

Disempowerment and Resistance in the Print Industry?

Reactions to Surveillance-Capable Technology

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ABSTRACT

This article offers a critique of recent characterisations of the effects of electronic technologies in the workplace. It presents detailed case study evidence that calls into question a number of common theoretical assumptions about the character of surveillance at work and the responses of employees to it.

Word count: 7,486 inclusive.

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Introduction

Questions concerning empowerment, surveillance, privacy and resistance have been long the focus of sociological studies of the labour process and of managerial strategies. In recent years, these issues have been given new and renewed prominence by developments in electronic technologies such as databases, and data-capture and workflow systems. This is because, even when they are not designed with surveillance functions in mind, such technologies frequently embody surveillance capabilities. Within social science disciplines there are two main and oppositional positions on these developments. The first is perhaps best represented in an important paper by Sewell and Wilkinson (1992). They drew attention to the apparent paradox that modern developments in the labour process and managerial strategies have given rise to decentralisation and devolution of responsibility for tactical decision-making while at the same time generating higher levels of centralised, strategic control and surveillance. They argued that the disruptive potential acquired by empowered employees in such a devolved system *requires* the development of countervailing techniques of surveillance and loci of control to ensure that the actions of employees, collectively and individually, are focused continually on the productive goals of the organisation. The second position is represented by Thompson and Ackroyd (1995) who

focused upon Sewell and Wilkinson's alleged overdrawing of the 'electronic panopticon' model (Sewell and Wilkinson, 1992: 281; see also Webster and Robbins, 1993: 244). In particular, they questioned the effectiveness of new management practices and argued that most organisations lack the capacity for the integration of information which such surveillance-based forms of control would require (1995: 622). Thus, they argued, Sewell and Wilkinson underestimated the scope for, and level of, worker resistance.

This debate has recently been revitalised in the context of a growing academic interest in call centre employment – a sector in which a range of modern electronic technologies are routinely deployed for monitoring and other purposes. Bain and Taylor (2000) have offered a trenchant critique of what they argue is the increasingly commonplace characterisation (see for example Fernie and Metcalf, 1998) of call centres as the modern equivalent of Blake's dark satanic mills. A central plank in Bain and Taylor's critique is the argument that few of the claims advanced in the burgeoning academic literature on call centres are informed by detailed empirical evidence. Against this they offer findings drawn from a case study of a major provider of call centre services which show that, popular and academic characterisations notwithstanding, workers were by no means cowed into submission by a system of total management control. Indeed they utilised a number of strategies for exploiting contradictory features of organisational and managerial practices in order to develop distinctive patterns of resistance. Bain

and Taylor thus line up with Thompson and Ackroyd in terms of the parameters of the earlier debate described above.

Ironically, both the disempowerment and resistance theses are based on the shared assumption that the employment relationship is intrinsically exploitative, oppositional and overtly conflictual. Both implicitly characterise employees' responses in terms of their relative capacity to assert individual or collective control over aspects of the work environment *contra* management objectives. However, recent observational studies of call centre operations have shown that matters are rarely that simple. Thus Lankshear *et al.* (2001) have shown how call centre employees may develop relatively autonomous conceptions of professionalism that simultaneously pursue management defined organisational goals while resisting aspects of management's demands.

What such studies suggest, then, is that more attention needs to be paid to *empirical* matters such as: the actual context of ongoing social relations of work; the methods through which employees construct definitions of the legitimacy of surveillance; and how such definitions are mobilised in reactions to surveillance and surveillance-capable technologies. With this in mind, we offer below a case study of the introduction of a management information and workflow system into the commercial print industry. This technology was intended to act as a resource in the management of print production and also to generate customer invoices. However, in the process of gathering data for these purposes it also provided a

moment-by-moment account of the real-time working of machine operators. Thus information on the identity of operators working on a job; the time taken to print jobs; the wastages involved; their time away from their machines; and the length of their breaks was recorded and placed in a data-base.

During the course of fieldwork conducted at one of the sites in which this technology was introduced the machine operators were observed to engage in unanticipated activities that effectively subverted the planned operation of the technology. The explanation for this behaviour which would be derived from the accounts offered by Sewell and Wilkinson, and Thompson and Ackroyd, is that employees' control and autonomy were threatened by new technology. In seeking to re-establish their control over the working environment employees engaged in acts of resistance which ran counter to managerial and organisational objectives. Our research, however, suggests that such an explanation is too simple. Accordingly, we present below an account of the day to day organisation of workplace relations in our case study site before and after the introduction of the new technology.

A Case Study of the Print Industry

Background

Establishment Printers is a pseudonym for a very large distributed printers operating twenty printing sites throughout the United Kingdom. At the time the

fieldwork commenced, it had recently won a number of new contracts from various Government Departments for the provision of dedicated printing services. This paper is based upon fieldwork conducted in one of the government departments (the Department) that the organisation services. The research made use of the range of techniques available to field-workers such as observation, unstructured interviews, video and audio recordings, and field notes.

Establishment Printers' production system exhibits a number of features of the kind of JIT production which is the focus of Sewell and Wilkinson's argument. In particular, the contingencies of demand flowing from the exigencies of the Department's own operations meant that much work was required at short notice, large stocks were not kept and there was a premium on delivery to deadlines. In addition, Establishment Printers is a total quality organisation with an ISO 9000 accreditation. Nevertheless, it would not be correct to argue that all the productive activities could be described as consistently embodying these features so as to constitute the kind of consistent regime described by Sewell and Wilkinson.

The operation that we are concerned with involves what is known in the industry as 'factory production printing' (as distinct from mere photocopying). The organisational regime is typical of commercial printing with a high premium placed on cost control and the timely delivery of the finished product. This entails close co-ordination of the different stages of the job. These consist of the following: 1) 'administration', where the job is admitted into the production process, its specifications detailed on a work ticket, and the various procedural matters such as cost centre, job owner etc. entered into a data base; 2) 'origination', which can vary from the full blown laying down of the type, through

the incorporation of art work, to the mere proofing of the text; 3) if the job is to be produced by off-set machines there is a need to make up etched plates. However, if the job is to be printed by electronic machines this stage is by-passed; 4) actual printing of the job; 5) 'finishing', which ranges from stapling to more complex forms of binding; 6) 'dispatch'.

The personnel involved are: administrative staff, who do not have managerial authority but who are responsible for the 'front office' work; machine operators; and managers. All the personnel involved had worked in the print industry for a number of years. Local managers were originally machine operators themselves and could, if required, take over production activities themselves.

Establishment Printers operates in a very competitive commercial environment. It is accountable to the Department for the timely delivery of a quality product at the bid price. In addition it is necessary to maintain overall profitability. Personnel at all levels are aware of these exigencies and the difficulties that undershooting performance targets could create.

Upon securing the Department's contracts, Establishment Printers introduced a Workflow/Information Management System, (SURVALANT). This was done for two reasons. First, it was believed by management that it would enable the site to be better able to meet its production and performance targets. Second, it honoured a commitment, made in its tender, to implement an electronic information system. This was intended to provide the Department with invoices that made the work done on its jobs more visible and that could be recognised as having been automatically generated by a data-capture technology.

We begin by describing a number of features of the work and organisation of the site prior to the introduction of SURVALANT.

The Imperative of a Smooth Flow of Work

As we noted, Establishment Printers operated in a highly competitive commercial environment. Failure to meet targets had potentially negative implications for all involved – managers, operatives, and administrative staff. It was in everybody's interests, therefore, to ensure a smooth flow of work between the various processes across the site. The implications of uneven work-flow for continued employment and working conditions were well understood and staff thus sought to avoid both slack periods (with implications of overstaffing) and periods of overstretch. However, the contingencies of print production pose a constant threat to the smooth flow of work since only some of the work done on the print room floor can be anticipated and, hence, planned for. Known-in-advance work, such as a regular standardised weekly job-vacancy bulletin, forms only a small proportion of the daily and weekly workload. The bulk of work has a contingent character which has to do with sources from which the work flows:

- i) Establishment Printers operate a walk up counter service for the Department, the demand for which varies during the course of the day and the week;
- ii) managers are always attempting to generate new work the timing and volume of which cannot be predicted;

iii) Establishment Printers provide a print-on-demand service of already stored electronic documents with the result that one long one-off print runs can be requested without notice;

iv) the Department requires a priority flagging system which means that some work has to be printed immediately it comes in.

In this context, operators and shop-floor management have developed practices and methods through which they confront and subdue the contingencies of print buying in order to achieve a smooth flow of work through their machines and across the print floor.

a) *Juggling The In-Tray*

Establishment Printers receive requests for print jobs on forms which solicit such details as the cost code the job is to be printed under, the type of paper to be used, its colour, and the numbers of copies required. Upon receiving a request, the job is assigned a number and the request form is then used as a ticket that accompanies the work and enables operators to see what operations are required. The administrative staff place the ticket and the work to be printed into a transparent jacket and assign it to an operator by placing it physically in the operator's in-tray. A ten day turn around for most jobs operates and the printing order is organised on a first come, first served basis. Operators are supposed to order the printing of jobs by working up from the bottom of the pile in their in-trays. In short, there is an intended sequential order to the printing.

However, operators do not, necessarily, process the work in their in-trays in this sequential fashion if, in their judgment, this cannot ensure a smooth flow of

work across their machines. Instead, they may juggle the contents of their in-trays, re-ordering the jobs so that they can smoothly pace the flow of their work. In re-ordering the in-tray operators will examine the job-tickets, and make assessments about how complicated the job is or how long it will take. They then balance these assessments against the deadline for the job, their current work-load, their need to print jobs that have not been completed from the previous day, and the fact that there may be jobs that they know will be upcoming but which they have not yet received. With this information in hand, operators re-order the jobs in their in-trays in such a way as to optimise the scheduling of their work to ensure a smooth flow of work.

For example digital machines are able to perform two functions at the same time; namely to scan in jobs to be printed whilst at the same time printing other jobs. Operators use the fact that machines are able to store scanned in jobs in a 'job queue' in order to juggle their in-trays. Thus operators will set off a long job well in advance of its completion date and not necessarily in the sequential order of the in-tray. They then scan in a number of short jobs that can be printed later. These may themselves subsequently be printed as if they were one long job. In this way operators can maximise the use of the printer and their own time, ensuring that they are not idle and ensuring that the printer is in constant operation.

b) Jumping the Gun

Operators can use work that they know is upcoming, such as regular requests, as a fixed point reference around which to schedule other work. However, although a useful resource, few of the job-requests received by Establishment Printers have this known-in-advance character. In response,

operators have devised practices for investing work with a known-in-advance character around which they can juggle other work. One of these practices is to anticipate a job, 'jumping the gun' and beginning work on it prior to its being entered into the production cycle by administrative staff. For example, print-on-demand jobs involve producing a specified number of copies of electronically stored work in response to job-requests received by telephone. These are recorded, by administrative staff, on memo pads rather than on the job-request forms that accompany originals. These print-on-demand memos normally lie on the administrator's desk until the following morning when they are entered into the processing cycle along with the daily quota of job-requests that have arrived by post. Thus, at any time of the day, a number of print-on-demand memos may be lying on the desks of administrative staff awaiting entry into the system.

Operators are able to use these features to invest print-on-demand jobs with a known-in-advanced character and then use this to address scheduling anomalies by beginning work on a job even though they have not yet been assigned it by administrative staff. Consequently, operators will call in on administrative staff in order to acquaint themselves with the disposition of any print-on-demand requests and possibly 'jump-the-gun' by loading the electronic files and printing them off before they have received the job ticket. This is done with the full knowledge of the administrative staff who co-operate with the operators in this practice.

c) Monitoring Each Other's Work

The print rooms at the sites are arranged so that similar types of printing machines are clustered together. This configuration of the machines means that operators have a clear field of vision of what other operators are doing, and are

thus able to monitor whether an operator is working on or is absent from their machine while it is printing. Operators can also monitor whether or not one of their number who is actually present is also attending or disattending to the printing process because they are in discussions with the manger, other printers, or administrative staff.

In addition to direct line of sight, operators have other ways of monitoring each other's work. First, the machines emit warning noises that alert operators to completed processes or machine problems such as paper jams or depleted paper trays. In addition to 'designed-in' sounds, the machines also make regular noises when engaged in particular operations and skilled operators can monitor the printing process just by the sound that a machine is making at any one time. Indeed, they are able to monitor each other's work in some considerably fine detail. They put this knowledge to work to achieve, for and with each other, a smooth flow of work through the print room by intervening in each other's work at decisive moments should they deem it necessary. By monitoring each others work, then, they are able to support each other should problems arise.

Thus, on the face of it the print-room is staffed by a collection of individuals with responsibilities for their own machines and work-loads. In fact, however, the ordering of the flow of work, through the print-room as a whole and across individual machines, is in part achieved through the operators' mutually supportive actions designed to handle such contingencies as operator presence and attentiveness, and machine state.

d) *'Passing The Work To Mary'*

In assigning jobs to particular operators, the administrative staff take account of such matters as: which machines are best suited to a particular job; the skill of individual operators; what jobs operators are currently working on; and the urgency of the job. The outcome of these decisions is that the work of the print-room as a whole is formally managed.

The managerially constituted order to the work of the print-room does not, however, take account of the contingencies of print production as they unfold for individual operators. These contingencies can take the form, for example, of 'jinxes' that plague an individual operator during the course of a working day. Jinxes can take a variety of forms such as machines 'playing up'; full hard disks making machines run slowly; or unusually complex job specifications.

Operators have developed practices for handling these types of contingencies and achieving the outcome that the planned organisation of the day's work is intended to result in: the smooth flow of work through the print room. One of these involves passing over work to their colleagues who fold it into their own work and then pass it back. Thus, although the work has been done by another operator it is done *as though* it was done by the operator assigned the work. For example they may 'pass the work to Mary' who runs the call-in counter service and who regularly has more slack periods than others.

Not all jobs can be 'passed to Mary' because her machines may not be capable of processing them, but 'passing it to Mary' is a practice that can be deployed as her working circumstances permit and one that is designed to re-achieve the structure of the work for the day. Because operators are able to monitor each other's work, everyone knows when one of them is having difficulties and at times a mere raising of the eyes to Mary results in an agreeing

nod and the work is quickly passed over. In fact, Mary is not the only person work can be passed on to. Other operators will try to make space within the framework of their own day's work to fold in colleagues' work. Thus, 'passing the work to Mary' exemplifies a more general practice for managing the contingencies of the working day.

It was into this existing assemblage of print production practices, designed to organise a smooth flow of work across the print machines and through the print room, that SURVALANT was introduced.

The Introduction of SURVALANT

SURVALANT was intended to automate and rationalise the work-flow and gather data on the work done on a job that could be used automatically to generate invoices and allow customers to see what work had been done, how long it had taken and why they were being charged a particular price. In the course of so doing it also generated information about the work of individual operators, such as productivity rates, wastages and mistakes, and time at the machine.

SURVALANT works by organising a work flow for jobs which is based upon a sequential model of the production process. This requires that new jobs first be entered into the system by one of the administrative staff at a PC terminal. A job-number is assigned which the system subsequently uses to recognise the job. When all of the job requests for the day are entered into the system they are allocated to individual printers who begin work on them by entering the job-number on a shop-floor terminal to call up the job from the system. Operators are also required to enter their own identity numbers and the process they are about to initiate. Operators also enter the number of copies, the type and colour of the

paper and, during the course of printing, the number of wasted copies and the duration of any down-time. Once operators have completed their work on jobs, they enter this information followed by the initiation of any other process that they have to undertake. When they have finished all of their designated work on a job they log off and turn the job over either to other operators or to the dispatcher, as specified on the job-ticket. These staff, in turn, go through the logging in and logging off procedures. In these ways SURVALANT is intended automatically to organise a smooth flow of work across the print room floor and to gather data about the processes a job goes through. It is clear, however, that the implementation of SURVALANT had a number of unintended consequences.

a) *The imposition of a overhead of use*

It may already be clear from our description of the process that there could be a considerable overall over-head incurred in using SURVALANT to log the progress of work on a job. This was because SURVALANT was not sensitive to the contextual details of the work such as the length of its print run or the size of the job. SURVALANT required operators to process all jobs through it in the same way and, consequently, an operator had to call up a job, log a personal identity number onto the job, log on the process to be initiated, log off the process, log on the next process and so on, irrespective of such features as length of print run. Over the course of a long job this logging in process would diminish as a percentage of the time spent on the job but, for short run jobs consisting of no more than a couple of pages, logging on represented a considerable percentage of the time spent on the job. It thus had the effect of introducing a considerable additional work load when there were many short jobs to be processed. This was particularly true of the counter service which consisted solely of short run jobs.

Using SURVALANT resulted in a disruption to the organisation of the work of the printers in the additional work-load and consequently time-load its use incurred.

b) Inflexibility

SURVALANT is designed not only to manage information about a job but also to organise the work done on a job. In this latter respect it imposes a structure on the work in accordance with the model of print process and practice in terms of which it is designed. We have noted that this model of work is a sequentially ordered process model. A consequence of this is that SURVALANT will not allow an operator to log onto one job whilst still logged onto another.

This requirement, however, conflicts with one of the practices that operators use to juggle their in-trays. During a print run an operator is logged onto that job which means that they are not construed by the system as being 'idle'. This means that should they want to log onto another job in order to scan it into the machine while the machine is printing a long run, the system will not accept their entry. The upshots are that either operators are unable to maximise the flow of work by juggling their work-load, or that they continue to juggle their work-load and not log-in the scanning-in process.

Both are problematic. The first disables attempts to organise the smooth flow of work in the light of print-production contingencies. The second conceals the work of printing from the Department who would not be able to see that scanning in had occurred and thus would not be able to understand why they had been charged for scanning in when, according to the account of the job produced by the system, it had not been done.

d) Proceduralisation

We have mentioned that SURVALANT orders the work into a sequentially organised number of process. This proceduralised the work in as much as certain processes have to precede others. However, this formally constituted procedure means that operators are not able to continue the practice of anticipating work by, for example, initiating work on print-on-demand jobs. This is because until a job has been entered it is not recognisable to the system. Thus an operator cannot begin work on a job that has not yet been entered into the system. However, if they did work on a job without calling up the system they could not record it later, when the job had been entered, because that work would now be out of sequence. There would, thus, be an inconsistency in the account of the job produced by SURVALANT for the Department. Neither could the operators let the work go unrecorded because then SURVALANT would record either that work that should have been done had not been done or that the Department was being charged for work that, according to the record, had not been undertaken.

The upshot was that because SURVALANT proceduralised the work it was not possible for operators to engage in practices, such as jumping the gun, that they had previously used to achieve a smooth flow of work.

e) Individualisation

Not only was the system based on the understanding that the work of the print room consisted of a number of sequential processes, it was also based on the understanding that *individual* operators carried out those processes. Each operator had a unique identification number which was used in conjunction with the job identification number to record the initiation and termination of processes enacted

on the job. The system thus displayed the designers' understanding of print work as individualised work.

However, as we have described, the print room was an interactional arena within which operators collaborated as the unfolding contingencies of the working day presented themselves. Operators supported one another as the need arose operating as a 'team', the precise components of which were assembled and dismantled as situations occasioned. SURVALANT's individualisation of the work of printing, however, disrupted the pattern of mutual support. Although it was still possible for operators to fill up an empty paper tray for others, they would be unable to provide support that required logging onto the system. Consequently an operator could not, for example, start off a queued job or unblock a jammed paper path for a colleague who was absent from a machine because both of these operations would have to be logged onto the system.

Obviously, operators could have maintained their mutually supportive activities by using one another's identification numbers. However, the fact that each operation was recorded by the system meant that operators were now formally accountable for processes logged under their identity numbers. Consequently, they were accountable for such matters as excessive paper wastage, re-occurring jams, and skewed work. SURVALANT thus introduced an element of doubt and mistrust into activities that constituted working with others. This inhibited operators from helping each other out and called into question the practice of 'passing it to Mary'.

Re-Establishing the Order of the Print Room

Faced with a situation in which their well-established practices for controlling work and maximising production were challenged by the introduction of SURVALANT, operators responded by devising new ways of organising their work. They reacted to the system by selectively switching it off for certain parts of the day's work. On the face of it this might appear to be just the sort of resistance to technology that Sewell and Wilkinson (1992) regard as increasingly difficult in the context of ever more sophisticated regimes of managerial control but which Thompson and Ackroyd (1995) insist remains a central feature of the industrial landscape. Neither of these characterisations is, however, adequate to describe what occurred at Establishment Printers. Their work around of the technology was not simply an attempt on operators' parts to preserve their autonomy and control in the face of a surveillance-capable technology. Nor can it reasonably be seen as an effort to thwart the continual march of technology. Rather their actions displayed an orientation to using the system in such a way that they could overcome the problems we have described above yet also achieve the organisational goals that motivated its deployment in the first place. Their activities thus took on the cast of solving a problem caused by the system, rather than simple resistance to management and technological control.

Both operators and shop-floor management were faced with a situation in which a technology that was to be used to organise the work was conflicting with the activities involved in doing it. The solution to this dilemma was that operators and shop-floor managers worked out a way of folding in the use of SURVALANT to their existing ways of ordering work, whilst at the same time using the system to represent their work as if it had been ordered and controlled by SURVALANT.

The way they did this was to use SURVALANT selectively to construct an account of their work that could be used by the organisation for its purposes of accounting for its work to the Department. As a result, the work of producing this account became subject to a new set of socially devised practices.

Administrative staff continue to enter received jobs into the SURVALANT system at the beginning of the day. However, from that point onward the system is ignored and the shop-floor terminals are not used to log-in and out the operators and various processes they perform. This is not to say that records of the progress of jobs are not compiled, nor that details of such matters as wastage or machine down-time are not noted. Rather, traditional methods of monitoring progress and recording job features via paper records are employed. Thus operators record the progress of their work on the paper tickets that accompany jobs, document their own working day, the jobs they have done and the time they have taken on various processes on the paper forms previously used. In addition they continue a previous practice of keeping scrap paper records of wastage and down-time so that they can provide an account to management, should that be called for, of any discrepancy between stock used and printing done or of abnormal time taken to do a job. The SURVALANT work-shop terminals remain unused.

We have then a paradox. Operators had devised a system for recording their work which was designed to address SURVALANT's disruptive effect on production. These procedures for recording work, however, were the very procedures that the Department did not recognise as an *objective* account of work undertaken. The mere fact that they had been compiled in the course of printing by the very operators whose work they gave an account of meant that, in principle,

their objectivity was questionable. As a result, they were not usable by the organisation for the purposes of accounting objectively for the work for which it charged the Department. By contrast SURVALENT was capable of producing an acceptable account of work undertaken but it impeded the prosecution of that work.

In this context, administrative staff developed a new task in which they engaged at the beginning of the day when they entered jobs into the system. This was to use the paper based records and operator notes collected at the end of the previous day retrospectively to programme the system with the data on a job that would provide the account required by the Department. The Department then received an account of the job that bore all the hallmarks of having been electronically and automatically compiled and therefore, from their point of view, of 'objectivity'. By using paper records as data with which SURVALANT could retrospectively be programmed, the system could itself be worked to produce an account of the work of printing that could be used for the organisational purposes for which it was intended. In short, operators, administrative staff and managers together invented, over time, a system by which SURVALANT was successfully folded into the existing practices through which the work of printing was organised. The aim was to maintain a smooth flow of work while delivering on the organisation's commitments to its customer: the Department. It is important to emphasize that those involved saw themselves as working out a realistic strategy in the face of a collapsing system of work, not a strategy for bamboozling the Department. Indeed, the Department showed every sign of satisfaction with Establishment Printers who were viewed as keeping to the details of their contract and supplying quality product.

Discussion

The disempowerment and resistance theses seemingly provide us with two clear-cut ways through which to characterise social relationships on the print room floor and people's (operators, administrative staff and shop-floor managers) reactions to technology. The disempowerment thesis would suggest that we have observed an instance of a technology that constrains the activities of those on the shop-floor and makes their work subject to an unacceptable and unprecedented level of scrutiny. By extension, the resistance thesis would suggest that we have described a case that evidences attempts by those subject to the technology and management practices of developing ways to subvert the technology and the management imposition, re-establishing their privacy in resisting its introduction.

However, neither thesis adequately provides for the socially organised character of the reactions to technology we observed. The reason for this is that both reify social relationships and technology to a point at which actual situated, visible and witnessable activities become unrecognisable. For example, it is not the case that SURVALANT subjected the shop-floor work to unprecedented levels of scrutiny. The work of operators had always been subject to scrutiny by the shop-floor managers who made realistic calculations as to the productivity and work levels of operators through their own every-day routine work on the shop-floor. Shop-floor managers made their own estimations of operators' performances and so-called objective data would not provide them with anything they did not know already, nor would it influence their opinions about anyone. Nor is it the case that operators had anything particularly to hide. They were skilled workers and problematic operations such as excessive paper wastages were in any case rare and as much a source of vexation to them as to others. Operators

did not have routinely to conceal their activities as they conducted their work, which was as visible before as it was after the introduction of SURVALANT. Moreover, SURVALANT did not impinge upon the way in which operators normally punctuated their work. For example, operators would often use the occasions at which a job was passed to the next process, or when they received jobs from others, as opportunities to socialise. They would break-off for a smoke or a coffee, or visit other operators when the situation was appropriate. These ways of socialising and flexing were just as viable after as they were before SURVALANT was introduced.

Further, those on the shop floor used many types of modern technology and all of the production process involved technology of some sort. SURVALANT was certainly part of the new wave of digital technologies but so too were the print machines the operators used. These state of the art digital machines were rapidly replacing the previous offset technology and operators were very enthusiastic about new developments which simplified many of the laborious activities they had previously engaged in when setting up a job.

The activities engaged in by the shop-floor personnel in working around SURVALANT were thus not oriented either to the preservation or re-establishment of their previous control and autonomy, or to a human/machine struggle. Placed within the context of the practices they used to organise the work, their reaction was not to technology *per se* but to a technology that, for their working circumstances, was poorly designed. We have attempted to describe the practices through which they organised their work so as to achieve a certain outcome in the face of the contingencies of print buying. Quite simply SURVALANT was not designed to support these practices. Its model of work

required new working practices which, however, could not result in the desired outcome: a smooth flow of work across machines and the print room floor. Operators had no equivalent problem with the other digital technology, which they continued to use at the very time they worked around SURVALANT. Indeed, part of their problem with SURVALANT was that it did not allow them to enjoy the benefits that other technology afforded them. If there was a struggle, then, it was between two incompatible technologies not between humans on the one hand and technology on the other. In working around SURVALANT operators were plainly reacting to its poor (for their purposes) design not to its status as a new and threatening technology.

Similarly, they did not orient to it as a disempowering technology. Their work arounds were not designed to conceal information about their work or their ways of working that the technology had made visible. This was because their work arounds involved them in logging just the same sort of information (the accuracy of which could easily be checked, if anyone cared to do so) that SURVALANT logged. Thus work arounds were oriented to its *method* of logging not to the fact that work was logged. The reintroduction of paper based methods folded the activities of logging into the very work of printing. SURVALANT made logging an overhead and hence employees reacted to it as, for their purposes, a poorly designed technology.

We should also be careful of interpreting the reactions to SURVALANT as 'resistance'. The working practices we have described were a web of activities that had been evolved over many years and which involved collaboration between machine operators, administrative staff and shop-floor managers. Indeed, in this context we should note that management is not the monolithic and

undifferentiated category implied in Sewell and Wilkinson's account. Indeed, in real work situations different levels and sections of management may have different goals and priorities. Moreover, as our case study shows, these in turn may be influenced by the strategic requirements of others, such as powerful customers (cf. Frenkel *et al.*, 1995: 785-6).

Thus when, for example, operators would juggle their in-trays or prowl around the administrative staff areas looking for new jobs, they did not have to do so surreptitiously. They did so in full view of everyone. It was in everyone's interest to achieve a smooth flow of work, and activities designed in this respect were shared, collaborated on and mutually encouraged. The work arounds of SURVALANT likewise involved collaboration between operators, administrative staff and local managers. They did not testify to a divide between operators and shop-floor managers who also worked around it.

These activities were, then, oriented to the realisation of the organisation's goals rather than a resistance to a technology or to management control. All concerned, operators, administrators and shop-floor managers collaborated in producing the outcome SURVALANT was intended to deliver in a situation where the system could not, as designed and implemented, deliver such an outcome. All concerned collaborated, as they had previously collaborated, in the organisation of the work.

Conclusion

We have not set out to show, nor are we concluding that, the disempowerment and resistance theses are incorrect in their diagnoses of trends and potentialities in the modern workplace. However, our study does suggest that their theoretically driven

analysis reifies both social relations and technology in ways which mask the complexity of the everyday experience of work. Thus concepts such as control and resistance neglect the questions of who is controlling and resisting whom and for what purposes. They overlook, for example, the possibility that employees may simultaneously resist some aspects of management control of their activities and nevertheless seek to perform their allocated tasks to the best of their abilities. They may do so both in order to achieve organisational goals and to maximise the intrinsic satisfaction of their work (cf. Lankshear *et al.* 2001).

In this connection, we should note that Frenkel *et al.* (1995) have argued that the growth of what they call 'info-normative control' is characteristically most likely to occur in the kinds of employment settings in which employees have a degree of discretion and operational autonomy. This, in turn, generates a situation in which they 'construct rather than simply adopt roles prescribed by management' (1995: 786). Management becomes increasingly focused on output (performance) rather than process. While, as Sewell and Wilkinson note, this is characteristically accompanied by investment in technologies for performance measurement, it also requires initiatives to secure employees' normative commitment to performance standards. This in turn is secured by a variety of means, including providing intrinsically satisfying work and developing participative management (1995:787-8). Frenkel *et al.* argue that whether these developments occur and '(h)ow "info-normative" control works in practice, including workers' attempts to oppose or amend it, is a matter for empirical research' (1995: 789).

We believe that our case study illustrates the importance of this injunction. Our contention is that the concepts central to the disempowerment and resistance

theses are too reified to provide a convincing account of the visible, witnessable work and activities engaged in on the print room floor. We suggest that our example illustrates the benefits of attending to empirical studies for what they reveal about the organisation of work, as it is experienced by those who perform it, rather than always refracting them through the lenses of abstract theories in ways which essentialise categories such as management and labour while offering reductionist characterisations of their relationships.

Acknowledgement

The authors are grateful to Gloria Lankshear for comments on an earlier version of this paper.

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