managerial response to the issue of work sharing entailed a couple of compromises. First, as caseworkers were organized in teams, caseworkers were given two options for receiving work when using the system: one for receiving their own cases and another for receiving the cases assorted to the whole team. The latter option was intended for cases where a missing co-worker was not there so that a team could work together. However, this particular option meant that all work was shared including the work of others who were not missing. As such, caseworkers hoping to help cover for a specific team member found the only manner of doing so to require actively sidestepping the directive to use the automated work delivery.

Noting that the first solution did not work, local management decided to abandon individual pools of work in favor of exclusively working through a shared pool of work. In addition, the project group decided to alter the system to allow caseworkers to skip cases. The extent through which the automated work delivery system restricted workers' capacity to act was lessened slightly by this compromise. However, these changes led to accountability concerns among workers. While it was possible for managers to see what each worker did through the system, there was no established routine to make sure that all workers did their own share in the new shared pool. In the past, the very reason for implementing individual pools of work was exactly for the sake of greater sense of accountability and to instead let teams overview the performances of one another through manual case selection. This past solution did no longer suffice when the new system was put in action. In the choice between letting workers cover for each other or to have them stand accountable to each other the former was chosen.

Inability to plan work

The inability to share work was not the only issue introduced by the new automated work delivery. Being delivered work in strict accordance to a set of priorities also affected the possibility for caseworkers to plan their work day. This was insulting to some workers. As a caseworker critically stated: *“There is an idea in this system that a caseworker is not competent enough to select important cases. Important cases are instead supposed to be selected by managers and others who think*

they know better." As caseworkers revealed in discussion, they were used to having a pragmatic stance on work selection. The managerial suspicion that caseworkers did not heed established priorities prior to the implementation of automated work delivery was not far from the truth. However, the arguments given for not slavishly following priorities previously reflected an idea of caseworkers knowing how to work most efficiently. As a caseworker argued: *"Early in the morning when you are tired it could be best to do a set of cases that are rather simple. Then, after doing a couple of these and feeling warmed up you could do the more complex cases. Switching back and forth lets you work efficiently without getting too exhausted."*

Additional arguments in favor of planning were heard as caseworkers claimed they knew when certain tasks were most opportune to pursue. One such task was collecting missing information required to assess the eligibility for remuneration. Collecting information was often done via phone. However, this was considered off-limits at inappropriate times, for example, too early or late in the day. Planning implied that workers tried to match their work schedule with fitting times to collect information. This was important as workers could choose when they would start their workday. Since there used to be individual pools of work that caseworkers were accountable for, it did not entirely matter when one would work as long as work got done. To make this possible, each caseworker had previously planned their work day individually. However, after the automated work delivery was implemented this was no longer possible. Caseworkers were slavishly given the same kinds of cases by the systems giving no possibility to stray from priorities, something that was problem as one of the most prioritized cases entailed collecting information from applicants. Consequently, caseworkers who started their workday early were told by the work delivery system to do cases that implied calling and bothering applicants early in the morning. This was considered to be far from ideal by workers and managers both.

As an attempt to alleviate the issue, and not force caseworkers to bother applicants at inopportune times, management came with a response concerning how priorities were input in the system that was sanctioned by the project group. As a local manager stated: *"We decided that we could shift around the priorities a bit. This way people who start work early can still do work without bothering anyone [i.e. applicants]."* In other words, management decided to not fully match national guidelines in their systems. The compromise taken by management had an ironic implication. Actual priorities heeded in work settings became more distinctly different from national guidelines than those priorities that local management had ever communicated in the past. Management had decoupled formal structure from practice, molding the disciplinary agency of the guidelines to fit the demands of work.

The pre-study that motivated the implementation of the automated work delivery had not mentioned that there might be valid reasons to sidestep priorities. What the project group behind the effort wanted to get rid of, the possibility of workers choosing to sidestep priorities, proved to have latent functions of sorts (cf. Merton, 1968). The mundane task of manual case selection had a series of interdependencies to such tasks as sharing work, helping each other, and planning one's work day that were critical for workers to work and co-operate efficiently. More so, the possibility to plan one's work day was critical to accommodate for the needs of external parties, that is, applicants. The project group had, however, not realized what the consequences would be if they would technologically enhance the disciplinary agency of formal structure in work delivery. In the end, the compromise chosen to lessen the issue led to the partial subversion of the rationale of the project as formal structure was no longer enforced as originally intended.

Rebellious technology and resistance through manual case selection

Not all issues that emerged were related to unexpected concerns due to reduced work discretion. A couple of months after the introduction of the system some caseworkers noticed that the automated

work delivery system failed to deliver all cases. Some cases would slip through the automated work delivery system. Initially this was believed to be a failure of translating work priorities within the system and thus efforts to fix the failure of the system initially focused on re-evaluating how priorities were input in the system. However, the system simply refused to do as told as its material agency in practice diverged from managerial intent. No way of solving these issues were identified and so local management settled on the compromise of letting caseworkers do some manual case selection on the side to ensure that no critical cases were left unattended. In other words, caseworkers were expected to first select case files through the automated work delivery and then manually search to check if all work was done as intended.

For some caseworkers, this was taken as a sign that the system was largely deficient. The lack of faith in the automated work delivery motivated some to also take advantage of the situation and try to go back to manual case selection. As a caseworker stated: *“If I still have to manually select cases now and then, why not do a bit more of that and continue doing the cases I consider to be important?”* Reclaiming manual case selection became not only a means for individual workers to work as they wished. Caseworkers also began coordinating their manual searching as teams to target cases they considered important during times of high workload, cases they felt were not sufficiently prioritized by the system. As a team argued: *“We agreed to work together as a team again, trying to get rid of cases together that we thought had been left unattended for too long. As we did, we got rid of these cases a lot quicker than if we had let the system tell us what to do.”*

To what extent caseworkers actively avoided the automated work delivery was difficult to assess. During my visits the first year, caseworkers would openly state their defiance and express that it was legitimate to avoid using the system. In my final visits, a year after the introduction, some would still state their disapproval of the system but feel less inclined to openly challenge it. If people resisted, they made sure to not let management know.

Conflicting automating technologies

During the implementation, the project group worked continuously with updating the system’s performance. Eventually, they identified the reasons as to why the automated work delivery did not deliver all cases. It collided with another automating technology. What was thought to be an issue of technological limitations in one system was rather a case of unexpected technological interdependencies between systems.

To account for this, I need to introduce yet another actor: another artifact born from a desire to automate manual processes. Besides the work delivery system, another project group at the SSIA had developed a system that could automatically process simple cases. The second system worked by scanning through available case files of a particular kind, temporary parental sick leave, within the complete directory of work. Doing so, the second system would tick a particular box if a case had been “opened” by it. While unproblematic for all cases it could successfully process, the automatic processing system was never intended to process all kinds of cases of the above-mentioned kind but only those that contained all necessary information for processing. Some cases still required manual processing, often of the type involving caseworkers contacting applicants to get further information. In the cases that the automatic processing system opened a case file and noted that it could not process it, the box “opened” had been checked regardless. This was a problem for the programming of the automated work delivery system as this particular box was needed to assess which cases to send to workers. Those cases that were ignored by the automated work delivery system were cases that had already been “opened” by the automatic processing system but were not fully processed.

To solve the problem of boxes being checked and automated processing blocking the automated work delivery from working, the project group developed a new kind of box that could be checked, “opened by the automatic work delivery.” The distinction served to ensure that even if the automatic processor had opened a case and failed to fully process it, the same case could still be opened by a caseworker through the automated work delivery system. However, this solution did not work as intended. This time workers unwittingly got in the way. As it were, caseworkers had developed a particular routine when working with case files that proved to defeat the purpose of making a distinction in boxes that were checked by any system. When caseworkers opened simple cases, they would traditionally check if further cases of the same kind had been sent by the same applicant. The reason for this was that it was common that a particular kind of case, that is, temporary parental leave cases, often were stacked by applicants so that remuneration was sought for various periods at the same time.

The issue of stacked applications was not something initially considered by the project group but something that caseworkers had developed a well appreciated routine for. Notably, many of the stacked cases could be solved simultaneously if there was any information missing to be collected as it often proved to be so that the same information was missing for multiple stacked cases. Caseworkers at the studied setting would, whenever they encountered applications, search for other cases sent by the same applicant and then contact that applicant to collect all necessary information in one swoop. This minimized the need to contact and bother any applicant several times to collect the same information and it also minimized the necessity to do the stacks of cases over a longer period of time. However, to do this, caseworkers would first get a hold of a case file through the automated work delivery system and then *manually search for additional cases from the same applicant*. Doing the latter step implied that all additional cases were not accessed through the automated work delivery system and thus did not get their boxes checked.

The implication of case files not getting their boxes checked was that the automated work delivery system would send cases being processed – or already processed – to be processed anew. Had it not been for the appreciated routine, the project group’s solution could have worked. However, when the project group was made aware of the appreciated routine, they agreed that it was convenient for workers and dared not challenge it to make the technology work. The alternative would have been to prohibit processing stacked cases simultaneously and thus make processing less efficient. Further alterations to the technologies at the setting would require more resources than anticipated and it was not immediately obvious that problems would truly be solved. As such, the project group came to terms with that their effort to automate work delivery could not work as fully intended. In the end, some cases were left to be manually collected.

Discussion

In the case, automated control achieved through automated work delivery implied different things for different actors over time. For management, it was at first a convenient idea that gradually turned into a complicated tool. For workers, it was at first an inconsequential system that later was considered an insulting reduction of their work discretion. These different perspectives on automated control reflected how the demands of work practice revealed themselves over time. Importantly, automated control also manifested through material and disciplinary agencies. Technologies showed their capabilities to abide and resist managerial intent over the course of the implementation. Moreover, the disciplinary agency of formal schemes in practice changed, morphing into something that diverged from national guidelines when technological inscription revealed that formal schemes were too impractical. Due to how human, material and disciplinary agencies were entangled, automated control was mangled in practice (Pickering, 1995) and altered

in form over time. Similarly, the consequences of automated control varied during the course of events.

The process of implementing automated control was here illustrated in an interplay between issues tied to the impractical consequences of automated control and the compromises taken to relieve these. The term compromise is used here to reflect that these efforts to make automated control function were not perfect solutions. Not only did they require considerable organizing effort to be realized but they also failed to please all parties involved. Hence, the compromises taken still left room for tension and led to new issues in need of new compromises. Managers did not attain a perfect tool of control as the aspiration to reduce organizing to coordinate work delivery through the automated control was met by the need to organize new routines to combine manual work selection with automated work delivery. For workers, the change still implied a reduction of work discretion, making both planning and “spaces for escape” (Knights and McCabe, 1998) to rest between cases harder to reach. Moreover, despite compromises being made, the possibilities to work together in teams and help one another were still reduced unless workers actively sought to coordinate work covertly.

Not all workers settled for the compromises. Some chose instead to resist these to reacquire some degree of control by “making out” (McCabe, 2014), that is, finding ways to avoid the work delivery system and resist control of work together in teams. The return to teamworking further revealed how working in teams was antithetical to automated control in the setting. As scholars of organization and work have discussed in the past, teamworking pushes down the burden of organizing and monitoring work to workers themselves who thus are tasked to discipline one another in teams (Ezzamel and Willmott, 1998; Knights and McCabe, 2000, 2003; Sewell, 1998). In this capacity teamworking has generally served as a normative mechanism of control. As was seen in the case, however, management chose to displace one mechanism of distributing work for another.

In an ironic response to the displacement of teamworking, workers resisted by redefining teamworking as a mode of pragmatic resistance (McCabe et al., 2020). This implied that resistance was pursued for it being more practical and efficient than what was formally ascribed. Such resistance served as a means for workers to manage the irrationality of formal expectations of work without having to change the minds of top management (Courpasson et al., 2012), something they never fully succeeded in doing. What motivated efforts to circumvent the automated work delivery system was thus not an effort with the purpose of rejecting work through radical resistance, but rather in finding informal ways of organizing work that workers conceived facilitated work.

To explain why tensions remained and why automated control failed to materialize as intended despite managerial efforts, one can note three crucial reasons that revealed themselves in the case. First, the very idea of automated control, of imposing formal structure to materialize a rigid disciplinary agency through technology, introduces rigidity in work. The benefits of loosely associating structure with practice (Weick, 1976) to be flexible were never considered in this rigidification of structure. In the case, the need expressed among workers to share and plan their work to be effective was not met any longer. The rigidity introduced also removed the possibilities of straying from formal structure, to do “real work” effectively (McCabe et al., 2020). This revealed the inherent irrationality of formal structure when taken too seriously in practice as guidelines never cared for sensitivity to questions of when activities were apt to pursue and not.

Secondly, another reason is the considerable challenge in orchestrating the material agencies of interrelated technologies that can arise. As the workplace was thoroughly digital already, and work was executed in webs of systems, not only one technology in practice mattered (Orlikowski, 2000) but multiple (Bailey et al., 2010; Bailey and Leonardi, 2015). Despite the common idea that digital technologies are more malleable than past technologies (Kallinikos, 2012), the material agencies of digital automating technologies seemed hard to fully configure to avoid systems from

working against each other. The systems still collided with appreciated routines of work no matter the tinkering undertaken. The rebellious manifestation of the technologies involved also afforded workers the possibility to resist automated control as they justified their resistance on the basis of the deficiencies of technologies and the possibility to continue manually selecting work within the systems.

Building on the other two reasons, the third reason is the staggering difficulty in knowing the agencies involved in materializing automated control in a workplace. The project group and management were unfamiliar with aspects of work and technology that revealed themselves as relevant, thus seeming ignorant of the agencies involved in actual work. More critically, however, parties in the setting were not aware of how agencies involved would be mangled together over time and what consequences would ensue over time. While one could argue that this concern relates to a failing of management alone, also workers seemed unaware of the consequences the automating technology would have. When first introduced, few critical voices were heard. It was first in realizing how work was altered along the way that workers became increasingly critical, albeit they never fully understood the material agencies involved that made the automated work delivery deficient.

Conclusion

The findings of this paper can be summarized as pointing to the complexity of implementing automated control of work. Technology dedicated to reducing manual work processes and enforcing formal structure in settings that are supposedly apt for automation might produce unintended consequences that are difficult to know in advance for involved parties. Assessing to what extent these efforts are successful is difficult as their outcomes do not fit into a clear dichotomy of success and failure in management attaining control (cf. Mumby, 2005). After all, work discretion was still reduced in the studied setting even if management accepted the limits of automated control. An important conclusion to be drawn from the paper is that the implementation of automated control can present considerable challenges for contemporary organizing of work. Even imperfect automated control requires organizing effort to manage the problematic issues that ensue; an organizing effort that seeks to find compromises between human, material, and disciplinary agencies in practice.

This paper contributes to studies of technologies of control and resistance. It sheds light on inherent imperfections of technologies of control (cf. Bain and Taylor, 2000), here with specific attention to automating technology. The paper does so by touching on discussions of both formal structure (Bittner, 1965; Feldman and Pentland, 2003; Meyer and Rowan, 1977; Weick, 1976) and technology in organizational practice (Leonardi and Barley, 2010; Orlikowski, 2000, 2007). Here, these two different phenomena are brought together through a sociomaterial practice lens to empirically explore the deficiencies of contemporary bureaucracy and control (Hodson et al., 2013), showing that the inherent irrationality of organization (Alvesson and Spicer, 2012; Brunsson, 2006; McCabe et al., 2020) cannot be easily dispelled through technological means.

Moreover, the paper shows how automated control can conflict with alternate mechanisms of control. The implementation of automated control was largely an attempt of imposing rational control that collided with past normative control in place, that is, teamworking (McCabe, 2014; Vallas, 2003). As such, the paper demonstrates how automating technology can displace contemporary teamworking practice and the implications of doing so. In addition, the paper also shows how automated control can be resisted. In the case, workers could reclaim past ways of organizing work and did so also by returning to teamworking. Hence, this paper contributes to an understanding of the multiplicity of meanings that teamworking can have (Knights and McCabe, 2000), here with specific attention to it being a mode of pragmatic resistance (McCabe et al., 2020).

To conclude, a fitting question to raise is to what extent the conclusions of this paper hold for other work organizations. The conceptual framework of this study highlights a sensitivity for the varied contingencies of work practice that make for an open-ended understanding of organizational phenomena. On that basis, it would be disingenuous to suggest that the study captures how efforts to introduce automated control necessarily have to end up. Nonetheless, the findings here provide heuristic generalizations (Tsoukas, 2009) that reflect the limitations of automated control. Plausibly, the findings are particularly useful for settings that rely on bureaucratic control of work (Edwards, 1979) and favor rational-technical discourses of control. Managers in these settings might assume agencies in play are more predictable and controllable than what they actually are. Hence, these settings could be more prone to invest in similar technological efforts by assuming that agencies can be further crystallized by automating technologies.

One could, however, also make the case that automated control is more ubiquitous and varied in its manifestation. Even if work organizations might not be easily controlled, the aspiration to rationally control work has been a common concern of managerial thought (Barley and Kunda, 1992). Consequently, automated control could manifest in organizational settings unlike the one in this paper and entail the automation of other processes than work delivery. Here, I have not aimed to discuss possible variations of automated control in modern organizations. Further studies are warranted to understand how automated control can manifest, not the least with the rise of social and technological challenges that new technologies might bring for the organizing of work (Kellogg et al., 2020).

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References

- Alvesson, M. and Spicer, A. (2012) 'A Stupidity-Based Theory of Organizations', *Journal of Management Studies* 49(7): 1194–1220.
- Badham, R. J. (2006) 'Technology and the Transformation of Work', in S. Ackroyd (ed.) *The Oxford Handbook of Work and Organization*, pp. 115–137. Oxford: Oxford University Press.
- Bailey, D. E. and Leonardi, P. M. (2015) *Technology Choices: Why Occupations Differ in Their Embrace of New Technology*. Acting with technology. Cambridge, MA: The MIT Press.
- Bailey, D. E., Leonardi, P. M. and Chong, J. (2010) 'Minding the Gaps: Understanding Technology Interdependence and Coordination in Knowledge Work', *Organization Science* 21(3): 713–730.
- Bain, P. and Taylor, P. (2000) 'Entrapped by the 'Electronic Panopticon'? Worker Resistance in the Call Centre', *New Technology, Work and Employment* 15(1): 2–18.
- Ball, K. (2010) 'Workplace Surveillance: An Overview', *Labor History* 51(1): 87–106.
- Barad, K. (2003) 'Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter', *Signs: Journal of Women in Culture and Society* 28(3): 801–831.

- Barley, S. R. and Kunda, G. (1992) 'Design and Devotion: Surges of Rational and Normative Ideologies of Control in Managerial Discourse', *Administrative Science Quarterly* 37(3): 363–399.
- Barley, S. R. and Kunda, G. (2001) 'Bringing Work Back In', *Organization Science* 12(1): 76–95.
- Bittner, E. (1965) 'The Concept of Organization', *Social Research* 32(3): 239–255.
- Blauner, R. (1964) *Alienation and Freedom: The Factory Worker and His Industry*. Oxford, England: Chicago University Press.
- Brunsson, N. (2006) *Mechanisms of Hope: Maintaining the Dream of the Rational Organization*. Malmö: Copenhagen Business School Press.
- Burawoy, M. (1979) *Manufacturing Consent: Changes in The Labor Process Under Monopoly Capitalism*. Chicago, IL: University of Chicago Press.
- Callon, M. (1986) 'Some Elements of a Sociology of Translation: Domestication of The Scallops and The Fishermen of St Brieuc Bay', in J. Law (ed.) *Power, Action, and Belief: A New Sociology of Knowledge*, pp. 196–229. London; Boston: Routledge & Kegan Paul.
- Colbert, A., Yee, N. and George, G. (2016) 'The Digital Workforce and the Workplace of the Future', *Academy of Management Journal* 59(3): 731–739.
- Courpasson, D., Dany, F. and Clegg, S. (2012) 'Resisters at Work: Generating Productive Resistance in the Workplace', *Organization Science* 23(3): 801–819.
- Czarniawska, B. (2007) *Shadowing: And Other Techniques for Doing Fieldwork in Modern Societies*. Malmö: Liber.
- Edwards, R. (1979) *Contested Terrain: The Transformation of the Workplace in the Twentieth Century*. New York: Basic Books.
- Ezzamel, M. and Willmott, H. (1998) 'Accounting for Teamwork: A Critical Study of Group-Based Systems of Organizational Control', *Administrative Science Quarterly* 43(2): 358–396.
- Faunce, W. A. (1958) 'Automation in the Automobile Industry: Some Consequences for In-Plant Social Structure', *American Sociological Review* 23(4): 401–407.
- Feldman, M. S. and Pentland, B. T. (2003) 'Reconceptualizing Organizational Routines as a Source of Flexibility and Change', *Administrative Science Quarterly* 48(1): 94.
- Gherardi, S. (2016) 'Sociomateriality in Posthuman Practice Theory', in A. Hui, T. R. Schatzki and E. Shove (eds) *The Nexus of Practices*, pp. 50–63. Abingdon: Routledge.
- Gherardi, S. (2019) *How to Conduct a Practice-Based Study: Problems and Methods*. 2nd ed. Cheltenham: Edward Elgar Publishing.
- Hodson, R., Martin, A. W., Lopez, S. H., et al. (2013) 'Rules Don't Apply: Kafka's Insights on Bureaucracy', *Organization* 20(2): 256–278.
- Holstein, J. A. and Gubrium, J. F. (2004) 'Context: Working it Up, Down and Across', in C. Seale, G. Gobo, J. F. Gubrium, et al. (eds) *Qualitative Research Practice*, pp. 297–311. London: SAGE Publications Ltd.
- Joerges, B. and Czarniawska, B. (1998) 'The Question of Technology, or How Organizations Inscribe the World', *Organization Studies* 19(3): 363–385.
- Kallinikos, J. (2012) 'Form, Function, and Matter: Crossing the Border of Materiality', in P. M. Leonardi, B. A. Nardi and J. Kallinikos (eds) *Materiality and Organizing: Social Interaction in a Technological World*, pp. 67–87. 1st ed. Oxford: Oxford University Press.
- Kellogg, K. C., Valentine, M. A. and Christin, A. (2020) 'Algorithms at Work: The New Contested Terrain of Control', *Academy of Management Annals* 14(1): 366–410.
- Knights, D. and McCabe, D. (1998) 'What Happens When the Phone Goes Wild?': Staff, Stress and Spaces for Escape in a BPR Telephone Banking Work Regime', *Journal of Management Studies* 35(2): 163–194.
- Knights, D. and McCabe, D. (2000) 'Bewitched, Bothered and Bewildered: The Meaning and Experience of Teamworking for Employees in an Automobile Company', *Human Relations* 53(11): 1481–1517.
- Knights, D. and McCabe, D. (2003) 'Governing Through Teamwork: Reconstituting Subjectivity in a Call Centre', *Journal of Management Studies* 40(7): 1587–1619.
- Langley, A. (1999) 'Strategies for Theorizing from Process Data', *The Academy of Management Review* 24(4): 691–710.
- Latour, B. (1993) *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.

- Leonardi, P. M. (2012) 'Materiality, Sociomateriality, and Socio-Technical Systems: What Do These Terms Mean? How Are They Different? Do We Need Them?', in P. M. Leonardi, B. A. Nardi and J. Kallinikos (eds) *Materiality and Organizing: Social Interaction in a Technological World*, pp. 25–48. 1st ed. Oxford: Oxford University Press.
- Leonardi, P. M. and Barley, S. R. (2008) 'Materiality and Change: Challenges to Building Better Theory about Technology and Organizing', *Information and Organization* 18(3): 159–176.
- Leonardi, P. M. and Barley, S. R. (2010) 'What's Under Construction Here? Social Action, Materiality, and Power in Constructivist Studies of Technology and Organizing', *The Academy of Management Annals* 4(1): 1–51.
- Manley, A. and Williams, S. (2019) "'We're not run on Numbers, We're People, We're Emotional People": Exploring the Experiences and Lived Consequences of Emerging Technologies, Organizational Surveillance and Control Among Elite Professionals', *Organization*: 1–22.
- McCabe, D. (2014) 'Making Out and Making Do: How Employees Resist and Make Organisational Change Work Through Consent in a UK Bank', *New Technology, Work and Employment* 29(1): 57–71.
- McCabe, D., Ciuk, S. and Gilbert, M. (2020) "'There is a Crack in Everything": An Ethnographic Study of Pragmatic Resistance in a Manufacturing Organization', *Human Relations* 73(7): 953–980.
- Merton, R. K. (1939) 'Bureaucratic Structure and Personality', *Social Forces* 18: 560–568.
- Merton, R. K. (1968) *Social Theory and Social Structure*. Glencoe: Free Press.
- Meyer, J. W. and Rowan, B. (1977) 'Institutionalized Organizations: Formal Structure as Myth and Ceremony', *American Journal of Sociology* 83(2): 340–363.
- Miettinen, R., Samra-Fredericks, D. and Yanow, D. (2009) 'Re-turn to Practice: An Introductory Essay', *Organization Studies* 30(12): 1309–1327.
- Mumby, D. K. (2005) 'Theorizing Resistance in Organization Studies: A Dialectical Approach', *Management Communication Quarterly* 19(1): 19–44.
- Nicolini, D. (2012) *Practice Theory, Work, and Organization: An Introduction*. Oxford: Oxford University Press.
- Nicolini, D. and Monteiro, P. (2016) 'The Practice Approach: For a Praxeology of Organisational and Management Studies', in A. Langley and H. Tsoukas (eds) *The SAGE Handbook of Process Organization Studies*, pp. 110–126. London: SAGE.
- Orlikowski, W. J. (2000) 'Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations', *Organization Science* 11(4): 404–428.
- Orlikowski, W. J. (2007) 'Sociomaterial Practices: Exploring Technology at Work', *Organization Studies* 28(9): 1435–1448.
- Pickering, A. (1995) *The Mangle of Practice: Time, Agency, and Science*. Chicago, IL: University of Chicago Press.
- Reckwitz, A. (2002) 'Toward a Theory of Social Practices: A Development in Culturalist Theorizing', *European Journal of Social Theory* 5(2): 243–263.
- Sandberg, J. and Tsoukas, H. (2015) 'Practice Theory: What it is, its Philosophical Base, and What it Offers Organization Studies', in R. A. Mir, H. Willmott and M. Greenwood (eds) *The Routledge Companion to Philosophy in Organization Studies*, pp. 184–198. 1st ed. London: Routledge.
- Schatzki, T. R. (1996) *Social Practices: A Wittgensteinian Approach to Human Activity and The Social*. Digitally printed version, paperback re-issue. Cambridge: Cambridge University Press.
- Schatzki, T. R. (2001) 'Introduction: Practice Theory', in T. R. Schatzki, K. Knorr-Cetina and E. von Savigny (eds) *The Practice Turn in Contemporary Theory*, pp. 1–14. New York: Routledge.
- Schatzki, T. R. (2002) *The Site of The Social: A Philosophical Account of The Constitution of Social Life and Change*. University Park, PA: Pennsylvania State University Press.
- Schatzki, T. R. (2010) *The Timespace of Human Activity: On Performance, Society, and History as Indeterminate Teleological Events*. Lanham: Lexington Books.
- Schatzki, T. R. (2019) *Social Change in a Material World: How Activity and Material Processes Dynamize Practices*. London; New York: Routledge, Taylor & Francis Group.
- Selznick, P. (1948) 'Foundations of The Theory of Organization', *American Sociological Review* 13(1): 25–35.

- Sewell, G. (1998) 'The Discipline of Teams: The Control of Team-Based Industrial Work through Electronic and Peer Surveillance', *Administrative Science Quarterly* 43(2): 397–428.
- Sewell, G., Barker, J. R. and Nyberg, D. (2012) 'Working Under Intensive Surveillance: When Does "Measuring Everything that Moves" Become Intolerable?', *Human Relations* 65(2): 189–215.
- Shestakofsky, B. (2017) 'Working Algorithms: Software Automation and the Future of Work', *Work and Occupations* 44(4): 376–423.
- Silverman, D. (2001) *Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction*. London: SAGE Publications.
- Spradley, J. P. (1979) *The Ethnographic Interview*. New York: Holt, Rinehart and Winston.
- Susman, G. I. (1970) 'The Impact of Automation on Work Group Autonomy and Task Specialization', *Human Relations* 23(6): 567–577.
- Taylor, P. and Bain, P. (1999) "'An Assembly Line in the Head": Work and Employee Relations in the Call Centre', *Industrial Relations Journal* 30(2): 101–117.
- Tsoukas, H. (2009) 'Craving for Generality and Small-N Studies: A Wittgensteinian Approach Towards the Epistemology of the Particular in Organization and Management Studies', *The Sage Handbook of Organizational Research Methods*, pp. 285–301. London: Sage.
- Vallas, S. P. (2003) 'Why Teamwork Fails: Obstacles to Workplace Change in Four Manufacturing Plants', *American Sociological Review* 68(2): 223–250.
- Weber, M. (1978) *Economy and Society: An Outline of Interpretive Sociology*. Berkeley, CA: University of California Press.
- Weick, K. E. (1976) 'Educational Organizations as Loosely Coupled Systems', *Administrative Science Quarterly* 21(1): 1–19.
- Zammuto, R. F., Griffith, T. L., Majchrzak, A., et al. (2007) 'Information Technology and the Changing Fabric of Organization', *Organization Science* 18(5): 749–762.
- Zuboff, S. (1988) *In the Age of the Smart Machine: The Future of Work and Power*. New York: Basic Books.

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