

# Evading Surveillance and Making Time: an Ethnographic View of the Japanese Factory Floor in Britain

*Mike Webb and Gerry Palmer*

## **Abstract**

*A core element of the debate surrounding Japanese manufacturing transplants is the capacity of management to suppress employee resistance. This paper reports a study based on an eight-week period of participant observation of a particular form of resistance, fiddles. It argues that the opportunity for fiddling stems from the organization's inability to control its buyer–supplier relationships, temperamental technology, and the ability of workers to manipulate standard operating procedures. Moreover, it suggests that fiddles operate mainly with the consent of supervisors, and ultimately are not in conflict with interests of management as they contribute to production targets.*

## **1. Introduction**

The establishment of Japanese direct foreign investment (DFI) in the West was celebrated by some host governments and managements of transplant companies as heralding a brighter future for workers (Beale 1994). Work would be transformed from the routine single-task drudgery of the Fordist workplace to ‘humanely fulfilling employment’ (Womack *et al.* 1990), based on participation and involvement. But for many workers in Japanese transplants, the reality has proved to be less enticing. Notwithstanding some positive responses from employees (Saso 1990; Adler 1993), the balance of current academic evidence presents a more critical perspective, documenting worker concerns over health and safety, the intensive pace of work, understaffing and rigidly standardized jobs (Graham 1995; Grant 1996; Lewchuk and Robertson 1996; Rinehart *et al.* 1997).

This reappraisal of the nature of work in Japanese manufacturing transplants, moving away from a celebration of shop-floor consensus to its characterization as ‘management by stress’ (Parker and Slaughter 1995), has generated debate concerning the efficacy of managerial hegemony. One contentious issue concerns the extent to which the social and technical

Mike Webb and Gerry Palmer are both at University College Worcester.

organization of production, associated with Japanese manufacturing transplants, has resolved the 'problem' of labour control for management. Academic opinion is divided between, on the one hand, a view that managements have successfully achieved extensive and minute control over the shop-floor (Sewell and Wilkinson 1992a, b), and on the other, that workers have retained some capacity to resist managerial intentions (Thompson and Ackroyd 1995).

Using data gathered during a two-month period of participant observation in a British-based Japanese manufacturing company, this paper argues that resistance can remain a feature of the shop-floor in Japanese manufacturing transplants. More significantly, the paper considers two issues that are currently under-researched: what conditions facilitate resistance, and who are the beneficiaries of resistance. These two questions are addressed through the consideration of a particular form of worker resistance, the capacity of workers to participate in 'fiddles' at the point of production.

The paper is organized in five main sections. The debate concerning 'fiddles', 'Japanization' and managerial control is presented in the following section. Section 3 presents an outline of the research methodology and describes the case study company, and this is followed by a section detailing the main research findings. The implications of these findings are discussed in Sections 5 and 6. Section 7 draws some conclusions.

## **2. 'Fiddles', 'Japanization' and managerial control**

The term 'fiddles' is used here to denote those shop-floor practices that involve workers using their accumulated experience and tacit knowledge of the production process to adjust or circumvent workplace rules and operating procedures (Edwards 1988). Fiddles are common under piece-rate systems (Burawoy 1979; Lupton 1963), but, significantly in the context of this paper, they are also a feature of non piece-rate workplaces, as employees seek to engineer some element of control over their working day (Ditton 1979; L. Taylor and Walton 1971).

The recent influx of Japanese foreign direct investment into Britain and America, and the concurrent adoption of Japanese management techniques by indigenous companies, has heightened academic interest in the capacity of workers to sustain fiddles. Within the 'Japanization' debate, fiddles have been identified as divergences from expected behaviour and management-defined norms (Sewell and Wilkinson 1992a). Under the technical and social organization of production associated with 'Japanization', these divergences can be viewed as presenting a particular issue for management. Central to this analysis is the fact that Japanese manufacturing techniques increase the organization's dependency upon its work-force (Oliver and Wilkinson 1992). For example, the operation of TQM, with its devolution of responsibility for quality to the point of production, is premised upon a requirement that workers follow operating procedures

strictly to the letter (or, perhaps more accurately, to the work standard). In addition, the *kaizen* culture of continuous improvement necessitates both managerial identification of any worker adjustments to operating procedures that are beneficial to the organization, and the incorporation of these into new work standards. Consequently, it is argued that a key objective for management is 'to reduce the negative divergencies and exploit the positive divergencies which individuals make' (Sewell and Wilkinson 1992a: 287).

The extent to which management has achieved this objective is the subject of contention. Some accounts of Japanese manufacturing transplants argue that management has successfully resolved this 'problem' of divergences from managerial norms through heightened workplace control (Delbridge *et al.* 1992; Garrahan and Stewart 1992; Sewell and Wilkinson 1992a, b). Consider, for example, Sewell and Wilkinson's (1992a, b, 1993) case study of Kay Electronic, a British-based, Japanese-owned manufacturing company, where, they suggest, management has successfully developed comprehensive mechanisms of surveillance and discipline.<sup>1</sup> They contend that electronic fault-tracing mechanisms within the production system allow errors to be tracked easily and quickly to specific operators, thus facilitating the intensive scrutiny of individual performance, with errant workers being subject to humiliation through public displays of fault figures. This system also allows management to identify operators whose performance is relatively error-free; this will then be scrutinized to determine whether they have made any amendments to operating procedures which could form the basis of a revised work standard. The authors claim that this vertical surveillance is supplemented by a horizontal system of self-surveillance as the devolution of responsibility for quality and quantity targets to teams involves the work-group in 'policing' its own members and identifying and sanctioning those individuals who 'aren't up to it' (1992b: 110).

Three related conclusions are drawn by Sewell and Wilkinson from their study of Kay Electronic. First, detailed and intensive monitoring of worker performance allows management to detect 'negative divergencies from management-defined norms which are then acted on accordingly' (1992b: 107). Second, any 'positive divergencies' have been appropriated by management to constitute 'improved' work practices, thus depriving workers of the benefits of fiddles (1992a: 285). Finally, worker resistance within this surveillance regime is 'difficult to imagine' (1993: 146).

This heightened control perspective has been challenged by Thompson and Ackroyd (1995), who contend that, within a capitalist mode of production, work-place relations cannot be adequately portrayed and theorized without the recognition of worker action in pursuit of their particular interests. They argue that, despite managerial innovations to extend surveillance over the shop-floor, employees will continue to devise ways of gaining some control over their own working time, and that worker resistance 'is there if workplace researchers have the time and inclination to look for it' (1995: 629). Where researchers have looked for resistance, evidence from Britain and North America suggests that management in

Japanese manufacturing transplants have not resolved the 'problem' of shop-floor control and that workers have proved neither tractable nor quiescent (Elger and Smith 1998; Fucini and Fucini 1990; Graham 1995; Palmer 1996; Rinehart *et al.* 1997).

This paper presents data illustrating the capacity of workers, in a Japanese manufacturing transplant, to engage in resistance. Using the classification of fiddles, the paper details and categorizes the strategies that workers devise to counter a regime of surveillance. This case study also builds on current research in two key areas. First, it identifies the conditions that facilitate fiddles; this is an important issue, because the form and extent of worker action is contingent upon an interplay of factors both external and internal to the organization (Lupton 1963). Second, it explores the relationship between fiddles and management benefits; adopting this line of enquiry recognizes the varying degree of managerial complicity in and tolerance of fiddles and the potentially diverse nature of managerial gains arising from fiddles (Edwards 1988).

### **3. Research method and research site**

The material for this paper was gathered during an eight-week period working as a shop-floor operator at Telco (a pseudonym), a British-based subsidiary of a Japanese manufacturing company.<sup>2</sup> During this time a range of operator-grade tasks were undertaken on three different product lines. The placement was negotiated through a British member of Telco's board, and both management and workmates were aware that this experience constituted a research project. A daily diary was kept to record experiences, observations and conversations.

The choice of participant observation as a research method was guided by a number of factors. There is recognition of the need for ethnographic research to investigate the nature of the labour process in Japanese manufacturing transplants (Allen 1994; Delbridge 1995). More significantly, perhaps, the nature of the research issue under investigation — fiddles — requires a research methodology that looks below the surface of formal organizations (Thompson and Ackroyd 1995) and views workers in their 'natural environment' (Blumer 1969). Participant observation allows the researcher to experience work routines at first hand, to see people at work, and to discuss their actions and motives with them. This juxtaposition of personal experience, observation and interaction allows the researcher to provide a detailed and reflexive (Hammersley and Atkinson 1995) account of the social world of the shop-floor.

The case-study company, Telco, is a first-tier supplier to motor vehicle manufacturers in Britain and the European Union. Its sole British base was established in 1987, since when the work-force has expanded from 170 to 400. Production at Telco is organized on seven production lines which are a composite of both cellular and linear design. Each line is managed by a team

leader and a chargehand, with the team leader reporting directly to the production manager. A line is dedicated to producing for a specific motor manufacturer or manufacturers with a range of product modifications both within and across specific vehicle models. Batch size is small, varying between 50 and 250 units, with each line producing between 900 and 1200 units daily. The general pattern of production consists of the following stages: sub-assembly work-stations; a flow system where the complete units are assembled; testing stations to check the functional efficiency of the unit; and lastly, final inspection and packing. Operator tasks are routine, short-cycle assembly duties.

On the factory floor, the official policy is that there should be no buffer stocks between work-stations. During his frequent visits to the production areas, the Japanese managing director was keen to see what he termed 'one-to-one' production. Incoming stock is currently sourced 40 per cent from Japan and 60 per cent from Britain, with British suppliers making daily deliveries. There is no inspection of incoming supplies, and they are moved on to the line as required. Finished units are dispatched daily, either direct to customers' lines or to holding warehouses.

There is a range of mechanisms to try to ensure that workers follow prescribed operating procedures. On the line above each work-station is a work standard, a detailed instruction sheet for each product model giving step-by-step instructions on how to perform that particular operation, with highlighted warnings of any potential quality pitfalls. A separate quality control department patrols the lines, checking that operators have displayed the correct work standard for the model being assembled. At the penultimate station on each line, the completed units undergo a full functional electronic test which instantly identifies any faulty work. The unit then moves to 'final inspection' where it is checked visually for cosmetic defects such as scratches and burrs which operators upstream have missed. Quality control also undertakes 'independent' checks of a sample of finished units. At the end of each day, the number of faults for each work-station is tallied and these are announced at the next morning's team assembly. In addition, these figures, noting individual and team errors, are recorded on a white-board at the head of each line, along with the previous day's target and actual output figures. If the daily output and quality figures are deemed unsatisfactory, this can result in individual or team censure from the supervisor or production manager.

The surveillance procedures also extend beyond daily accountability through the operation of a traceability system, a procedure whereby workers checking the functional or cosmetic quality of the product mark it to signify that it is of an appropriate standard. Traceability allows errors to be tracked back to particular operators at any point during the operating life of the unit. This surveillance function of traceability is explained clearly to the operators in their first-day induction by the personnel department.

As a 'new starter', I underwent the standard induction process. On the first day, this included a presentation from a member of the personnel

department, a factory tour with my trainer and being kitted out with my company workware; the second and third days were mainly spent with the trainer, getting used to the hand-tools and the parts from which the units were constructed; it was then on to the line.

4. On the line at Telco

The traceability system, the daily tallying and public display of faults, the checks during and at the end of the production process and the ‘independent’ gaze of quality control all serve as constant reminders to operators of Telco’s ability to reprimand errant performers. However, despite these controls, workers at Telco developed a range of fiddles. These can be analysed along two dimensions. First, they can be categorized according to whether they were pursued by individual action or by employees acting collectively. Collective action denotes that the beneficiary of the fiddle is dependent upon the active complicity of another operator. Second, they can be classified according to one of two purposes: evading surveillance or making time. Evading surveillance involved workers in action that was essentially defensive, the aim being to avoid detection and blame for any sub-standard work. Making time represented action to gain pockets of space away from the drudgery and physical demands that were a consequence of the routine, continuous and fast-paced nature of work at Telco. A categorization of fiddles based on this two-dimensional analysis is provided in Figure 1.

FIGURE 1  
Dimensions of Worker Fiddles

	<i>Evading surveillance</i>	<i>Making time</i>
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<i>Collective</i>	‘Doctoring’ quality control sample Passing work back up the line for rectification Not recording all rejects	Circumventing operating procedures
<i>Individual</i>	Hiding reject work Allocating faults to incoming stock	Ignoring ‘cleaning-up’ time Circumventing operating procedures Hiding buffer stocks Leaving the line

This section now describes the fiddles listed in each of the diagram’s four cells.

*Evading Surveillance: Collective Action*

An example of collective action to evade surveillance arose during my first day on the line when I was packing completed units for Sarah, who was responsible for ‘final inspection’. The ‘final inspector’ has a key role in

product quality, of ensuring that the units are visually of an acceptably high standard and have no minor scratches, blemishes, etc., defects that should have been identified earlier in the production process. As the units began coming down the line, Sarah explained that the first four units at the start of production, or of a new batch, were to be packed and put in a special box for quality control. Quality control would collect and inspect these, and if any were found to be defective could order the whole batch to be re-examined. As I started to pack the units, Sarah instructed me to put some of the units in the quality control box but to allocate others for normal dispatch. It was not until 12 units had come down the line that we finally had four for quality control. When I asked what was wrong with the eight consigned direct to the customer, Sarah replied, 'they're fucking shit'. I later learned that what Sarah meant was that they had some minor cosmetic defect which might not have escaped the 'eagle-eyed' quality controller but which were not likely to be spotted by Telco's customer or the final consumer.

In her position on 'final inspection', Sarah broke with formal operating procedures in other ways to help her team-mates evade surveillance. If any faults were found at the 'final inspection' station, these were meant to be booked on a daily 'rejects sheet' and the units then passed to the chargehand for rectification. This 'rejects sheet', indicating the number and type of 'end-of-line' defects, was collected by the team leader, who would then record them for management. However, Sarah would send defective units back down the line wherever possible, so that the operator concerned could rectify the problem. This meant that not all faults were recorded; reject units that had been sent back up the line to be corrected were not usually entered on the sheet. These 'fiddles' were common practice across all the three lines on which I worked, and functioned with the express intention of protecting members of the team. As Dave, a final inspector on another line, told me: 'you don't write everything down — you don't want to get people into trouble'.

However, this clandestine support was not always offered to all operators. Take, for example, the case of Peter, an operator on Sarah's line. Peter was generally considered by his workmates to be a 'skiver', taking unnecessary days off and producing slipshod work. If Sarah spotted a rectifiable 'end-of-line' defect that emanated from Peter's work-station, she would sometimes 'book' it rather than send it back, arguing that this was what his general attitude and carelessness deserved.

A further feature of note concerning the collective circumvention of surveillance procedures is the complicity of the chargehand and team leader (henceforth referred to jointly as supervisors) in this process. Take the instance of the 'doctoring' of the quality control sample by the 'end-of-line' inspector. I asked Sarah about the possibility of being reprimanded by the supervisor for manipulating the official operating procedure. Her response was that this would not be a problem, as not only were the supervisors well aware of this practice, but operators were often instructed by supervisors to 'pass' marginal units with cosmetic defects. Similarly, the practice of making

operators responsible for their own rework was sanctioned by supervisors, with one supervisor telling me: 'if you make them correct their mistakes they don't make as many'. This practice also meant that supervisors, who were responsible for rectification work, were relieved of this task.

Interestingly, supervisors' willingness to pass units with visual cosmetic defects led to conflicts between themselves and the workers, as on occasions an operator would be instructed to let through work which he or she felt was sub-standard. In these cases, to protect him- or herself from any future comeback should the unit be rejected by quality control or by the customer, the operator would insist that the supervisor sign the unit, thus indicating that responsibility for passing it lay with the supervisor. When faced with this demand for a signature, the supervisor would often reconsider the initial judgement and consign the unit for rectification.

### *Evading Surveillance: Individual Action*

Operators also developed individual methods of evading detection of their mistakes. Two examples from the sub-assembly areas illustrate this. Sub-assembly usually involves placing a number of components on a jig and then operating the machine to clamp the components into a complete sub-assembly. Although not a difficult task, the pace of the line demanded that the work be carried out with dexterity and speed, an operation at which I was not always successful. If the components were wrongly positioned on the jig, the sub-assembly would emerge as unusable and some of the components would have to be declared as scrap. On one line Richard, my neighbouring operator, saw me going to record one component as scrap after I had mislocated a component on the jig. He advised me not to declare it as scrap, as this would mean a fault recorded against myself, but to mark it as a defective incoming part; in that way the supplier would be held responsible and not me. It was, he said, a trick he used whenever he thought he could get away with it. An additional covert way of avoiding having to record faulty work against myself was explained by Anne, an operator on a different line. She told me to 'put any mistakes you make in your pocket, not tell anyone about it and take them home with you'. This apparently was a method that she pursued, particularly in the early days when she was learning the job.

### *Making Time: Collective Action*

Operators used collective fiddles to gain some measure of control over their immediate work environment. An example of this collective action is illustrated by a description of the way the checking and final inspection operations were organized on one line. The area was staffed by Kate, Lorraine and Paula, with myself making up the fourth member of the group for a three-week period. Our task was to perform a series of checks on the finished units as they came to the end of the line. First, they would be put on a machine for a specified time which simulated hot conditions, to ensure that



they responded appropriately. Then they went to the 'lumo' (illumination) booth, where a complete electronic functional test was performed. Finally, they went to inspection and packing. The women had worked together on this section for several years, and familiarity with the operations also meant that they had found a number of shortcuts which they exploited. For example, with the heating process, rather than leave the units on the machines for the specified length of time demanded by the work standard, when the unit had indicated that it had responded appropriately to the temperature, it was removed and replaced with another, irrespective of whether the full time cycle had been completed.

The ability of this work-group to manipulate standard operating procedures allowed them to collude to gain some control over the pace of work. The use of the 'lumo' booth provides an example of this collusion. The 'lumo' booth is completely enclosed with a full-length black curtain, thus preventing anyone from seeing in. Only one operator was supposed to work in the 'lumo' booth, but it provided an ideal meeting place for the workers in this group to chat, knowing that even if the work became backed up they could clear the backlog quickly by shortcutting official operating procedures. The 'lumo' booth also provided a refuge for workers from other workstations and lines to have a chat and take a pause if they managed to make time during their operations. In addition, with company rules forbidding eating on the shop-floor, the 'lumo' offered a haven for storing and consuming food. For example, Paula, one of the three regulars who worked the 'end-of-line' section, had difficulty in getting up in the morning and consequently did not have time for breakfast without being late for work; her solution was to bring her breakfast (two slices of toast and a drink), daily on to the shop-floor in her bag, and spend time in the 'lumo' eating it. Her work was either covered by her colleagues or backed up to be cleared later.

### *Making Time: Individual Action*

Workers also developed individual ways of making time. My task on one line was to undertake three tests on the product, a procedure I followed religiously until my predecessor at the station told me I had no need to bother with the third test, as this was replicated further down the line. When I asked about the potential consequences of doing this, he assured me that 'there shouldn't be any problems; it was Mark [the supervisor] who told me to miss the third test out'.

The collusion of supervisors also helped operators make time through the building up of buffer stocks. Officially, the establishing of buffer stocks was forbidden as the management was keen to develop one-to-one production. However, supervisors would encourage operators to accumulate small parcels of stock as an insurance against machine breakdown or poor-quality supplies. Once having accumulated 'reserve' stock, operators were able to use this to cover periods of absence from their work-station.

On other occasions, worker strategies to make time brought them into conflict with supervisors. Take, for example, the contest that occurred around the margins of work time, over the issue of toilet breaks. Toilet breaks, which acted often as a rest and a break from monotony rather than a physical need, officially had to be sanctioned by the supervisor. However, rather than seek permission, operators would simply leave the line, merely informing their fellow-workers. Occasionally, the supervisor would try to control this absence from the line, an action that could be firmly rebutted by the operator. For example, one lunchtime Anne described, to a group of fellow operators, an altercation with a chargehand. 'I was going to the loo for a break and I could see Darren [the chargehand] looking at me. He shouted to me "where are you off to", so I turned round to him and said "I'm going to change my tampon — have you got a problem with that?" He went bright red — he won't ask me that again in a hurry! What I told him wasn't true, but it's taught him a lesson.'

A contest also developed between workers and senior management over 'cleaning-up' time. Officially, the last five minutes of the shift was to be devoted to general housekeeping, but this was widely ignored, with operators using the time to chat or find reasons to go and visit their workmates who happened to be stationed nearer the exits. At one team meeting, a memo from the MD was circulated rebuking workers for their misuse of 'cleaning-up' time. The memo stated that, in the absence of any genuine cleaning requirements, production operations were to continue up to the final bell. That evening the MD 'patrolled' the floor during 'cleaning-up' time and the operators all found various aspects of housekeeping to occupy themselves. However, when, over time, the MD's patrols became less frequent, the operators returned to their previous practice and the use of 'cleaning-up' time drifted into its original pattern of relaxed chatting.

## 5. Explaining fiddles

The ability of operators to pursue fiddles can be explained by four factors: buyer–supplier relations, temperamental technology, the manipulation of standard operating procedures, and accountability of supervisors.

### *Buyer–Supplier Relations*

A key factor explaining fiddles is Telco's position in the supply chain. Motor vehicle manufacturers have been able to exert considerable market power over their first-tier suppliers (Turnbull *et al.* 1993). Telco's customers were all large motor vehicle producers, who were able to dictate terms over quality and, crucially, timing of delivery. By contrast, Telco was not able to exercise the same level of control over its own incoming parts. In particular, it had problems with cosmetic defects with some of the incoming stock, which the firm was finding difficult to resolve. This presented a dilemma: the

fluctuating quality of incoming parts was not compatible with both consistent high quality and high-volume production.

This quality–quantity tension at Telco, as in other Japanese manufacturing transplants (B. Taylor *et al.* 1994), became the responsibility of the supervisors to resolve, on a day-to-day basis. They managed this by compromising over cosmetic aspects of quality, such as minor blemishes or scratches, to ensure that production schedules were fulfilled. Supervisors continually made judgements concerning the quality levels that particular manufacturers would accept, based on the customer-specific knowledge which they had built up over time.

For operators, the tendency of supervisors to pass non-perfect units was a source of legitimization and defence for their own pursuit of fiddles. It involved legitimization because the flexible attitude of supervisors to quality was used by operators, such as the ‘end-of-line’ inspectors, to justify passing units with slight visible defects. It represented defence, because if operators were reprimanded for passing what supervisors saw as sub-standard units, the operators were quick to respond that they, the supervisors, often did the same.

The variable-quality supplies also accounted for the ability of operators to engage in one other fiddle: the booking of their own mistakes down to faulty incoming parts. This tactic is more likely to be an option where incoming stock has a reputation of being of unreliable quality, allowing operator mistakes to be recorded as yet another supplier error.

It is instructive to compare Telco’s customer–supplier relationships with those of Nippon CTV, a British-based Japanese electronics manufacturing company (Delbridge 1995, 1998). Nippon was relatively successful in insulating its internal operations from problems with its supplier relationships, and it enjoyed a comparatively protected and secure product market as supplier to its own distribution division. This position allowed management to plan and control the production process with greater certainty, thus insulating the labour process from disruption; consequently, while fiddles were not eliminated from the shop-floor, their operation was circumscribed. At Telco, by comparison, the failure to guarantee the quality of supplies and the stringent delivery demands of a competitive external market created tensions and contradictions on the shop-floor which provided the work-force with the scope to engage in fiddles.

### *Technology*

A further explanation of the circumvention of quality procedures is offered by the temperamental nature of the technology in use. Most lines depended on multi-functional high-technology machinery to perform standard operations. The reliability of this machinery was variable, and on some lines caused significant problems. One operator, Ray, whose machine broke down with monotonous regularity, created a series of posters at home which he pinned above his machine. The first said ‘Out of order’; the second, ‘Still

out of order' and the final one, 'For sale: modern Japanese machine; could be repaired or used for spare parts'.

These technical problems presented supervisors with another difficulty in achieving output targets, as the capacity to sustain continuous production could not be guaranteed. In order to minimize the impact of breakdowns, supervisors conspired with workers in fiddles. The illicit hoarding of buffer-stocks provided a form of insurance, as these could be used as a short-term measure to keep production underway. In addition, the acceptance of units with slight cosmetic defects took production closer to fulfilling a daily target which was always under threat from machine breakdown.

### *Standard Operating Procedures*

Several examples have been given to demonstrate the capacity of workers to manipulate standard operating procedures. Job timings for each workstation are based on figures supplied by the parent company in Japan, and presuppose that operators follow the work standard to the letter. In practice, operators managed to 'short-cut' these work standards, enabling them to perform their tasks more quickly and so to make time.

Supervisors also played a central role in the manipulation of standard operating procedures. In some cases this involved directly instructing workers to deviate from written work standards. More generally, the detailed knowledge held by supervisors of the minutiae of operating procedures would suggest that the shortcuts took place with, at least, their tacit approval. As this circumvention of procedures eased the attainment of production targets, it seems reasonable to assume that it represented a conjunction of interests of supervisors and workers.

### *The Accountability of Supervisors*

Monitoring and surveillance systems can be used to control and evaluate the performance of supervisors, in addition to that of operators (Delbridge 1998). As discussed above, the compliance of supervisors in fiddles can be linked to the 'responsibility' they were allocated for ensuring that targets were achieved. Additionally, the supervisors were held accountable for other measures of line performance, such as the defect rates. One supervisor told me that 'if you [the supervisor] have too many rejects on your line, they [the management] turn round and blame you. They say it's your fault, you're not training the operators properly.' Under these pressures, supervisors are much less likely to insist that errors, such as those found by the 'end-of-line' inspectors, are officially recorded.

## **6. Managerial benefits, resistance and compliance**

### *Fiddles and Managerial Goals*

In the context of variable-quality supplies and temperamental technology, fiddles worked in the interests of management as well as the work-force; it was only through the circumvention of operating procedures that daily productivity targets could be met. Although output was achieved at the cost of compromises in standards concerning cosmetic quality, this did not present a significant problem for management given that supervisors were able to use their accumulated knowledge of the standards of different customers to assess what would be acceptable.

This issue of managerial gain raises the question of the extent of management involvement in fiddles: were they merely unwitting recipients of the advantages accruing from worker action, or was there some degree of complicity? Although the shop-floor focus of the research makes a conclusive answer difficult, there is evidence to suggest that fiddles occurred with at least the knowledge and tacit approval of some managers. The British production manager at Telco had 'risen through the ranks' from supervisor to his present post. Given that supervisors played a key role in many of the fiddles, it seems unlikely that they were unaware of the practices. In addition, operators were more stringent in applying quality standards when Japanese managers were 'patrolling' the shop-floor than was the case with British managers. The difference in behaviour was based on a common perception among operators that British managers would turn a 'blind-eye' to fiddles, while their Japanese counterparts insisted on official procedures being observed. This perception is supported by the personal involvement of the Japanese managing director in the direct, if periodic, clamp-downs of fiddles such as the hoarding of buffer-stocks and the worker 'misuse' of cleaning-up time. Tentatively, these data suggest that managerial compliance in fiddles can be linked to the country of origin, with fiddles being more likely to be overlooked by British than by Japanese staff.

A further question arising from the issue of managerial gain is whether fiddles that worked mostly in the interest of management can be labelled as a form of resistance. The answer must be that they can, because, as Jermier *et al.* argue, resistance includes worker action, which, 'while not a direct threat to capitalism, can change working practices in significant ways and possibly expand the space through which labour affects the conditions of its own reproduction' (Jermier *et al.* 1994: 5).

Operators were able to ameliorate these conditions as the fiddles allowed them to retain some capacity to determine both how intensively they worked and the extent of their accountability. The case for categorizing fiddles as resistance is further sustained by considering the meaning that workers attached to their actions. Both Anne's 'put-down' of the supervisor over toilet breaks and Mark's comments on the complicity of the 'end-of-line'

inspector in supporting their colleagues, vocalized a deliberate flouting of workplace rules in pursuit of operators' interests.

In addition to benefiting from the operation of fiddles, management also gained from the ways in which fiddles were circumscribed by operators. The non-support of Peter because of his slipshod work, and the insistence that supervisors initial 'dubious' units, illustrate the boundaries imposed on fiddles by the work-force, boundaries that worked to eliminate most of the fiddles that operated against managerial goals.

This 'self-policing' by operators has clear resonances with Sewell and Wilkinson's analysis of managerial control at Kay Electronic. However, while Sewell and Wilkinson emphasize the primacy of control and the relative demise of resistance, at Telco resistance and compliance co-exist. Moreover, the selective application of fiddles provides an illustration of the manner in which control and resistance can be linked in one action, with resistance simultaneously including aspects of compliance (Collinson 1994).

## **7. Conclusion**

This case study has examined the nature of the labour process in a Japanese manufacturing transplant. The data support Thompson and Ackroyd's (1995) view that worker resistance can be a feature of the 'new' workplace. There is also evidence to confirm Sewell and Wilkinson's analysis, as workers' actions were shaped, at least in part, by the mechanisms of surveillance and control. But, while these mechanisms did effect some measure of worker compliance, operators at Telco devised and sustained an array of fiddles allowing them to make time and evade surveillance.

A range of conditions has been identified which helped facilitate worker fiddles, i.e. buyer-supplier relations, temperamental technology, and the ability of operators to manipulate standard operating procedures. This raises two salient points concerning resistance. First, the opportunity for fiddles at the point of production is at least partially explained by circumstances external to the factory floor, illustrating the importance of analysing workplace relations within the full circuit of capital accumulation (Kelly 1985). Second, while technology might extend the potential for managerial control, its impact can be mediated by operational difficulties and by human agency (Wilkinson 1982), cautioning against an over-deterministic account of technical innovation.

The role of the supervisor has also been established as playing a central influence in translating the impacts of uncertainty into opportunities for workers to circumvent official operating procedures. Supervisors supported and encouraged operators in many of their unofficial actions, in order to meet production targets. It is interesting to note that, while supervisors are portrayed as occupying a key role in Japanese manufacturing transplants (Wickens 1987), there have, with occasional exceptions (Delbridge and Lowe 1997), been few data focusing specifically on the day-to-day interac-

tion of supervisors and operators in transplants. This is an area which would benefit from future research.

The relationship between fiddles and managerial interests has been explored. It has been suggested that the selective application of fiddles acted to sustain managerial interests by facilitating the achievement of output targets while performing some measure of quality control. Moreover, given the uncertainties that characterized production at Telco, arguably, management actually relied on fiddles to ensure output, which in turn offers an explanation of the tolerance of fiddles by some managers.

The ability of workers to devise and sustain fiddles at Telco stands in contrast to the 'emasculatation' of operators at Sewell and Wilkinson's Kay Electronic, raising the question of how these differences might be explained. It may be that the control systems at Kay were more comprehensive, thus denying operators any capacity to develop fiddles. But, while acknowledging that surveillance procedures will vary between organizations, what emerges at Telco is the enduring ability of workers to manipulate working practices. Alternatively, Kay may have been able to reduce uncertainty on the shop-floor to a greater degree than Telco. There is some evidence to support this, as Sewell and Wilkinson state that Kay 'go to great lengths to ensure that distributors' orders are both accurate and firm' (Sewell and Wilkinson 1993: 142); but, set against this, Kay has faced problems with 'JIT supply because of continuing local supplier incompetence' (1993: 142). Lastly, it could be that the fiddles were present at Kay, but that the research methodology used was not sensitive to this form of worker resistance.

The question now becomes, is Telco merely a 'rogue' example, or is this form of resistance likely to be a more widespread feature of workplace relations in Japanese transplants? While the ethnographic nature of the material makes a direct answer impossible, it has provided an explanation of the key conditions in which resistance was able to germinate. Significantly, wider evidence suggests that at least two of these conditions — unreliable supplies and temperamental technology — are not confined to Telco. A number of Japanese transplants have experienced difficulty in finding local suppliers who can meet quality and delivery targets (Dunning 1986; Oliver and Wilkinson 1992), and also have faced disruptions caused by unreliable manufacturing technology (Grant 1996). The conditions that allowed worker resistance at Telco are therefore manifest in other Japanese manufacturing transplants, so it seems arguable that similar forms of fiddles will also be present.

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## Notes

1. The name 'K-Electric' is used in one case study, but the detail provided would indicate that it is the same organization as Kay Electronic.
2. This was undertaken by the second-named author.

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