Preface

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Ten years ago, my colleague Donna Mergler and I were asked to be resources in a training session on "women's occupational health" for health care workers. We had each given sessions in occupational health before, although never on this topic. We usually began by asking all workers to describe their jobs and identify what they thought were their health risks. We would write the list of problems on a transparency, asking questions to stimulate participants to examine their work environment.

In the usual session involving 30 workers, this exercise would last about an hour. We would then explain the scientific bases for the various categories of health problems, using the workers' examples. Our presentation usually took a couple of hours, and then trainers from the unions would take over and explain the legal and regulatory context and how problems could be prevented.

This time, we ran into trouble. The session started at 9:30; when we broke for lunch, we had not finished going around the room. In fact, we had not gotten halfway. We were barely able to finish hearing all the workers had to say by the end of the day, and we never got to give our presentation at all. They talked about lifting heavy patients, working around toxic chemicals and radiation, and slipping on icy steps. Hospital janitors described exhaustion from cleaning their ever-expanding areas, home care workers told of efforts to turn disabled patients in slippery bathtubs, and radiology technicians told hair-

raising stories of exposure when X-ray machines were accidentally turned on by young interns. A good 90 percent of their grievances concerned stress. How could receptionists deal with patients who threw things at them when the doctor was late? What should cleaners say to the nurse who dropped a bag of urine and refused to clean it up?

And, above all, how could workers deal with time pressure? How could nurses' aides fit patient care into standards that provided a given number of seconds for feeding a patient who might be recalcitrant or sleepy? What should a night orderly do, alone with 300 elderly semi-autonomous residents, when three wake up at once? How could laboratory technicians cope with the threat of catching hepatitis and other diseases when handling hundreds of blood tubes every day? How could a nurse finish her reports in time to pick up her daughter at day care? Donna and I came out of the session shaken. It was as if we had opened a valve and stories were pouring through. Neither we nor the union trainers had foreseen the depth of the women's needs.

Ten years later, a member of a committee that determines grants in occupational health explained to me, "In occupational health, there are central problems and peripheral problems." Asked for examples of each type, he offered "construction workers falling off scaffolding" as central and "stress" as peripheral.

If women have so many occupational health problems, why do they not interest those responsible for research and intervention in occupational health? This book was written to answer that question.

Occupational health science and intervention have not often been about women. There is legislation on the length of the workday, but none for the combination of paid and unpaid work. There are standards for how much weight a stevedore can lift and how often, but none for how many shirts a woman can sew on a shift. There is a threshold limit value for exposure to asbestos for miners, but no limit to the number of insults a receptionist may hear per hour without a break. Scientists have not produced information on which to base this sort of standard. In fact, occupational health scientists have not perceived these problems as part of their field.

It must also be said that women's health activism has not, by and large, been about workers. Breast cancer activists do not worry about flight attendants' exposure to cosmic rays,[1] scientists who do research on osteoporosis do not ask whether women on their feet all day are more or less likely to suffer from it, feminists who question hormone replacement therapy for menopause do not seem to know

about the relation between chemical exposures and premature menopause.

This is not the fault of the activists: the scientists are just as ignorant. A scientist who was planning a large study of osteoporosis among women who worked at an electric company refused to include occupational factors because there was no previous evidence that they were relevant. When I pointed out to her that exercise was known to be a determinant of bone density, she replied that she would include recreational exercise but that her questionnaire items had been worked out and did not include any on physical activity on the job.

In this I book ask, *why has there been little or no fruitful dialogue between those interested in women's health and those interested in occupational health?*

This book has been influenced by a need to make other scientists aware of the effects of their indifference to women's suffering. Recently, my colleague Nicole Vézina testified at the hearing of a mail sorter. Nicole had studied the workplace and compared it to a vision of hell: extremely noisy and uncomfortable, with some workers handling about 12,000 kilograms of packages per day.[2] The flavor of employee–employer relations can be captured in the events surrounding the noise reduction program. The employer had been put on notice that the workplace noise was over the regulated 90 decibels, and consultants had suggested putting ball bearings on the conveyor belts to diminish it. The employer therefore installed just enough bearings to bring the noise level below 90 decibels and then stopped, leaving about half the conveyor belts without any noise reduction device.

The workers had a claim before the compensation board involving problems with the elbow joint caused by repetitive work.[3] Nicole analyzed the work and found that extremely repetitive movements put stress on the elbow joint. A professor from another university testified that the worker's injuries were not related to her work. Although he accepted Nicole's description of the movements, he quoted from the scientific literature purporting to show that repeated movements could not produce injury below a specific weight manipulated. He also described his own laboratory tests, which, he held, showed that this type of work was not dangerous.

When the worker lost her case, Nicole was extremely upset. She kept thinking about the arm and shoulder pain suffered by the mail sorters she had met. She could not understand why the other scientist seemed not to be bothered by the workers' suffering. Although she did

not agree with his interpretations of the scientific literature, she had to admit that no researcher had examined the exact situation in which the mail sorter found herself. No study had considered such a high number of repetitions or the awkward position that the worker maintained. Nicole asked other researchers in our group, CINBIOSE, to think about the case and explain why it had been lost. (CINBIOSE is an interdisciplinary research center. The abbreviation stands [in French] for the Center for the Study of Biological Interactions in Environmental Health [*Centre pour l'étude des interactions biologiques entre la santé et l'environnement*]. It is composed of 9 [women] professors from the biology, legal sciences, sociology, psychology, and kinesthesiology departments of the University of Québec and about 30 student and paid researchers from North and South America, mostly women.)

So this book was written to ask, *how do scientists decide whom and what to study in the occupational health field?*

This book is about scientists' perceptions and how they are molded by their position and their own working conditions. It is about women workers and the discounting and invalidation of their perceptions. It is about some ways that women workers and scientists can be brought together to make occupational health studies more accurate and effective in improving working conditions.

The book is also my attempt to resolve my own difficulties in understanding the interactions of biological and social factors. Pursuing a bachelor's degree in social relations, a combination of sociology, psychology, and anthropology, at an Ivy League university, I was uncomfortable with the theories being advanced there, especially since they seemed somewhat classist, racist, and sexist (I was taught that people remain poor because they have not learned to save for tomorrow, that blacks are poor because they have a matriarchal tradition, that women have penis envy because that is natural). Because I wanted evidence-based theories, I turned to the natural sciences, receiving my doctorate from McGill University in the field of genetics, one of the more deterministic sciences.

Armed with these quite disparate tools, I tried to understand where nature ends and nurture begins when dealing with socially relevant characteristics of diverse populations. Like other biologists before me and with their help (especially Ruth Hubbard, Richard Lewontin, and Anne Fausto-Sterling), I came to understand that it is not a good idea to start by thinking about people's characteristics. The question is not:

are those in the biological category "women" intrinsically weak, are "blacks" genetically musical, and so forth. It is essential to recognize from the outset that these supposed biological categories are really social definitions. If one black grandparent or great-grandparent is enough to make a person black, we are certainly not dealing with genetics when we compare blacks and whites. And the definition of people with the chromosomal abnormality Turner syndrome[4] as women because they do not have a penis (they don't have a uterus, ovaries, or breasts either, but that doesn't seem to count) leaves me wondering about the biological basis of our definitions of sex as well.[5]

I also realized, with help, that environment channels the performance and well-being of biologically divergent populations.[6] Door openings allow some to pass easily and cause others to bump their heads. But doors can be made big enough for all; the door size is a political decision. For a feminist, it was enabling and enriching to realize that politics determined the weight of flour sacks that preferentially excluded women from good jobs in a cake factory. The sacks weighed 40 kilograms, a weight that only able-bodied males could lift. They were not made to weigh 100 kilograms, because then no one could have lifted them. So why not have them weigh five or 10 kilograms, so that most people could lift them? Only because no one in a decision-making position needed them to be smaller than 40 kilograms.

This realization sent me back to school to study ergonomics at the Conservatoire national des arts et métiers in Paris. I had to learn how to analyze situations in order to suggest ways to make work environments less restrictive. Ghislaine Doniol, François Daniellou, and Catherine Teiger taught me that environments are almost totally plastic if the right questions are asked. When I returned to Québec after this training, I learned that finding the right solution was not enough. It was no use suggesting that cleaning would be organized more efficiently if men were no longer defined into "heavy" cleaning and women into "light" cleaning; someone important had to agree. The partnership program of the Québec Council of Social Research allowed CINBIOSE researchers to get together with some important people: the women's committees of the three major Québec unions. With them, we could hope to create a political context to improve the health of women workers. They helped us understand the grave consequences of treating sick workers as though they were malingerers and cheaters. In this book, class analysis of occupational health issues has not been explicitly developed, as other authors such as Dan

Berman, Steve Fox, and Asa Christina Laurell, have done. I leave the theoretical analysis of the relation of gender, class, and race in occupational health science to someone else.

In this book, I explain how we have applied the three fields of biology, ergonomics, and social relations to a single political challenge: making the field of occupational health more gender-sensitive. I begin with the question I am most often asked: why is this necessary? Why should women's occupational health be any different from men's? The first three chapters address this issue by describing male/female differences in jobs, health, and basic biology.

Chapters 4 to 6 concern science as a social institution. Why are scientists unresponsive to the needs of women workers? Is there some incompatibility there, or is it just that scientists are no more feminist than most people in our culture? This section explains how the scientific milieu works: who gets in, how scientific research projects originate, and how they turn into scientific knowledge.

Through case studies, Chapters 7 to 10 detail the scientific treatment of issues important to women workers: musculoskeletal disease, office work, emotional stress, and reproductive hazards. These chapters illustrate Ruth Colker's statement: "The prevailing pattern . . . is that women are treated with respect to their biology in ways that perpetuate their subordination in society."[7] Their differences from men can be emphasized or ignored by scientists, but the result of both procedures is the neglect of problems experienced by women workers.

In the final section I make some proposals for change. Chapter 11 presents ways to minimize the consequences of past approaches to occupational health for women workers. It suggests how women, their concerns, and their work can be included in labor standards, compensation programs for occupational accidents and illnesses, and workplace policies. The last chapter proposes alternative ways of doing research, some of which have already been developed around the world and in our research center, CINBIOSE, at the University of Québec at Montréal. I end with some suggestions on how to do reliable research that will provide women workers and policymakers with the information they need to improve women's workplaces.

Most of the examples in this book are taken from my experiences in Québec, where I have lived since 1965. But growing up in Springfield, Massachusetts, I saw nothing very different. One of my earliest memories is of being taken through a factory where women assembled radio parts during the late forties, a job CINBIOSE studied

in Québec in 1994. Women in both factories worked with rapid hand movements, bent over tiny components, but neither of the employers could see any reason for them to complain about their working conditions. U.S. readers may find some differences in the context for funding scientific research, but since we all publish in the same journals and compete with each other for the same jobs, these should be few. The Québec legal system has made some useful innovations, such as protective reassignment for pregnant workers and a healthier union context, but more and more we copy our labor standards from the United States. (I point out some differences within the North American context.)

One major difference should be noted here. In Québec, racial differences are dwarfed by the great ethno-linguistic division (French versus English). This is not to say that racism does not exist in Québec, but only that we have encountered few people of color since they are rare in the French-speaking workplaces we have studied. Much remains to be said about the way colonialism and ethnocentrism affect workers and the union movement in Québec.

I count more than 20 researchers at CINBIOSE who have contributed to the research results and the thinking presented in this book: Donna Mergler, Nicole Vézina, Suzanne Bélanger, Katherine Lippel, Louise Vandelac, Julie Courville, Céline Chatigny, France Tissot, Carole Brabant, Sylvie Champoux, Johanne Leduc, Sylvie Bédard, Sylvie de Grosbois, Susanne Deguire, Johane Prévost, Yves St-Jacques, Alain Lajoie, Evelin Escalona, Micheline Boucher, Lucie Dumais, Sophie Boutin, and Serge Daneault. Ana Maria Seifert, in addition to her full-time job as the heart and soul of CINBIOSE, has been my partner and collaborator in almost all the investigations.

This book is at the confluence of three fields studied by feminists, and I have been influenced by all three. For the study of women and science I am particularly indebted to Ruth Hubbard and Abby Lippman; for the study of women and health I am indebted to Patrizia Romito, Marie-Josèphe Saurel-Cubizolles, Maria De Koninck, and Francine Saillant; for the study of women and work I am indebted to Catherine Teiger, Danièle Kergoat, and Joan Stevenson. I learned about how to do science from Catherine, Marie-Josèphe, and Ted Bradley. And I am very grateful to our union partners Carole Gingras, Gisèle Bourret, Nicole Lepage, Danièle Hébert, and Ghyslaine Fleury and to countless workers who have shared their experiences with us. My conscience allows me to write this book in the first per-

son singular only because it would have taken too much time for us all to do it together (although it would have been fun) and my coworkers all have other important things to do.

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Unless otherwise noted, the quotations from union health and safety representatives are taken from my translation of the transcript of a meeting held on April 29, 1995, organized by the research team L'invisible qui fait mal.

Finally, I thank the people who read parts or all of the manuscript, even though I was too stubborn to follow all of their suggestions: Pierre Sormany, Katherine Lippel, Jeanne Stellman, Steve Stellman, Mary Baldwin, Leonor Cedillo, Åsa Kilbom, Susan Stock, Dorothy Wigmore, Angelo Soares, and Mario Richard. Lesley Doyal gave me a good suggestion for the last chapter. Daood Aidroos, Nathalie Gignac, Karine Escobar, and France Tissot were able research assistants. Michael Ames, Jane Barry, and Paula Rayman at Temple University Press were particularly helpful in putting a name to some of the flaws in the manuscript. And Pierre, Daood, Mikail, and of course Edgar and Pauline provided emotional support.

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Women Workers and Their Working Conditions

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Since occupational health is intimately linked to the jobs people do, we need to know what work women do before considering its effects on health. When feminist sociologists looked at jobs, they discovered that most women work in very different environments from most men.[1] In fact, women and men occupy such totally different niches in the labor market that we can almost talk of separate work forces. In order for men and women to be evenly distributed across the job market, about three-quarters of women would have to change jobs. A recent study of North Carolina workers puts the figure for gender segregation (76 percent) even higher than that for racial segregation (55 percent).[2] This is the most important reason to focus specifically on women's occupational health.

The differences are of two general types: employment conditions (salaries, hours, length of contracts) and job content.

Employment Conditions

The most striking fact about women's employment conditions is still that women have lower salaries than men. In 1993, women in Canada who worked full-time during the whole year earned 72 percent of the salary of the average man.[3] In the United States, the comparable figure is about 76 percent.[4]

Part of the male/female difference comes from the fact that

women hold the lower-paying jobs, but there is also a difference in pay rate for the same jobs. In the United States in 1995, for example, full-time women sales representatives earned 69 percent as much as men in their profession, female cleaners earned 84 percent as much, female computer operators earned 74 percent as much, and female factory inspectors 65 percent as much.[5]

The male/female difference in income is significant because income is an important health determinant, and it shows the low value put on women's work, the "vertical segregation" of the job market that affects women's health a bit less directly. Hierarchical position is also an important health determinant, directly and indirectly—directly, because workers' physical and mental health are better when they are more autonomous; indirectly, because the more power workers have, the more easily they can make their workplaces healthier. If we look at the list of women's and men's top jobs (Table 1) we notice that women are 66 percent of sales workers but only 35 percent of sales supervisors. In a bank studied by CINBIOSE, 88 percent of tellers were women, but only 16 percent of branch managers were.[6]

Compared to men, women also are paid for less of the time they work. In other words, a smaller proportion of women's work time belongs to the professional work day. Since, in occupational health, hours worked per week correspond to the duration of exposure to occupational hazards, it would appear that women are generally less exposed at their jobs than men. In Canada for example, 52 percent of women over 14 and 65 percent of men held jobs.[7] The average male worker put in 37.6 hours a week, and the average female worker, 34.4 (based on a 50-week working year).[8] Women are three times as likely as men to work part-time and three times as likely to be temporary workers.[9] More than a quarter of women work part-time, while fewer than 10 percent of men do.[10]

When we consider women's work day, the paid work day is just half the picture. Women's work day does not end when they leave the office or factory; it just changes. Studies done by Statistics Canada show that Canadian married men with children under five work 18.2 hours per week at domestic tasks and child care, compared with 32.2 hours per week for married women with children under five and 23.8 for single mothers of children under five.[11] The extra 14 hours per week more than makes up for the slight difference in average hours of paid work. Walters and colleagues found that female registered nurses (with or without children) reported 24 hours a week spent on homemaking

TABLE 1: Top Twenty Professions for Women, U.S.A., 1992

	Workers	*Number of women (thousands)*	*% women*
1	Secretaries/stenographers/typists	4,246	98
2	Teachers, preschool–high school	3,154	75
3	Records processing clerks (esp. bookkeepers, accounting clerks)	2,891	88
4	Sales workers, personal and retail (except cashiers)	2016	66
5	Cashiers	1,998	79
6	Registered nurses	1,702	94
7	Nursing aides, orderlies, attendants	1,574	89
8	Information clerks (esp. receptionists)	1,466	89
9	Sales supervisors	1,352	35
10	Waitresses	1,090	80
11	Textile machine operators (esp. sewing machine operators)	917	76
12	Sales representatives, business and financial (esp. real estate)	899	40
13	Cooks	865	46
14	Hairdressers and cosmetologists	688	91
15	Janitors and cleaners	635	30
16	Fabricators, assemblers, and hand workers (esp. assemblers)	632	33
17	General office clerks	599	84
18	Mail and message distributors (esp. postal clerks)	546	37
19	Social, recreation, and religious workers (esp. social workers)	540	50
20	Maids	525	82

Source: Compiled from information from the U.S. Bureau of Labor Statistics and from Stellman, J. (1994). Where women work and the hazards they may face on the job. Journal of Occupational Medicine 36 (8): 814–825.

Note: As noted in the original article, detailed titles were not listed for the following classes of occupations: secretaries, stenographers and typists; information clerks; records processing clerks; sales supervisors; sales representatives, business and financial; fabricators, assemblers, and hand workers, mail and message distributors; social, recreation, and religious workers. However, within these categories I have listed the occupation, if any, that accounted for most of the women.

tasks (including car repairs and outdoor tasks), compared with 16 hours for male nurses.[12] Women are also responsible for 70 to 80 percent of elder care. Half of the women now between 35 and 64 will have to care for an older relative at some time.[13]

This difference in family responsibilities has several conse-

quences. First, employment is affected. As mentioned above, women are more likely than men to be found in part-time jobs. Of women who work part-time, one-third do so because they were unable to find full-time work, but 11 percent work part-time because of personal or family obligations.[14] Women work shorter periods before being interrupted: (an average of 81 months at their present job compared with 108 for men).[15]

Second, women's family responsibilities have consequences for their fertility and health. Several studies have identified teachers as particularly likely to contract breast cancer. This has been explained as a result of delayed childbirth among this occupational group.[16] Interviews with teachers show that they have trouble responding to their own children after a long working day with other children.[17] This points up the necessity to examine the whole issue of delayed childbirth as an occupational health issue with effects both on certain cancers and on fertility. It may be that in some occupations childbirth is delayed because of an incompatibility between professional and family responsibilities.

Third, there are consequences on the level of extraprofessional activities required to meet family and professional responsibilities. Women are much more often absent from work because of family or personal obligations than men (6.4 days per year versus 0.9 for men).[18] Not only does this level of absence affect the perception of women's dedication to their jobs; it also results in their being unable to take sick days for their own illnesses.

Job Content: Different Job Titles

Women are segregated into specific industrial sectors and into female-majority jobs within these sectors. This seems to be true all over the world. In 1983, the Confederation of National Trade Unions, with help from the Canadian government, sponsored a conference on women's occupational health.[19] Each report was presented jointly by a scientist and a worker who had been involved in the research. Women came to the conference from four continents and 15 countries, including Thailand, Brazil, and South Africa. We North Americans were astonished to find that women from the third world did most of the same jobs we did: the Thai, Swedish, and French reports were on garment workers; the Québec report on food processing workers aroused interest among the Latin Americans, since women in those countries also worked in food processing plants.

Even more surprisingly, the division of labor within factories was similar. Women did packing and inspection, repetitious jobs and cleaning. Men did heavy lifting, truck loading and driving, and supervision.

As CINBIOSE researchers have had increasing contact with European, African, and South American women, the similarities have struck us as often as the differences. In Brazil, the United States, France, and Québec, women are the cashiers in the supermarkets and men are the meat cutters. On all four continents the primary school teachers are usually women, while university professors are usually men.

Of course, there are important differences. In Brazil and France the cashiers work sitting down while in North America they stand all day.[20] Primary school classes contain 20–40 children in North America, often 50 or more in South America, and up to 100 in Africa. Women are much more often street vendors in Asia and Africa than in North America. But the sexual division of labor seems to be a fact of life around the world.

In North America, the services sector accounts for an increasing proportion of all jobs, while women are still overrepresented in services and underrepresented in manufacturing and in food and resource generation. Women are often found in office work, personal services and the caring professions: in the top professions of Table 1, there are five office professions (secretaries, etc.), five personal service professions (waitresses, etc.) and four caring professions (teachers etc.). The picture is similar in Canada, although job titles are grouped somewhat differently.[21]

A nonnegligible proportion of women do factory work, concentrated in specific factories and parts of factories. In the clothing industry, women sewing machine operators make women's clothes, while men usually sew men's coats. Cutters are almost always men, while pressers are sometimes women. In the auto industry, women sew seat covers and men install engines. In metallurgy, men tend the furnaces and women do the office work.

Until recently, occupational health research has concentrated on the sectors and departments where men work. This work has been thought to be "heavier" and more dangerous, so it has been better regulated. In Québec, for example 85 percent of jobs fully covered by health and safety legislation are occupied by men.[22]

Even though we do not think of women as doing heavy physical labor, many women's jobs have an important physical component, which can produce aches and pains and eventually even cripple. Sec-

retaries type thousands of characters per hour, repeatedly sliding the same tendons over the same joints. Day care center workers pick up 20-pound children over and over again. Pressers lift heavy irons. Cleaners scrub to remove grime. Primary school teachers bend over little children's desks for long periods in one of the most taxing positions for the human back. These and other women's jobs involve stresses that can lead to health problems, and the fact that their physical component is often unrecognized means that workers' health is unprotected by the usual health and safety norms and practices.

In order to see how the physical demands on women and men differ, consider, as we did, the assembly line in a cake factory.[23] At the beginning of the process, men mixed the batter, poured it out, put it into the baking trays, and put the trays in the oven. They took out the trays with the baked cakes and dumped the cakes on a tray, whereupon the women took over. They lined up the cakes in neat rows, put them on cardboard plates, and ran them through the wrapping machines. They then packed them in little boxes with labels, put the little boxes into bigger boxes, and handed them over to the men, who loaded them into trucks and drove away to deliver them. The sexual division of labor was almost absolute. The rare women who took men's jobs felt or were made to feel quite uncomfortable.

Poultry processing, in Québec and in France, works the same way.[24] Men kill the turkeys and cut them into large pieces; then women cut off the smaller bits and trim them. Women label and pack individual turkeys, but men load and drive the trucks that take them away.

These divisions correspond to different physical requirements. Women's jobs often demand rapid hand movements, visual acuity, and standing in a fixed position. We have seen that rapid movements are necessary in most assembly-line positions. Service jobs such as data entry and cleaning also require rapid, repetitive movements.

Visual acuity is necessary in many jobs requiring fine work: sewing, microelectronics, work with Video display terminals (VDTs). Endurance, particularly the ability to maintain a fixed position, is a stressor more often found in women's jobs, particularly in North America. Supermarket clerks, bank tellers, and department store salespeople are among the workers, mostly women, who stand all day with no access to a seat even during slack periods.[25]

Job Content: Same Job Title

When we started observing work, we were astonished at the difference in job content between women and men who had the same job title. After many hours of observation, we are convinced that it is impossible to extrapolate the risks in, say, a male cleaner's job to those of a woman cleaner.

Cleaning in Québec hospitals is divided into "light" and "heavy" categories, once known more openly as "Housekeeping (women)" and "Housekeeping (men)," with men earning more than women.[26] This is a partial list of the tasks done by each:

Heavy work
- He [*sic*] uses mop at least 24" wide, vacuum cleaner, polishing machine,
- floor-stripping machine
- He washes the vents, windows
- He washes the walls and ceilings
- He takes down, hangs up draperies and curtains

Light work
- She [*sic*] uses mop at least 18" wide, "light" vacuum cleaner for furniture
- She dusts
- She washes the wastebaskets, ashtrays, doors, mirrors, toilets
- She fills dispensers (paper, soap)[27]

Similar job assignments are found in industrial cleaning. Women dust and wash bathrooms, and men dry-mop, wash, wax, and vacuum floors. In this less unionized area, the light/heavy pay differential has persisted. The "light cleaning" job title, by government regulation, pays 40 cents per hour less than "heavy cleaning."

We heard many justifications for the sexual division of manual labor. When asked to distinguish heavy from light cleaning, the men in one hospital said: "Women aren't made to do heavy work. They couldn't use the floor polisher. If you make a false move, bang!" They went on at some length to convey the total impossibility of a woman's using the floor polisher. Most women agreed that certain operations were impossible for them. One woman explained to us that it was lucky for her that her husband was the heavy worker on her route. That way, he could do any jobs that were too heavy for her. On the other hand, some women told us that handling the floor polisher was just a trick that anyone could learn.[28]

In Chapter 3 I examine critically some of the scientific justifications given for dividing jobs in this way.

Mental and Emotional Requirements in Women's Jobs

Several researchers have examined the emotional aspects of work done by women. Finnish researchers found that women's jobs involved less autonomy and more repetition and also required more social skills.[29] Similar results were found in studies by the European Foundation for the Improvement of Living and Working Conditions.[30] These little-recognized requirements of women's jobs may be responsible for some mental health problems.

To do an ergonomic analysis of the cognitive aspects of several jobs done by women, Teiger observed women sewing gloves. The employer wanted to know why no worker stayed past the age of 26. The answer was found in the job requirements. Workers received the two halves of the glove from a cutter and sewed them together. This sounded like an easy task to the employer, who did not know that the cutters frequently made minor errors so that the two halves did not fit together correctly. The sewing machine operators had to compensate for the errors in cutting by making small adjustments in the fit of the two halves while sewing at high speed. It required enormous concentration to "marry" the two halves,[31] and the workers were not able to keep up this job for very long—they were superannuated at 26!

The same requirements—speed and concentration—were found in jobs done by women in turkey processing.[32] The woman who trims turkey wings has six seconds to pick up the wing from a conveyor belt and remove bits of fat, skin, bone, cartilage, and any blood clots. If the wing is not perfectly trimmed, it is she who will be criticized by the person responsible for quality control. The work requires not only mental alertness but also physical dexterity and endurance. Nevertheless, this job was called "light work" by the employer. In fact, until ergonomists protested, employers used this job for workers recovering from work accidents.

Some large studies relating heart disease to stress have inspired scientists to think about workers' emotions. Karasek and his colleagues found that workers experienced "job strain" when demands were high and decision latitude low.[33] That is, workers can cope with hard job requirements if they have the power to do things the way they see fit, but become distressed and ill when they lose this discretionary

power. In general, women's jobs have more "job strain" than men's,[34] although, the concept applies to men's jobs as well. Some emotional aspects of jobs are assigned almost exclusively to women. Perhaps because it applies to few men's jobs, the concept of emotional labor has only recently been developed to describe the requirements of some jobs in the service sector. Hochschild defines emotional labor as "the management of feeling to produce a publicly observable facial and bodily display . . . sold for a wage." She describes how airline flight attendants are explicitly paid to manage their own and the passengers' emotions, to prevent fear and create customer loyalty. Women airline attendants, she notes are much more likely to be required to perform this type of emotional labor than men.[35]

Entering Nontraditional Jobs

Even women entering a well-established existing male job often encounter differences in physical, mental, and emotional job content. One would think that a male gardener and a female gardener would both do the same tasks. We found the opposite when we studied gardeners and other blue-collar workers employed by a large Canadian city.[36] Women had been integrated into municipal blue-collar jobs following pressure from feminist groups. At the time of our study, women were still in only 22 of the 201 blue-collar job categories, and they made up only 5 percent of the more senior permanent employees and 39 percent of temporary employees. We interviewed 106 women and men, paired for seniority and for job title at the time of hiring, about their jobs and about the teams in which they worked.

Several indications led us to the conclusion that women and men with the same seniority and job title did not in fact perform the same tasks. First, fewer than half of the paired workers gave similar job descriptions. Second, workers were specifically asked whether men and women who worked with them were assigned to the same tasks. Just over half the women reported that they did not do the same tasks as their male colleagues.[37] The reasons given were varied: choice of the supervisor, the colleagues, or the individual, or lack of appropriate-sized equipment. The principle constituting this gendered division of labour was characterized in two ways: 10 women (mostly cleaners) said women did work that required more care or had to be done to a higher standard, and 17 (mostly gardeners) said that men did the jobs requiring more physical strength. Women were more likely to do

weeding, planting, and pruning bushes, and men were more likely to do "heavier" tasks, such as pushing loaded wheelbarrows uphill, pruning trees, and using forks and picks. Men were also more likely to use machines such as the cultivator. Using machines was a privilege often reserved for the gardening team leader, almost always a man.

Women in other blue-collar municipal jobs also said they had trouble getting to use machines. The first woman cleaner assigned to a sports arena, "Marie," told us about her struggle to get to use a cleaning machine. Although these municipal cleaners were not officially segregated into "light" and "heavy" work, she (and the female coworkers who joined her later) were often assigned to cleaning offices and other places where it was important to be meticulous, while men cleaned the corridors and gyms. In larger spaces, floors were not mopped but were washed with a cleaning machine. The machine had a seat so that the worker could ride up and down the corridor or the gym. Since it was much more fun to ride the machine than to scrub in corners with a mop, a rotation was established so that all workers had a chance at it. When Marie's turn came, the supervisor passed her over and assigned the machine to a man. Marie protested and threatened to make a fuss. The supervisor finally allowed her to use the machine, but refused to explain how it worked, and gave her a nearly impossible task to do with it. He appeared disappointed when she succeeded, and she was never again allowed to use the machine.

This kind of task segregation affects health in two ways. First, since men and women do not do the same jobs, they do not have the same health risks. Second, discrimination can affect mental health. Cynthia Cockburn[38] and Ann Stafford[39] have described the humiliations and violence experienced by women in training for nontraditional jobs. Others have revealed the sufferings of women in these jobs, exposed to wearing criticism, harassment, homophobic attacks, and even physical violence.[40]

Discrimination also exists in more traditional jobs. During collective interviews with a group of six bank tellers chosen to represent different working conditions,[41] "David" illustrated for us the different male/female relationships with the bank management. He and "Suzanne" were sitting side by side at their computers with their backs to the window. They had closed their respective blinds because of glare from the sun. A visiting bank executive walked in and yelled at Suzanne for closing her blinds. He explained that people outside had to be able to see in, as a protection against bank rob-

bery. He forced Suzanne to open her blinds but said nothing to David. As soon as the executive left the branch, Suzanne closed her blinds, since otherwise she could not read her screen. When the executive revisited the bank a few weeks later, he was furious to see that Suzanne's blinds were closed. He threatened her with dismissal, but still said nothing to David, whose blinds were also closed.

Asked to comment on this tale, the women bank tellers made comments like: "I don't like to think about it," "If you get angry every time, you'd be angry all the time," "I just don't pay attention." In other words, they saw discrimination against women as part of their working conditions and met it with resignation.

Ann Robinson interviewed women teachers and found that they were subject to discriminatory remarks from pupils, parents, colleagues, and supervisors. A secondary school teacher "Just last week, I was in the secretary's office and I said something to another teacher. He said 'You're so aggressive! Are you on the rag?' Another teacher next to him said 'No she's not on the rag, she just isn't getting enough.' All in front of a bunch of students." All 72 women Robinson interviewed spoke of the persistence of sexist stereotypes.[42]

We can conclude from this rapid look at the workplace that women and men often face different task requirements and physical and emotional stresses. This is true even when they have the same job title and even when they are officially assigned to the same tasks. When scientists compare women and men or extrapolate studies on male workers to women with similar job titles, they may be missing important information. By and large, women's health is subject to different workplace effects from those of men.