

Doing Cleaning Work 'Scientifically': The Reorganization of Work in the Contract Building Cleaning Industry

Luís L.M. Aguiar

Okanagan University College, Canada

How is office cleaning work organized? Is cleaning work undergoing changes similar to those in workplaces in other industries? This article answers these questions by investigating the building cleaning workplace in Toronto, Canada. It argues that the organization of work has shifted from a 'traditional zone cleaning' approach to one of 'gang cleaning'. The latter stresses the tool of 'scientific management' in the reorganization of the building cleaning labour process. The implication of this change for cleaners is discussed.

Keywords: building cleaners, gang cleaning, reorganization of work, scientific management, zone cleaning

Introduction

This article investigates the changes taking place in the organization of work in the building cleaning industry in Toronto.¹ It argues that a shift is taking place from the performance of multiple cleaning tasks under 'zone cleaning' to 'mono task' assignments for 'cleaning specialists' in a reorganized labour process labelled 'gang cleaning'. This entails, as well, a change from a semi-autonomous workplace whereby cleaners previously arranged the sequence of their cleaning tasks and largely determined their pace of work, to a transformed workplace whereby the penetration of Taylorism establishes a regimented system of work organization and managerial practice. This is evident in the reassignment of cleaners to specific tasks and in the role computer technology plays in the reorganization of work, the disciplining of the workforce and in the setting of the

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pace of work. The organization of work in building cleaning has been simplified and reduced to its most basic components. As a result, cleaners no longer perform a range of tasks in zone cleaning under limited supervision. Instead, they perform one task only in a spatially mobile assembly line corresponding to work specifications designed and defined by a computer program under tight managerial control. Moreover, a new occupational designation of cleaners has been introduced referring to them as 'specialists' in their assigned task. In many contemporary cleaning workplaces in Toronto, therefore, we now have 'restroom specialists', 'dusting specialists', 'mopping specialists', etc. These changes are being implemented as the industry redefines itself (Aguiar, 1999: Ch. 5).

The reorganization of work entails work intensification for cleaners. This is a reality for workers whose employers seek to do more work with fewer employees (Russell, 1999). In addition, a gender division of labour based on biological definitions of 'physical strength' remains entrenched across the industry. Also, there has been an introduction of new technical processes for the carrying out of work. This is most evident in the introduction of 'back-pack' vacuum cleaners in the workplace. It is difficult, however, to assert that these changes represent a coherent and uniform managerial strategy to reorganizing work across the industry. This is a result of the industry's composition and capital investment (see later).

This article is an exploratory study of the emerging trend in the reorganization of work as found in the larger companies (over 100 workers) in the industry. Whatever the case, work intensification has increased, a diminishing number of tasks per cleaner have been assigned, a rigidity in the gender division of labour prevails and an entrenchment of assumptions about gender roles in the cleaning workplace remains.

Debating Changes in the Workplace

The recurring macro crises of the capitalist system have also brought about experimental change at the micro level (Beck, 1992; Harvey, 1989; Hobsbawm, 1994; Lash and Urry, 1987; Mandel, 1978; McBride and Shields, 1997; Palmer, 1992; Teeple, 1995). In particular, the workplace has become a laboratory for experimentation in the most efficient and effective ways of organizing production and

the quickest return on investment (see Krahn and Lowe, 1998: 199–258). A focus on the reorganization of work, and the development, adoption and/or implementation of new production methods to increase productivity and ensure a greater commodity quality across economic sectors, has taken priority. However, change has created chaos for workers in that established forms of doing work are now said to be inefficient and outmoded. In addition, much of this experimentation has led to layoffs, redundancies and health and safety issues, thereby increasing insecurity and stress for workers and their families (Duffy, 1997; Fudge, 1997; Messing et al., 1992; Pupo, 1997).

At the level of the workplace, writers debate how best to understand and capture the changes taking place in the contemporary workplace. Some argue that Taylorism is no longer useful for capital to maintain since it is rigid, cumbersome and incapable of responding quickly to the changing market demands faced by capitalists. Instead, they argue, in its place is a post-Fordist labour process organized by work-teams, *kaizen*, lean production and flexibility in employment relations. Many of the writers espousing this view are eager to push labour to participate with management in the further implementation of change in the workplace. Rankin (1990), for example, argues that post-Fordism means industrial democracy and craftsworker-like identity for employees in the workplace. Hence, the restructuring of the labour process offers mainly 'gains' for workers (Piore and Sabel, 1984; Womack et al., 1991). This is so because production is organized along the lines of a system of networks of workplaces coordinated to correspond with the needs of each workplace and empowering workers to contribute to the conception of the work process (Rankin, 1990; Piore and Sabel, 1984; Womack et al., 1991).

Others critique this literature for its generalizing tendency, and point out that, outside the US case,² it has questionable validity as a model of change at the workplace level (Brown, 1997a, 1997b). They object to lean production's method of getting workers to supervise themselves in 'stress by management' approaches; they state that teamwork is a hoax and its primary function is to undermine spaces workers have informally created to resist the pace of work; that it means increased surveillance for workers through sophisticated new technology; that it ignores gender in the restructuring of the labour process; that flexibility accounts are much

more unevenly evident in workplaces than has been argued; that it undermines the role of unions; and that post-Fordism in the workplace is really more about managerial rhetoric than the empowering of workers (Elger, 1991; Jenson, 1989; Parker and Slaughter, 1988; Pollert, 1991, 1988; Robertson et al., 1992; Tomaney, 1990; Walby, 1989).

Most of the writers just cited imply a linear progression in the organization of work from a highly exploitative and paternalistic labour process, to an oppressive Fordism to a liberating post-Fordist schema of work performance of multi-skilling work and workers' self-actualization. Even those who are critical of the post-Fordist literature tend to be so because they do not accept the extent of post-Fordism throughout industry, rather than the linearity of this scheme. In this literature, the uneven development of capitalist industry is frequently overlooked. Often, these writers do not consider that if indeed the organization of work is changing, it might not necessarily move forwards with the same pace and timing they have identified elsewhere. In other words, there is a tendency to homogenize the dominance of Taylorism in industry and a failure to recognize its versatility in the organization of production. The reluctance to recognize the heterogeneity of contemporary work organization seems due to an overreliance on data gathered from the auto industry (MacInnes, 1987).

The Building Cleaning Industry in Toronto

According to the most recent and reliable figures, there are 10,802 janitorial firms in Canada.³ The large majority are small establishments in employment size and annual revenue totals. For example, in 1996, 404 (or 60 percent) of a total of 677 janitorial companies in Metropolitan Toronto employed between one and four workers. Nationally, in 1993, only 35 establishments (0.3 percent of all firms) had revenues over Can\$5 million (Aguiar, 1999, 2000). Neal and Neale (1987) suggest that the total number of building cleaners in Metropolitan Toronto is approximately 20,000, though exact figures are difficult to get because of the clandestine operations of many firms in the industry (Leonard, 1998). The industry seems to be undergoing a shift in the ethnic composition of the workforce. An older Portuguese workforce is being slowly substituted by 'Third'-World workers composed of Central and South Americans, Eastern

Europeans and some Africans. While the Portuguese were never the only ethnic minority working in the cleaning industry (Reitz, 1990), beginning in the mid-1960s, Portuguese women were increasingly recruited by the industry because of their work ethic, standard of 'cleanliness', 'cheap' and abundant labour supply, as well as their 'docility' exacerbated by their unfamiliarity with the English language and workers' rights (Anderson, 1974; Iler, 1982; interview with Joe Jordan, 9 February 1996; interview with Gina Gignac of the Canadian Union of Public Employees [CUPE], 27 March 1997; Neal and Neale, 1987; Reitz, 1990; Spiers, 1975). The newer workforce reflects the changing nature of labour migration into Canada, the exhaustion of the Portuguese as a key source of labour power for cleaning businesses and the racialization and ethnicization practices of the labour market (Li, 1996; Stasiulis, 1997). A similar process of ethnic minority workforce substitution is evident in Boston (Lado, 1994) and Los Angeles (Mines and Avina, 1992; Waldinger et al., 1998).

A key political issue for building cleaners remains their lack of 'successor rights' recognition and the labour market insecurity resulting there from. Successor rights permit contract workers to retain their jobs in the event that their contracting employer loses a building contract to another company. If this recognition were extended to building cleaners, their employment contract would carry over to the new contractor. For a period of two years, cleaners enjoyed job security via the New Democratic Party's (NDP) introduction of Bill 40 as part of the party's reforms to the Ontario industrial relations system.⁴ In 1996, however, the NDP was defeated by the Conservative Party, who quickly dismantled the Labour Relations Act with Bill 7. This bill not only complicated union organizing, but repealed the right to organize for agricultural workers and domestics and eliminated the anti-scab clause in the previous legislation. In addition, it abolished successor rights for cleaners and other contract workers. The end result for cleaners is job insecurity and increased precariousness in the labour market (Aguiar, 2000). This is likely to persist since cleaners are employed by contractors and not by building owners themselves. The latter feel no obligation to ensure the continuity of employment of those people already cleaning their buildings regardless of which contractor wins the tendering process. The contracting out feature of capitalist restructuring has exacerbated the vulnerability of many workers, including cleaners (Leach, 1993; Sears, 1999).

Zone Cleaning: The Traditional Organization of Work

Traditionally, the labour process in the cleaning industry has entailed the performance of a range of 'deskilled' tasks within area-specific boundaries. Each cleaner was assigned to a specific floor and expected to perform all the cleaning tasks in every office on that same floor. The tasks were defined by management who also expected them to be complete by the end of the shift. It was left to the cleaner to arrange the sequence in which she chose to perform the tasks. Thus, some preferred to dust first, while others vacuumed and then dusted. In some cases, as described later, cleaners could bring unpaid help on to their floor to assist them with cleaning.

A gender division of work in the workplace separated 'man's work' from 'woman's work'. Immigrant women cleaners dust and wash desks, tables and counters, sweep, mop, vacuum and remove rubbish in offices and washrooms in buildings across the city. The industry has defined these tasks as 'light' work activities and assigned them to women. While they clean, they must respect the layout of the office and the placement of its content even though in many cases it complicates the performance of their work. In spite of this assignment as performers of 'light' duties, immigrant women have refused to be marginalized in the cleaning workplace. They created space to perform their tasks in the sequence they found most convenient, and to a large extent defended their own definition of cleanliness in the workplace (Aguilar, 1999). Today, they continue to nurture a discourse of cleaners' interest, most recently represented in their unwillingness to succumb to managerial redefinition of cleanliness and work intensification without a struggle (Aguilar, 1999). Immigrant men, on the other hand, mop lobbies, remove garbage, 'strip', 'wax' and 'buff' floors. This is defined as 'heavy' work. Male cleaners operate machines to carry out most of these tasks. Their job is also more 'visible' than women's work since they clean lobbies and corridors. In this labour process, cleaners have had a degree of autonomy in the performance of their work. A Portuguese woman cleaner, who has been performing this work for almost 30 years, describes what her work entailed:

I arrived in Canada in 1967 and a week later I was working as a cleaner. Only when I had my youngest child did I stay at home. In 1973, after two years of raising my young son, and buying my house, I returned to cleaning but with a different

company. I cleaned floors. We cleaned only half a floor then. There were two women on each floor, each cleaning half a floor. This was washrooms, all the carpets; we cleaned everything spotless. But work kept changing and we had more and more of it to do. (Helena Arruda, 8 December 1991)

Traditionally, women cleaners used rudimentary tools to perform their tasks. Here is how a cleaner describes it:

Soap, liquids, chemicals . . . for desks it was only a wet rag that was used. For the washroom was Ajax and the proper chemicals for cleaning. At that time, we also mopped the washrooms with a big and heavy mop. But this changed with the new collective agreement and men began to do the mopping. The floor surfaces no longer was our [women's] responsibility. Today, everything that requires sweeping and mopping is not women's work responsibility. (Maria Rosário, 19 August 1995)

The means of labour are quite unsophisticated, and technologically simple:

I need a vacuum, cloth towels for the desks, paper towels for the windows and Windex. A special kind of soap to remove scratches and other things from the desks, the bowl cleaners which is an acidic chemical to be used in the washrooms once or twice a week. We also use gloves; some companies provide them, some don't. (Vera, 11 November 1994)

The Gender Division of Labour

As many feminists have pointed out, women tend to perform, in the paid workplace, the same types of tasks they have performed at home without financial reward (Phillips and Phillips, 1993). Work in the building cleaning industry is no different in this regard: women perform cleaning tasks which they also carry out at home. Moreover, theoretical developments have indicated the centrality of connecting domestic unpaid work and paid work in the economy (Armstrong and Armstrong, 1990). This connection is important since it relates women's experience as holistic and validates unpaid work. In addition, their responsibilities for the unpaid work in the home explains, up to a point, their labour market location and the compromises they make and how it affects their workplace experience.⁵ More recently, it has been more forcefully argued that there are not two distinct spheres, the domestic (private) and the waged workplace (the public). Instead, the boundaries between the two

are quite elastic and issues are much more intertwined and overlapping of spheres in women's lives (Pupo, 1997). This is even more clear for women cleaners since they repeat cleaning work three times in their working days. They do it in their own homes, for cash in the homes of professional women and men in Toronto, and then in the office towers and shopping malls in the city centre. While the cleaning tasks are bound by each of these labour processes, women's domestic responsibilities transcend all three. Consider how a cleaner explains this:

With respect to the work schedule in the cleaning industry, there is more of a possibility to spend more time with one's kids. While working in cleaning, the kids can stay at home and don't have to be given to anybody for baby-sitting, and the mother can actually spend more time communicating with the kids. This is one of the few benefits attached to cleaning work. This is due to the hours of work. When the kids arrive from school you are still at home, and when you return from work they may be asleep. The next morning you're home again and able to prepare them for school. This is the only benefit attached to working as a cleaner and it is due to the hours of work. There are cleaners that work all night, but usually one has the day to sleep and rest, and spend time with the children. (Julia Guedes, 17 November 1994)

It suggests that domestic work is continuous and that boundaries between paid work, in whatever category, and unpaid work are really fluid and flexible for women workers. It also gives us a glimpse of the factors women take into account when joining the cleaning workforce.

In the building cleaning industry, biological determinism (Crompton, 1997; Armstrong and Armstrong, 1990) is harnessed to organize, explain and legitimate the division of cleaning tasks between women and men. Two terms define the gender division of labour: 'heavy' and 'light' duty. Men perform the 'heavy' work and women the 'light' work. As already pointed out, this translates to women performing: dusting, vacuuming, sweeping, removing waste from waste baskets, cleaning washrooms and sinks. Men, on the other hand, polish, 'buff' with a 'buffing machine', 'strip' the floors, mop, remove garbage bags and place them in garbage dumps.⁶ One cleaner said:

Men's work is different. Women clean tables, pick up garbage from the small garbage containers and put it in large bags. Men take the large garbage bags and put them in garbage bins. They clean the floors (waxing, etc.) women don't do this because these are heavy machines. Women do the vacuuming. . . . (Sandra, 12 January 1996)

Often, 'heavy' duty means directing the movement of a machine along the floor, though 'stripping' floors is more than controlling the direction of a machine and can be arduous work. Nevertheless, this division and explanation has entered the 'common sense' consciousness of women and men, who willingly volunteer that indeed a gender division of labour based on physical strength and automation is appropriate for cleaning work (Helena Arruda, 14 May 1994). Not everybody is in agreement with this position, however. A woman cleaner says:

It is easier for a man to do women's work than for a woman to do a man's work in cleaning. Many of the women do not know how to operate the machines necessary to do the work . . . [Couldn't they learn it?] But if they are taught, of course they will learn. I have and it was a male cleaner who taught me. I asked to be taught because I told them [management] that I wanted to do man's work. When the male cleaner is absent, I do his work. It is a job that women can do, but most do not want to learn how to do it. Because it is also heavy work: the mop is heavy and washing floors with a mop is hard work. I have done it twice because he was absent. There are two washrooms on each of the 15 floors, and they are large. Wherever there is uncovered floors, stairs at both ends of the building, also have to be mopped. Whereas we work six-hour shifts, men do eight hours. Our shift is from 5:30 to 11:30, and the men's shift ends at 1:30 a.m. (Edite Pires, 10 August 1994)

The contestation of the gender division of labour was never expressed as an issue during the interviews. This was also the case with interviews with trade union officials. There is an accommodation to the gender division of labour in the industry. It is unchallenged and consented to by people directly involved in cleaners' issues and concerns. Were it to be posed, women's wages and health would improve. Messing et al. (1992: 367) write on the gender division of labour in cleaning trains,

. . . il faut interroger la règle voulant que seules les femmes soient habilitées à nettoyer les toilettes, ce qui rend impossible la rotation du personnel pour limiter le caractère répétitif de la tâche.⁷

Gender differences do not rest only on the length of workshift and tasks assigned but, as importantly, on wages. Women continue to earn well over a dollar less than their male counterparts in the cleaning workplace. For example, the collective agreement between Canadian Union of Public Employees (CUPE) Local 2295 and Empire Maintenance Industries Inc. makes clear the wage difference between 'light duty workers' (women) and 'heavy duty workers' (men).

TABLE 1
Classification and Wages

Classification	Contract Year 1991	Contract Year 1992	Contract Year 1993
Light duty workers	Can\$8.22	Can\$8.58	Can\$8.97
Heavy duty workers	Can\$9.46	Can\$9.89	Can\$10.33

Note: Collective agreement between Empire Maintenance Inc. and CUPE, Local 2295, 'Appendix "A"', p. 29.

Interestingly, the wage difference between women and men shown in Table 1 actually increased by 12 cents between 1991 and 1993. Most of the cleaners represented by Local 2295 are (Portuguese) women. The Local's executive at the time the contract cited was negotiated was almost entirely composed of women. Nonetheless, the wage difference between genders actually increased! Data from interviews confirmed that wage differences by gender are pervasive within the industry. A woman cleaner remarked:

He [male cleaner] earns \$9 per hour, which is the minimum for that kind of job compared with other companies. His salary has increased by a \$1 an hour, while women's wages in the same company have not increased at all. (Ana Esteves, 13 June 1994)

We can conclude from this that male cleaners work longer shifts, operate the machinery in the cleaning process, earn more wages per hour than women and are less likely to experience job changes. These features seem to suggest that the industry views men as the breadwinners in their families. This is another reason for keeping the gender division of labour intact.

Autonomy in Cleaning Work

Investigations of cleaners' work processes reveal that there is an aspect of what many writers have labelled 'autonomy' in performing job assignments (Chatigny et al., 1994; Hood, 1988; Messing et al., 1992; Neal, 1987; White, 1990). This permits the worker to organize the tasks according to the sequence she or he wishes. Jane Hood (1988: 101) writes that compared to factory workers, nurses' aides, food service workers and most secretaries, cleaners 'have both

more freedom from supervision and more control over their work pace and work methods'. Cleaners 'can vary the order in which they clean rooms or do daily tasks, and establish their own schedules for waxing floors' (Hood, 1988: 101). Neal (1987: 50) is even more categorical when she claims that this 'autonomy' is practically the only control cleaners have in their workplace. But this autonomy in choosing task sequences is not always set beforehand. Often it is determined by the cleaner when she or he arrives on site and assesses the situation. Messing et al. (1992: 362) write:

Les opérations effectuées varient énormément, dépendant des décisions prises par l'opératrice en fonction des conditions ponctuelles qu'elle rencontre. Les actions font l'objet de choix effectués à la lumière d'observations des conditions dans la toilette, et de connaissances concernant le temps disponible.⁸

Furthermore, 'autonomy' can be restricted by the type of supervision in the workplace. A cleaner stated:

I do have a certain autonomy in the way I approach the tasks that I have to perform in each office. . . . When you are in the office alone, you work in your own way [*faz a sua maneira*]. Generally speaking, I always start by removing the garbage. Once that is done, I will then dust the desks, chairs and all other general dusting in the office. I will always leave the vacuuming for last. The boss will tell you what you have to clean, but then it is up to you to do it any way you choose. Unless, of course, you have a demanding boss who wants you to perform the tasks in the steps that she/he thinks it should be done. (Helena Arruda, 16 May 1994)

The literature shows workers resisting supervisors who insist that they follow closely the steps set for them in the instruction of production processes. Workers are too clever to succumb to such imposition and find ways of reorganizing the production steps to shorten production time on their terms. Shapiro-Pearl (1979: 296–7) describes how Portuguese jewellery workers changed job procedures to fit their own 'best way' of doing the work, and in the process reduce the work intensity imposed by management.

The idea that cleaners 'create' autonomy in performing their work, and that it is contingent upon the conditions encountered at the workplace, as well as the kind of supervision, has led some writers to suggest that working as a cleaner entails skill, though not so recognizable by employers. Chatigny et al. (1994: 9) make this case with respect to hospital cleaners:

Faire partie du PES [Personnel d'entretien sanitaire] requiert donc, autonomie, discrétion, sens de l'observation, capacité d'être en contact avec la maladie et le public, capacité d'ajustement, de simultanéité des tâches et de planification.⁹

This discussion of autonomy overlooks the literature that shows how workers adopt and devise their own ways of working, whether it be on the factory floor or in the office (Hodson, 1995; Macdonald and Sirianni, 1996a, 1996b). The point is that the autonomy may not be due to the job definition itself, but more likely to the imagination and creativity of workers as they adapt to their workplaces and the demands that are made of them. In this context, the workers make room for autonomy in performing their work (Burawoy, 1979; Hamper, 1986; Shapiro-Pearl, 1979). This worker-created feature of the labour process is being increasingly compromised by the reorganization of work in manufacturing and service industries (Armstrong, 1994; Delbridge et al., 1992; Rinehart et al., 1997).

The Reorganization of Work

The tendency in the reorganization of work literature is to harmonize the changes that are taking place across industries so that one gets the impression that not only are all industries doing it, but that change is uniform within each industry. This is not the case in the building cleaning industry. There are a series of changes taking place that complicate the investigation, and pre-empt any attempt to speak confidently on the uniformity of what is going on in the industry. The interview data, therefore, suggest strongly that a number of changes are happening. I detail the nature of the changes and the variety with which industry people describe the scenario.

The Intensification of Work

It is difficult to say when work organization began to change in building cleaning. But cleaning in the hospital sector began to change in the 1970s (White, 1990). White (1990) writes that before hospitals jumped on to the bandwagon of austerity, cleaning was organized in a way that pace of work was reasonable and that cleaners had their 'own ward' to clean. One of the benefits associated with having a ward was that cleaners could talk to patients and staff

whom they saw regularly. The conversations were appreciated by patients, since they had some therapeutic benefit. It was also pleasant for the cleaner since it provided the work with an added purpose – interaction with patients.

There seem to be competing cleaning strategies in the industry. This has emerged as a result, in part, of an economic climate that has been hard on building owners mainly through a fluctuating tenancy rate in buildings occupancy (Aguiar, 2000). Because of this, building owners and managers have been much more demanding of clients, including building cleaning contractors. The Building Owners and Managers Association (BOMA) (1990: ii) says this much:

In these times of extremely competitive office markets and heroic efforts to retain tenants and to attract new ones, building management is asking how cleaning services can be provided most efficiently and effectively. Office worker satisfaction and productivity counts, as does the bottom line cost of assuring exemplary building performance.

These types of demands, along with the competition within the industry itself, have led to a number of strategies to reorganize and intensify work.

Delbridge et al. (1992) argue that the just-in-time/total quality management (JIT/TQM) managerial strategy to reorganize work in fact intensifies work for employees. The principle underpinning the JIT/TQM system is to further entrench management control and to eliminate workers' 'slack' during work-time. The reorganization of work in cleaning is very clear on this: cleaners are working harder, faster and more strenuously during consistently reducing work-time. At the same time, they continue to endure low wages, or in some cases, stagnant wages over the last three or four years of work. Whereas previously they cleaned one office floor during a seven-hour shift, now, the data show, they are increasingly cleaning one-and-a-half or two floors in six- or even five-hour workshifts (Helena Arruda, 16 May 1994). Moreover, cleaners maintain that this increase in the pace of work has been implemented without any noticeable drop in the tenancy rate of the office building which they clean. They say that the floors they work on continue to be fully occupied by tenants. What has indeed changed is the added burden of doing the work in a reduced shift with stagnant wages, and an added half to one full floor for cleaning. One cleaner

begins this discussion by contrasting briefly the new and old intensity of work:

When we started at that building, we had four hours per floor (this was almost four years ago). Slowly they [management] began to cut hours saying that they couldn't pay the eight hours, and that the contracts were made with the same amount of money and they began to cut one hour per floor. (Helena Arruda, 8 December 1991)

According to this cleaner, management was quick to point out their advantage in the current labour market. This was both management's way of intensifying work and pre-empting workers' resistance to change.

They [management] would say to us: 'if you don't accept it, there are lots of people who will, take or leave it'. We were aware that they had people – Spanish and Brazilian – [who] used to offer themselves for \$5 per hour. (Helena Arruda, 8 December 1991)

As might be expected in this world of labour intensification and insecurity, wage increases did not keep pace with the increasing workload. Working conditions remained poor and deteriorated:

I think they [wages] have remained the same because we started at that building three, almost four years ago, earning \$6.85 an hour and today we are still at this same wage rate. Just last week I spoke with the boss to see if a wage increase was coming, but they continue with the same wage. In addition, the workload continues to rise: do a little more of this and a little more of that, the work has to be finished and they have to do it. . . . From my point of view, the working conditions have not improved at all . . . I have spoken with some cleaners in other companies and they have told me the same thing [i.e. low wages and increasing work]. (Rosamária, 2 February 1995)

Work intensification has been part and parcel of the industry's new economic context. But many workers are defiant of it, even to the point of striking. A Portuguese woman cleaner reported that in Place Ville-Marie in Montreal, the cleaning staff was reduced from 350 to 150 workers! At the same time, the employer demanded that workers take on an additional 800 sq ft as part of the areas they have to clean. In addition, between 125 and 140 garbage bins had to be cleaned. One woman remarked: 'Pour faire mon travail, je suis obligée de courir constamment pendant 8 heures' (Talbot, 1989: 3).¹⁰

The intensification of work is evident in another set of interviews. Until very recently, many women workers brought a family member

(usually their spouse) to work to help them complete the job earlier, especially with the increase in the workload and the reduction in time allotted for cleaning. This was important for the women interviewed since it meant that the work was completed earlier, thus enabling them to get home early enough to spend some time with their families. By having their husbands on the same floor with them, their fears were allayed about working alone in a large, empty office floor (Neal, 1987). A woman cleaner said:

There were 31 floors in the building which had to be cleaned. We have two floors for each woman, and there was also the case that some women did an additional half of a floor here and half there. At the beginning they would let us bring help to do our work, and when we were finished, we could leave. But they prohibited this so that not even husbands could come and help their wives clean, and we also had to remain in the building for the five hours [could not leave earlier]. They argued that the work was not done as well [with outside help], and that they would hurry to finish so they could leave. But, in my view, the work was done as well or better because the person who has help improves her own work because she knows that she is being helped elsewhere. Isn't that so? Whereas when she is alone she does not do so well. But they later said that we couldn't take anybody, not husbands, nobody really, and that we had to remain at work for the full five hours. (Ana Esteves, 13 June 1994)

Feelings of anxiety and apprehension about working alone in an office complex are not unreasonable given recent incidents of violence perpetrated against office building cleaners in Toronto (Aguiar, 1999; *Toronto Star*, 1996: A32). The cleaning contractor too benefited from this unpaid work arrangement in that health and safety provisions could be delayed since he or she assumed that the male partner could offer 'protection' on the floor. This arrangement has been eliminated without a corresponding creation of safety features on the floors, and with the increased work rate demanded from workers. The surveillance technology in office buildings is not only omnipresent but also invasive. It is there to protect private property and to act as a deterrent to criminal activity. The safety of cleaners is only a marginal concern, and both managers and cleaners agree that video cameras, walkie-talkies, security strip cards, security guards and surprise visits by supervisors and security guards are not for the benefit of cleaners' safety in the workplace (Aguiar, 1999; *Toronto Star*, 1997: J6). Cleaners are very much aware of what lies behind these changes to their work and working conditions:

Interviewer: Were you given an explanation regarding the increase in work and the reduction of hours of work?

Cleaner: None at all. Well, the only explanation they gave us was that the owners of the building had also cut the money to them [contractors] to clean the building. And, as a result, they had to cut hours to the workers while all the same work had to be done. But I don't think this is so. Even a supervisor is never fully explained to what's going on. I think the real reason is for them to make more money; they are taking money away from the workers and put in their pockets of the company because since I have been working as a cleaner \$6.75 or \$6.85 has remained the hourly wage. When I was cleaning offices and a bookstore I was making \$7 per hour. But the women who replaced me got only \$6.75 an hour. Why was that? The owners of the building hadn't reduced the money to the contractor. Rather, the latter decided on his own to pay her less than what he was paying me. (Helena Arruda, 16 May 1994)

Safety in the cleaning workplace is a serious issue and companies do not pay enough attention to it. The provincial government continues to cut back on its responsibilities of ensuring that jobs are performed without incident. In 1996, under the guise of its 'Common Sense Revolution', the Conservative government in Ontario dismantled the Workplace Health and Safety Agency of Ontario (Knight, 1996: 8).

'Back-Pack' Vacuums

Technology also intensifies work through the speeding up of the cleaning process and the intensity involved in completing a task rapidly and in shorter time. There are several accounts of companies attempting to introduce new technology into the cleaning workplace. The most common is the turn to new vacuum cleaners for the offices and carpeted corridors in buildings. Currently, there are three types of vacuum cleaners most often used in the industry. First, there is the traditional 'upright' vacuum cleaner. These are still the most common in the industry, especially since small-size employers do very little experimentation with new technologies. According to one employer, the new uprights have been a 'God-send' to his staff. They automatically adjust to the height of the surface being cleaned; cut power when the dust bag is full, or large pieces of paper or cloth get stuck in the beater bar; and will not

start if the 'micron filter' is out of place.¹¹ Nevertheless, many companies are moving away from this type of vacuum cleaner towards more sophisticated developments. The second type of vacuum is the 'hip vac'. It attaches to the hip of the cleaner instead of being installed on her back. This positioning eliminates complaints by workers about the awkwardness, weight and heat concerns associated with the back-pack vacuum.¹²

According to the industry's Internet 'chat-forum', the 'back-pack' vacuum is by far the most popular of the new vacuums and the advantages of its use far outweigh its disadvantages. These new vacuums are attached to the back of the cleaner in a knapsack-like fashion with a hose down the back and around the arm of the cleaner and aimed at the floor. A manufacturer of this type of vacuum promotes it this way: 'They make competing in a tough workplace possible' (*Cleaning Management Magazine*, 1991: 48). And then again: 'With Pro-Team backpacks you vacuum faster, better and in more places' (*Cleaning Management Magazine*, 1992: 6). The Pro-Team Quarter Vac has been singled out as the best of the back-pack vacuums on the market. Among its advantages are: its lighter weight (than competitors); expanded soiled waste capacity; increased power capacity, which means that it is better at pulling dirt out of carpets; lower decibel levels than competitors; more suction power; better reach into tighter spaces; and the collection bag is bigger than its competitors.¹³ The disadvantages are: it is too heavy; the hummer is not well padded; and it is only useful in rooms with a lot of furniture. One cleaning employer remarked that he 'would not want to wear one for more than about an hour because my shoulders get tired and crampy'.¹⁴ The cleaners who are experimenting with these new vacuums, and interviewed for this study, pointed out the speed with which it cleans. In some cases, they said that what would normally take four hours to vacuum, now takes only two. But they complained that it was difficult to work with since the motor attached to it was noisy and this bothered their ears. In addition, the power of the motor exuded heat on cleaners' backs making it sweaty and generally unpleasant for the operators to carry on working. The cleaners also found it demeaning. They expressed a concern about the way they looked with the vacuums on their backs. Some cleaners said they did not want to be viewed as 'freaks' or 'aliens' with those things harnessed on their backs. One cleaner remarked:

I scared myself with that thing on my back. Every time I passed a mirror or something, I startled myself. Imagine what it would do for some office worker if I walked in with that thing on my back. They would think I was an alien from Mars or some other place like that. It looked ridiculous and I wasn't going to carry it around. (Julia Guedes, 17 November 1994)

In one workplace, the union representative pointed out that resistance to back-packs had to do with cleaners' integrity and the culture of the workplace (interview with Gina Gignac from CUPE, 27 March 1997). They successfully resisted the implementation of this technology because they did not want to be perceived as 'freaks' walking in and out of offices. The union representative gives some credit to the cleaning contractor who willingly ceded to the union's request for a third party assessment of the health and safety issue of this new technology. The company accepted the evaluation of the Workers' Health and Safety Centre in Toronto, and so the vacuums remain available for use only on a voluntary basis (interview with Gina Gignac, 27 March 1997). Such an option, however, is not available to cleaners in non-union settings. Even in unionized workplaces this can be a problem. During an interview with Fernando Reis from the United Food and Commercial Workers' Union (UFCW), he pointed out that several of the cleaning workplaces he organized had switched to 'back-pack' vacuums and there was little he could do about it (interview, 28 September 1995).

The New Building Cleaning Workplace – The Penetration of Taylorism

In the building cleaning industry, the new workplace is also promoted and organized through TQM in order to keep up with clients' changing tastes and needs. It also emphasizes quality and enhances communication with clients as well as building long-term relationships with them. For Berry (1993: 221), TQM features in the cleaning industry include: leadership, customer focus, process evaluation, measurement, knowledge and variation and responsible decision-making. Unlike most other definitions and uses of TQM, this one does not acknowledge some role for the workers operating under this arrangement. 'Quality cleaning will become a larger part of our culture when professionals in the cleaning industry demonstrate

the benefits of their services' (Berry, 1993: 221). For example, the Skydome in Toronto has established a 'university campus' on site where 'almost everyone from the president to the cleaner gets regular instructions on how to improve their performance' (*Toronto Star*, 1994: A1). Some of the 'subjects' include QSP (quality, service, people) and history – 'Skydome Traditions'. People closer to the building cleaning industry make an even bigger claim on the validity of TQM for the industry:

TQM is very promising for the professional cleaning industry. It emphasizes, for example, that the cleaning job produces something of great value – health protection – and must be done properly from the start. When we look at a clean, healthy building and the cleaning businesses that keep them that way, we find that corners have not been cut at the expense of quality. Both business and customers have learned the importance of quality and are probably well on their way to being full TQM business. (Berry, 1993: 203)

And as elsewhere, proponents of TQM are eager to present it as something new and revolutionary with potential for both employers and their clients.

TQM is revolutionary in that it gets away from the traditional idea that the primary objective of business is to make a profit. Instead it says that the primary purpose of business is to stay in business. (Berry, 1993: 204)

What is purported to be new in the workplace, such as worker contribution to a better functioning of work organization, is overstated since workers have always made this type of contribution. To ignore this contribution is to underestimate the agency of workers in the Fordist workplace. The discussion that follows interrogates the literature on the post-Fordist workplace. As I hope will be clear, scientific management is central to the new organization of cleaning work. The use of 'science' to ascertain the number of tasks and 'time-and-motion' studies to assign the 'appropriate' number of workers to a particular activity and the time which they have to complete the task, is essentially scientific management. Moreover, the focus on fragmenting the set of tasks that compose cleaning work in order to, in this case, assign one task per worker seems to have been one of the key functions scientific management delivered to management in attempting to deskill workers at the turn of the century. Therefore, working in the contemporary context, as is also evident in building cleaning, remains 'grounded

in conventional Fordist principles of assembly line and standardized work' (Rinehart, 1996: 180). Furthermore, 'lean production constitutes an evolution of Fordism, not its transcendence. The label neo-Fordist, then, is more appropriate than post-Fordist' (Rinehart, 1996: 180). But this assessment of 'lean production' is insufficient since it suggests a linearity to the development of the organization of the labour process, albeit within the same pattern of work organization. In addition, it is commonly expressed upon investigations of 'core' industries and workplaces in sectors like automobile and steel. Our case study is different because it is about a 'peripheral' industry employing an immigrant workforce. I suggest that the change is moving from a deskilled yet varied cleaning process to an organization of work functioning on the assignment of one task per employee. The latter repeatedly performs the same singular task during the entire workshift for a week, and in many cases, for an entire month. In such workplaces, a recategorization of cleaners' occupations has been introduced. In this Taylorist cleaning labour process, cleaners are defined as 'specialists' in the activities they individually perform. This word game offers little to cleaners in terms of delivering interesting work or increased wage rates. On the contrary, they experience an increased work pace, deteriorating working conditions and increased risk of repetitive strain injuries in particular (interview with Gina Gignac, 27 March 1997).

The idea of changing work methods is not simply about tinkering with one or another of the tasks in the labour process. Rather, it is about intensifying cleaners' frequency of performance of one specified task. It is a redesigned organization in that cleaners intensify their work in the performance of an even more limited number of tasks. This is linked to a rethinking of the entire process of cleaning work altogether. An industry consultant makes this clear.

What we're seeing in the 80 percent [of the industry] is a lot more . . . as opposed to seeing, if you will 'team cleaning', is a lot more understanding of what the people are doing, what needs to be done: do they need to litter pick as opposed to vacuuming, do they need to do it once a week or five times a week? I think there is a lot more, and it is due to the TQM process: what are people doing? How long does it take them to do it? Can we do it more efficiently? There are a lot more people out there trying to understand what cleaners are doing. As a result of that understanding change is made in the way things are done, and maybe that is part of this whole TQM process. The business is very competitive; it is probably one of the most competitive businesses around, and 90 percent is labour and if you can reduce labour, that's the way you reduce cost. (Bill Garland, 6 May 1996)

*Systèmes GES*¹⁵

The Systèmes GES group has developed a computer program package offering clients 'counselling and technical assistance so as to facilitate their work or improve their efficiency'. The software package comprises six modules: Inventory, Technical Specifications, Workload Analysis, Organization of Work, Stock Management and Quality Management. According to the system's promoters, SMMS (Specialized Maintenance Management System) 'is more than just a computerized data processing tool; it actually *thinks* for you' (my emphasis). The essence of this system is captured in the following: 'in fact, our software interprets and analyses all your building maintenance needs, and plans each of the daily operations and activities necessary to satisfy those needs'. It does this through an inventory of the floor space:

The inventory module requires detailed information relating to surfaces and areas to be maintained. . . . The purpose of this [*sic*] data is to describe the nature of the environment to be maintained. It includes: standardized codes, descriptions, information relating to floor, wall, and ceiling areas as finishers, as well as inventory items and quantities.

It is followed by an assessment of the 'technical specifications' to be performed:

[The technical specifications module is] used to describe the tasks or activities required to maintain the areas identified in the inventory module. It allows the user to specify the nature and frequency of the various maintenance tasks involved for each area. The specifications sheet is created by means of a standard prototype which is then automatically applied to the individual area to be maintained.

Once these two preliminary investigations have been conducted, the organization of work should correspond to the program's 'reading' of the floor space:

[The organization of work is dealt with through the 'work path definition' and the 'routine task plan'] the assignment of work areas to each member of personnel, taking into account his or her employment category. The individual work programme has two elements: routine task plan: are those which are distributed over a five (5) day week and recur on a weekly basis. A work plan for these tasks is automatically produced by the system, and may be modified with respect to scheduling and work area distribution by means of an update function.

This program, therefore, records the size of the area for cleaning and then calculates for the client a series of data, including how many cleaners ought to be assigned to a specific area and how long they ought to take in performing each task. Rather than eliminate scientific management from work organization via TQM, the industry has integrated some of its fundamental components into a computer software program capable of determining the most efficient way of organizing work for management. This is indeed troublesome: the way in which cleaners are observed, studied, experimented with, all in order to produce more and more with less and less of their own discretion on the job. This is scientific management in pure form and without human relations school's input to boot!

From 'Multi-Tasking' to 'Mono-Tasking'

One of the timely studies undertaken recently was carried out by a group of academics and union researchers at an auto plant in Ingersoll, Ontario. This plant is known as CAMI, and the workers are members of the Canadian Autoworkers' Union (CAW). A key finding in this longitudinal study was that the reorganization of work in the auto plant did not mean enhancement of workers' abilities in the performance of greater functions in the assembly of a car. Rather, the researchers demonstrated that job rotation meant more task performance by the workers without the accompanying skill enhancement that management had promised when this change was initiated. The workers became well versed in multi-tasking (performing a number of tasks), but each task was as deskilled as it had been prior to the change in the organization of work (Rinehart et al., 1994, 1997; Robertson et al., 1992). This empirical study made an important contribution to the literature on work since it questioned the hegemonic view that the new workplace entailed new skills and empowerment for workers vis-a-vis their work process and their managers and employers. Clearly, this was not the case in the study of CAMI.

In the building cleaning industry, until recently, cleaners performed a variety of tasks; the organization of work meant 'multi-tasking' in zone cleaning for workers. In addition, cleaners had some control over the pace of work and took pride in performing

their tasks. As we have seen in the discussion of the traditional organization of work, this included, for women, sweeping, dusting, vacuuming, wiping, disposing of garbage and so forth. The current reorganization of work has imposed on workers a 'mono-task' function which they repeat for the entire workshift during the week. Increasingly, the organization of work in building cleaning entails the performance, for an entire week, of a single task like 'dusting', for example. In carrying out this single task, the cleaner must visit all offices in the building to get the job done. Whereas previously the cleaner performed multiple cleaning tasks on a 'fixed' floor, she or he now must traverse all floors performing one task only in each office on each floor. While performing this one task, each cleaner is part of a group of two or four cleaners each performing an individual task. In the industry this is most often called 'gang cleaning', or sometimes 'team cleaning'. One employer describes it thus:

Typically, a team of four cleaning specialists work separately but cooperatively, with each member's tasks outlined on a job card, following sequential work routes. The work is systematized and structured with specified times allotted for each task.¹⁶

Another says that unlike zone cleaning, the traditional mode of assigning cleaning space, gang cleaning is a 'staggered assembly line that allows each specialist to cooperatively "assemble" their component of the cleaning program in a prescribed sequence and manner' in a building.¹⁷ There is little in this that suggests worker empowerment or discretion in the new labour process. Supporters of gang cleaning argue that it reduces cleaning time and improves quality by refining cleaning work to its 'purist form' and then creating 'specialists' to perform each function.¹⁸ In this set-up, cleaners' discretion in the performance of their activities has been severely attacked and compromised as a result of increased planning and standardization, or working steps, imposed on them by management. Gang cleaning erodes workers' capacity to perform a variety of jobs by reducing the range of tasks they perform during their shift. Moreover, the compartmentalization of the labour process continues through group organization around repetition of a single task. Thus, cleaners travel between floors in the building, with each group member performing their own separate task in the overall accumulation of tasks in order to make a clean building.

While carrying out the research for this project, I learned that at the Toronto Dominion Centre (TD Centre) in central Toronto, Empire Building Maintenance was trying to implement gang cleaning. The workers resisted by arguing that performing one task only had health and safety risks that they did not want to take. These included repetitive strain injuries. Further, they believed that such reorganization would deteriorate 'cleanliness' in the workplace as no one would care any longer for 'their own floor' since 'ownership' of the floor had been taken from them by management in the reorganization of work. Interestingly, some tenants supported the 'ownership' argument saying that they were happy with the quality of cleaning and wanted stability on their floor (Aguiar, 1999). This could best be maintained by keeping the existing organization of work and the same workers on the floor. The CUPE Local 2295 representing the workers in the TD Centre used the limited language in their collective agreement under 'sick leave' to oppose management's reorganization of work. According to this contract clause, a cleaner had to be returned to their floor when they returned from sick leave so long as their absence did not exceed six months (interview with Gina Gignac, 27 March 1997). In this instance, CUPE cleaning members successfully resisted the reorganization of work. But workers' resistance to and protests against gang cleaning are not always evident, and in some cases this may be due to the fact that such workers are not unionized and cannot benefit from the union's experience and organization around issues such as this one (interview with Fernando Reis, 28 September 1995). One employer interviewed remarked that gang cleaning was not for him because:

I am aware that some companies are using 'gang cleaning'. But I do not support this form of reorganizing work because workers have their own nuances about how to clean and know what they can do and can't. They are also aware of how some office occupants like their office cleaned. (Corvin Building Maintenance, 16 August 1995)

Clearly, this employer objected to gang cleaning because it was not as efficient at getting the job done. It did not allow for the idiosyncrasies of specific offices, which only a cleaner familiar with the office would know. Needless to say, this was not a common response by contractors.¹⁹ This contractor's position relied on an implicit acknowledgement of the value of cleaners' definition of cleanliness as better than a computer-generated standard.

Conclusion

This article discusses 'how is cleaning work organized?' An investigation of the labour process in the industry was undertaken to answer it. The research revealed that something is indeed happening in the industry, and this is evident in the changes from the traditional organization of work (zone cleaning) based on the performance of multiple tasks under remote control, to a 'mono-task' performance regulated by computer programs designed to specify the space and time allotted to clean an office. For workers this means an increasing work pace and loss of discretion in the performance of their tasks. It also means increased vulnerability due to their 'uprooting' from their customary work assignments and floor location. Reduced to performing one task only, cleaners are more vulnerable to competition from the reserve army of labour since they can be easily replaced.

At a theoretical level, I question the usefulness of the post-Fordist argument in understanding the building cleaning labour process. Instead, I propose that scientific management is the new organizing rationale of the cleaning labour process. Taylorism has not been transcended in the new workplace, but instead has evolved with more sophistication to reorganize work in the contemporary building cleaning industry. It is in this context that I put forth the argument that we have now reached the era of scientific management in the organization of work. This is the best way to characterize the changes under way in the building cleaning labour process.

This article also points out cleaners' resistance to workplace change. Cleaners articulated a discourse of 'pride' and 'ownership' of cleaning tasks and areas. Lipsig-Mummé (1995) argues that organizing the new working class in the 21st century will involve a combination of discourses and tactics. Among them, she claims a discourse of 'professionalism' based on pride and skill is likely to have some success in reaching out to previously unorganized workers. My own ongoing research seeks to ascertain, among other things, the extent to which unions have grabbed a hold of these statements to articulate and energize new organizing campaigns in the industry (Aguiar, 1999).

Notes

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1. The research for this article is based on 96 interviews with cleaners, trade unionists, cleaning contractors, municipal politicians and community activists. Also, it relies on archival research and participation in a cleaning industry chat forum for documentation. This study was undertaken between 1994 and 1997 and focuses on the practices of the larger companies (over 100 employees) in the cleaning industry in Toronto. Four main unions represent cleaners in Toronto. They are the Canadian Union of Public Employees (CUPE), the Labourers' International Union of North America, the Service Employees International Union and the United Food and Commercial Workers' Union (UFCWU) (Aguiar, 2000). Collectively, they represent approximately 5000 cleaners in Toronto. This is about 25 percent of the workforce in the industry (Aguiar, 2000). Today, the political climate in Ontario is such that an all-out attack on organized labour and workers' rights has been initiated by the Conservative government of Ontario. Thus, if the present climate persists, cleaners in particular will suffer even more exploitation and insecurity in the workplace and the labour market (Aguiar, 2000; Schenk, 1997; Martinello, 1999). As a result, building cleaners' ability to resist management and state attacks are being even more compromised.

2. Increasingly, in the USA, data are being published contesting lean production's pervasiveness (Kauss, 1998).

3. In my research, I interviewed cleaners working in office buildings and shopping malls in downtown Toronto. For this article, I have focused on my Portuguese informants. Statistically speaking, I have used cleaners and 'janitors' interchangeably primarily because government sources do not distinguish between the two.

4. Among Bill 40's provisions were the banning of (non-management) strike-breakers; the extension of union certification rights for agricultural workers and domestics; automatic certification; and the extension of successor rights for contract workers.

5. See Crompton (1997) for a summary of theories purporting to explain 'women's work'.

6. The same type of division of labour exists in cleaning in hospitals. According to Jerry White (1990: 47) men mop, sweep, polish and dispose of garbage, and have less contact and socializing with patients than women. On the other hand, women dust, clean rooms and bathrooms and sterilize rooms after patients are discharged.

7. Translation: 'We have to question the view that only women are capable of cleaning washrooms. Otherwise, the rotation of the cleaning staff across tasks will not take place to limit the impact of the repetitive nature of the work on women.'

8. Translation: 'The number of tasks performed varies enormously depending on the decisions made by the cleaners in function of their observations on the floor. The tasks performed also take into account the time they have in which to perform their tasks.'

9. Translation: 'Building cleaning work requires: autonomy, discretion, sense of observation and ability to identify trouble spots, capacity to adjust, plan, and undertake numerous tasks at once.'

10. Translation: 'In order to complete my work, I must run constantly for eight hours.' For a discussion of the workings on 'the body' in the reorganization of work see Leslie and Butz (1998). For a more extensive and theoretical discussion of 'the body' in late capitalism see Lowe (1995).

11. Email by Louis, forum@listserv.facility-maintenance.com, 16 October 1997.

12. Email by Robert, forum@listserv.facility-maintenance.com, 23 October 1997.

13. Email by David, forum@listserv.facility-maintenance.com, 24 October 1997.

14. Email by Edward, forum@listserv.facility-maintenance.com, 23 October 1997.

15. Systèmes GES stands for Systèmes de gestion d'entretien spécialisée (System for the Management of Specialized Cleaning). The following quotes come from the company's description of their 'Maintenance Management System SMMS' software package.

16. Email by A. Rathey, forum@listserv.facility-maintenance.com, 7 November 1997.

17. Email by David, forum@listserv.facility-maintenance.com, 7 November 1997.

18. Email by David, forum@listserv.facility-maintenance.com, 17 November 1997.

19. Some employers dislike team cleaning for the following reasons: '[it] leaves a person pretty well used up'; in some cases the pairing of individuals within groups is difficult due to race and personality conflicts; and some workers work at a faster pace than other group members (J. Houchins, 17 November 1997, forum@listserv.facility-maintenance.com). The latter point falls within the 'management by stress' theme developed by Parker and Slaughter (1988).

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Luís L.M. Aguiar

is assistant professor in sociology at the Okanagan University College in Kelowna, British Columbia, Canada. He is currently researching the political organizing of building cleaners in Toronto and Vancouver. He is also studying the economic and ideological reinvention of the Okanagan Valley in British Columbia.