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**OCCUPATIONAL HEALTH RESEARCH:
DOMINANT PARADIGMS AND THE EXCLUSION OF WOMEN**

BY

Melissa Follen

**A thesis submitted to the Faculty of Graduate Studies
and Research
in partial fulfilment of the requirements
for the degree of**

**Master of Arts
in Canadian Studies**

**Carleton University
Ottawa, Ontario
February 4, 2001**

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**The undersigned recommend to the Faculty
of Graduate Studies and Research acceptance of the thesis**

**“Occupational Health Research:
Dominant Paradigms and the Exclusion of Women”**

submitted by Melissa Follen, B.A.

**in partial fulfillment of the requirements for
the degree of Master of Arts**

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ABSTRACT

This study examines research paradigms in an attempt to determine why feminist occupational health research is not fully accepted by the occupational health community, mainstream researchers and funders. Central to this discussion is the analysis of the research and experience of the Centre for research on the biological interactions between health and the environment (CINBIOSE) at the Université du Québec à Montréal (UQAM). To explain why feminist occupational health research continues to be marginalized, a theoretical framework is used to examine the influence of political and economic factors on research paradigms. The dominant paradigms have grown within the context of a society built on patriarchal and capitalist structures, which place a lower value on women's work and women's health and on research on women's occupational health. It is concluded that for women-centred and gender-based research to be fully undertaken by occupational health research bodies, a significant paradigm shift is necessary.

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CHAPTER 1 - INTRODUCTION

Research on the health effects of a paid job on women has traditionally focussed on non-traditional work, with much of the research focussing on certain reproductive hazards for women. Women and men do different work. Although there are some exceptions to this,¹ there has traditionally been a division of labour between the sexes with most women and men doing jobs deemed appropriate for their sex. Within non-traditional work most attention has been paid to those jobs which expose workers to hazardous chemicals and substances. The idea that there are occupational health concerns in traditionally female work is not accepted by many researchers, policy makers, or even some women's health advocates.

Feminist women's health research - what I will call a gendered² analysis of health - is a difficult concept that many reject, ignore or fail to understand. Mainstream health research, in contrast to feminist research, is often gender-blind and seldom accounts for social and biological differences between females and males. The findings of research done on males, be they mice, monkeys or humans, are normally considered transferable

1

This is especially relevant in the current context of globalization which has lead to a "feminization" of the labour force. See: Pat Armstrong (1996) "The Feminization of the Labour Force: Harmonizing Down in a Global Economy." Pp. 29-53 in I.Bakker, *Rethinking Restructuring*. Toronto: University of Toronto Press.

2

Gendered is a term coined by feminist researchers, activists and analysts to imply that the analysis of an issue is done taking account of gender differences between females and males, based on their social roles and status, going beyond the obvious biological differences.

to females. For example, a famous study sponsored by the National Institutes of Health on aspirin and heart attacks was conducted solely on men, although the researchers knew that heart disease is the leading cause of death among North American women.³ Research such as this is then applied universally to men and women. In an attempt to correct the shortcomings of such mainstream health research, a body of feminist health research has developed over recent years. (Armstrong and Armstrong, 1999, 1996; Doyal, 1995, 1981; Sherwin, 1998, 1992; Walters, 1995, 1985; and others) This “women’s health” research analyses the social factors affecting women within their specific realities, and the impact of such factors on women’s health and access to health care. However, women’s occupational health remains a relatively under-studied⁴ area within this developing research.

In Canada, the majority of occupational health research is still done using a gender-blind approach. Fortunately, there are some exceptions such as the Centre for the Study of Biological Interactions in Environmental Health (CINBIOSE) at the Université du Québec à Montréal (UQAM). This research centre is comprised of researchers who, for the past 20 years, have attempted to reveal health effects of work on women. CINBIOSE

³

Sherwin, Susan, (ed.) (1998) *The Politics of Women’s Health: Exploring Agency and Autonomy*. Philadelphia: Temple University Press, p. 238.

⁴

My literature searches of Canadian sources have indicated that feminist research on women and occupational health is virtually limited to the work of Karen Messing and her colleagues. There has been other work undertaken by researchers in Europe which would be useful to refer to; however, it is beyond the scope of this thesis.

has attempted to expose the health hazards in jobs often considered safe and clean because they are done by women.⁵ The Centre places particular emphasis on the importance of worker input in the definition of research problems, and in the research design, an approach which has revealed a wide range of occupational health consequences for women. In her most recent book, *One-Eyed Science*, the Director of CINBIOSE, Karen Messing, critiques the state of occupational health research in Canada. She poses a number of crucial questions, one of which is central to this thesis: "If women have so many occupational health problems, why do they not interest those responsible for research and intervention in occupational health?" (Messing, 1998: xiv)

My selection of this topic resulted from an extensive review of Canadian feminist research on women's occupational health. It became evident to me that the researchers at CINBIOSE and the Pan-Canadian Network⁶ on Women's Occupational Health are largely responsible for the bulk of that research. This group of researchers has created a growing body of key feminist research on the gendered aspects of occupational health which should inform occupational health and safety research and policy.

5

For numerous examples of this research see: Karen Messing, Barbara Neis, Lucie Dumais, eds. (1995) *Invisible: Issues in Women's Occupational Health*. Charlottetown: gynergy books.

6

The Network constitutes researchers from various backgrounds whose work has contributed to the body of research within the Canadian feminist discourse on occupational health. This group of researchers and activists has worked together in different capacities over the past 20 years in order to improve the situation of women workers in Canada.

This brings me to my main thesis question: Why has mainstream health research ignored the specific occupational health concerns for women, in spite of the research emanating from researchers such as those at CINBIOSE? To answer this question, I look to the dominant paradigms that frame the selection of occupational health research for funding and for publication in journals. Although the evidence produced by researchers who work within the dominant paradigms ignores the differential health impacts of jobs on women and men, and results in what I would describe as limited and incomplete research, such research nonetheless dominates mainstream, peer-reviewed journals and funding.

Research which does focus on the differential health impacts on women and men often faces barriers within the mainstream research establishment, barriers which reflect the dominant paradigms. Researchers at CINBIOSE have written about their experiences and challenges in presenting feminist research to a non-feminist research body. My study builds upon this work using a political economy analysis to identify dominant research paradigms, to explain their origins and, to examine the affect they have on the promotion and production of feminist research. With an understanding of research paradigms, it may be easier to develop strategies to remove the barriers experienced by feminist occupational health researchers.

This thesis provides a qualitative analysis of feminist and mainstream occupational health research. I look at three key areas: 1) which methods are widely accepted and used; 2) whether the consideration of social context is included in mainstream research methods;

and, 3) if and how women are considered in mainstream research.

This qualitative analysis examines various sources of occupational health research to assess the use of paradigms by the researchers and by those assessing research for funding and publication in academic journals. I begin with an analysis of rejection letters received by CINBIOSE from academic journals. This analysis helps reveal the paradigms of mainstream researchers by identifying the style of research they value. Following this is an analysis of responses received from an email interview sent to CINBIOSE researchers to further elaborate on their experiences with academic journals. Next I report on a systematic study of abstracts and articles from occupational health journals appearing in the Medline database. The final component of my study involves a critique of three major health research funding institutions in Canada and the U.S. which were selected based on their degree of influence in the promotion and production of health research. The mainstream paradigms are identified through key indicators and the implications for feminist research are discussed. In order to reveal these non-feminist paradigms I use key indicators such as a preference for quantitative research, which identify them. My indicators also point to absences such as an academic journal's preference for "non-anecdotal" research, or a failure to require female and male subjects in a study. A complete list of indicators is provided in Chapter 4.

The analysis is framed by a political economy approach, an approach in which context, power, and social relations are key to what constitutes evidence and to how research is done. From this perspective, factors such as patriarchal and capitalist structures within an

era of globalization and restructuring shape research and evidence which is socially constructed, accepted and rejected. Research is understood as historically located in material and structural conditions, with paradigms playing a critical role.

Rationale for this study

Many of the researchers at CINBIOSE (and others) have expressed frustration at the difficulties they face in getting published and when presenting their findings to mainstream researchers, policy makers or occupational health administrators. This thesis provides some insight into the problems of conflicting paradigms and the power of the dominant paradigms which tend to control research in this field.

Occupational health is vitally important to the lives of women workers in Canada. The need for research in this area has been eloquently expressed by the researchers of CINBIOSE and the Pan-Canadian Network on Occupational Health. Over the past twenty years these feminist researchers have initiated a continuous process of networking, and through past colloquia and meetings they have arrived at a number of specific calls to action. My selection of the research question for this thesis was based on a specific call to action identified by professionals in the field:

Data on women should be included in occupational health investigations. Studies of occupational disease which include only men should be justified by researchers. Research tools should be developed, validated and standardized for both sexes. Data on sex and ethnicity should not be treated as independent determinants of health without reference to working and living conditions. (CINBIOSE, In Press)

CHAPTER 2 - THEORETICAL FRAMEWORK

This thesis is an investigation of paradigms which influence the type of health research that is undertaken and funded, and the value placed on specific research questions. An analysis of paradigms involves human beings, their societies, and the socio-economic structures within those societies. Health research paradigms do not develop in a vacuum, but are rather a product of both the historical development of scientific thought and current social contexts. As is demonstrated in this chapter, a political economy framework is used to explain the links between social structures and research paradigms.

I base my discussion of paradigms on the much-quoted work of Thomas Kuhn, *The Structure of Scientific Revolutions*. Although his work was an historical analysis of pure and applied science and the development of scientific thought, his ideas are applicable to the social sciences as well. Kuhn uses the term paradigm in two senses. The first is a broad usage of the term to incorporate the general worldview, values, techniques and beliefs which are shared by members of a particular community (research community, scientists, etc.). The second usage is more technical, and denotes the “concrete puzzle-solutions” which can be used as models or synopses for theory development. (Kuhn, 1970: 175) Others have drawn from Kuhn’s work in order to apply the concept to other disciplines. In the context of the social sciences, the term paradigm usually implies “perspective, worldview, metatheory, assumptions about reality, schema, and theoretical orientation.” (Nielsen, 1990: 19) It is in this sense that I refer to paradigms throughout this paper.

According to Kuhn, a paradigm also becomes a sort of “criterion for choosing problems...that can be assumed to have solutions.” (Kuhn, 1970: 37) It becomes clear in his discussion that scientists, or researchers in general, can become driven by their particular paradigm and limit their selection of problems to be solved to those which are considered solvable within that paradigm. Other problems are rejected as being too problematic to be worth the time (Kuhn, 1970: 37), or simply remain invisible. This understanding of paradigms can help to explain the general tendency of mainstream research bodies to reject research concerns that grow out of feminist paradigms.

Kuhn’s analysis also included a discussion of paradigm shift. According to him, a shift happens in the presence of anomalies. If a particular phenomenon cannot be explained by the current paradigm, a new one is necessary. At a certain level, this can be considered an acceptable theory: change happens in the face of difference or contradiction, when the item under observation does not function in the manner expected. However, Kuhn’s theory does not take into consideration external, social and material factors which could affect a shift or prolongation of a particular paradigm. He does make reference to the fact that scientists are human, and thus their own thoughts and previously-held concepts come into play when they interpret particular phenomena. However, he does not illustrate how their socio-economic status, their sex, or the current political economic environment of the society within which they work could also promote a change or continuation of a particular paradigm.

Nielsen speaks of a paradigm shift which has been felt within research communities with the growth of feminist research (Nielsen, 1990: 19) emanating from women's studies programs at universities, and feminist community groups and organizations. However, I would argue that for a paradigm shift to take place, the new paradigm must become one of the dominant paradigms, and be accepted and applied by the dominant group. I question the assertion that feminist research represents a paradigm shift, because it has not been grasped by the mainstream, broadly defined here as the dominant policy makers, researchers and funders. Unless such a shift takes place, feminist research will continue to be marginalized as an "alternative" paradigm.

My theoretical approach assumes that within a capitalist and patriarchal society, political and economic structures can have an impact on research paradigms. These structures set the conditions in which investigation happens, influencing what is valued and rewarded. The political and economic context are interrelated and are an important consideration in the analysis of research paradigms. In the case of research, it is the very consideration of problems or questions which are influenced by paradigms, and which can result in the exclusion of problems which are important to women's health. I postulate that in the current context of globalization and restructuring where neo-liberal ideology prevails, mainstream research entities, whether these be universities, funders or government, continue to marginalize feminist health research as they have done for the past 40 years. These bodies work within specific paradigms which guide them in their prioritization of research topics, and which make them either blind to the feminist research methods and

paradigms, or to undervalue them even to the point of a denial of their existence or relevance. This is particularly the case for feminist occupational health research which is the topic of this thesis. Political agendas, economic agendas, corporate agendas and even historic social and economic structures can play a role in the promotion, acceptance or rejection of research paradigms. Power, politics, and economics have an impact on the formation of paradigms, as do capitalism and patriarchy in a country like Canada. Contrary to popular belief, science is not neutral, research is not neutral, nor are the paradigms of the researchers neutral, regardless of the extent to which they claim objectivity. (Messing, 1998; Harding, 1986; Kellough, 1996, etc.)

The following sections expand on the ways socio-economic factors influence the creation and promotion of research paradigms. There are four main components to the theoretical framework upon which this thesis is based. These four components illustrate that it is important to use a feminist perspective in research in order to ensure that the appropriate questions are asked, so that key issues for women are not ignored. The purpose is to demonstrate that the dominant research paradigms are not feminist and those operating within such paradigms often do not ask appropriate questions for women's occupational health. I begin with a definition of patriarchy because it has negative implications for feminist research, and promotes the dominant, non-feminist research paradigms. Then, I discuss why the sexual division of labour is important to understanding the position of women in a capitalist society, which in turn influences the value placed on women's work and women's health. The third component is an historical perspective on scientific

research and health, as they relate to the early development of capitalism and outline the evolution of dominant research paradigms. The fourth component involves corporate power in the current context of globalization, and the impact of that power on the perpetuation of non-feminist research paradigms.

Patriarchy Defined

Capitalist society is characterized by a male-dominated, patriarchal social structure which has significance for feminist research. Armstrong and Armstrong see patriarchy and capitalism as integrated, as the same system. (Armstrong and Armstrong, 1985: 23) Dorothy Smith defines patriarchy as a “massive organization of masculine power in the state”(Smith, 1992: 5), which includes the legal, cultural, scientific and professional establishment. What is usually considered to be rational or even normal, is a system of male domination integrated within capitalism. Both systems inherently promote and thrive on the domination and oppression of women. This patriarchal and capitalist society sets the context for the dominant paradigms reflected in research. The production and promotion of research, including the institutions which control that research (by way of funding, publishing), have been male-dominated. The research which emanates from the dominant paradigms has historically excluded issues important to women’s health. Instead, with the exception of research on reproduction there has been an almost exclusive focus on men’s health, where such research is considered to be applicable to both sexes.

Capitalism and the Sexual Division of Labour

The second component of my theoretical framework involves the position of women in society. This position is based largely on the work they do and the value given to that work reflected in women's health and the research relating to women's health. Research paradigms are influenced by the researcher's assessment of women in society: if women are undervalued because their work is not considered important, and when paid work is not considered central to women's identity, so too will their health be undervalued and thus will not be included in research questions. This is demonstrated in the previous example where health research has ignored women's health issues, considering the male-dominated research to be applicable to both sexes.

The undervaluing of women's work is linked in part to the sexual division of labour which places different values on different kinds of work.

(F)ree wage labour, which is essential to the very definition of capitalism, entails the reproduction of labour power primarily at another location. This separation under capitalism between commodity production and human reproduction (including the reproduction of the commodity labour power) in turn implies a particular division of labour between the sexes, and thus a division within classes. (Armstrong and Armstrong, 1985: 3)

This quotation succinctly defines the sexual division of labour which is an important piece of this theoretical puzzle and a key to the deconstruction of the social factors which influence and indeed create paradigms. A capitalist system includes both productive and reproductive work. The work done outside the home, based on profit-gaining motives and the production of surplus material for sale is considered productive work. Conversely,

reproductive work has traditionally been mainly carried out within the household. Childcare, cleaning, and cooking for example, do not involve profit motives or the production of surplus as profit. Therefore, I would argue that work within this reproductive realm including the “reproduction of the commodity labour power” is not considered productive and is undervalued. Historically, patriarchal, male-dominated paradigms influenced the definition of what was considered women’s work and men’s work. Women’s work and position in society were traditionally concentrated in the reproductive realm, reflecting their childbearing capabilities and the nature of their other domestic work. With industrialization, the production of goods and services for sale in contrast, was normally undertaken in the public realm, in a marketplace of some form. As this productive work largely took place outside the home, it was mainly men’s realm which contributed to notions of greater value. These two separate but interpenetrating spheres of work paralleled a division of labour by sex, (Armstrong and Armstrong, 1985: 22) contributing to powerful male-centred paradigms based on male-dominated socio-economic structures. There has been a complex debate among theorists about what constitutes reproductive and productive work and domestic labour, the details of which go beyond the scope of this study. For the purpose of this thesis, I use the terms productive sphere and reproductive sphere to illustrate the historical tendency for women and men to do work deemed appropriate for their sex, recognizing that there is also overlap and women also work in “non traditional” jobs normally considered by Canadian society as “men’s jobs.”

Although women's work as defined by capitalism and patriarchy was relegated primarily to the reproductive sphere, in practical terms many women have throughout history worked in both spheres. This has had an influence on how their work is perceived, valued and rewarded. For example, throughout the era of industrialization in North America and Europe, lower-class women worked in factories and heavy industry. Although women are and have been involved in productive labour in varying degrees throughout the development of capitalist societies, their work continues to be undervalued in part due to the traditional links between women and the reproductive sphere. Often, much of women's paid work reflects the work done in the home, i.e., nursing, food service, childcare, etc., thus contributing to the lower value attached to that work. A further complication for women is their dual role. Today, women make up almost half of the labour force (Armstrong and Armstrong, 1994: 15) yet they are also largely responsible for work in the reproductive sphere, such as running a household, cleaning, cooking and childcare. This responsibility limits their capacity to participate and advance in the labour force in the same manner as men, due to the added time pressures and interruptions to their career path which child rearing often entails.

In a capitalist society, where commodity production and profit maximization are priorities, anything connected with the productive sphere is given greater value by the dominant classes, due to its exchange value on the market. Property and commodity ownership and control of the production process are the sources of power in a capitalist state. Thus, those who are connected to these domains possess greater power than those

who do not have a major role in the production process. There are varying degrees of power within this structure from owner to worker, but the productive realm of work is more highly valued than the reproductive realm, in part because the productive realm is the only source of profit based on the surplus value of goods produced. Since women's work is generally associated with the reproductive sphere in both the home and the paid labour force (in spite of their involvement in both spheres), it has been traditionally undervalued in comparison to men's work. This often means that women are not involved in positions of power, such as senior management. Although increasing numbers of women work within the productive sphere, this undervaluing is reflected in women's "market work". As I explain in Chapter 3, women's labour force work is characterized by lower paying jobs, lower status jobs, and is segregated with women doing those jobs considered "appropriate" for women. Women dominate the service industry, secretarial work and health care work (nurses and lab workers, not doctors, for example). The lower value placed on women's work whether in the reproductive or productive sphere, is reflected in the undervaluing of research on women's work and on the health of women workers. They are equally undervalued within the current research paradigms that dominate Canadian academe, government and industry.

It is important to note that within this framework, the issues of class and race/ethnicity must be factored into the equation. Women are not a homogeneous group and it should be made clear that there are differences among women related to their class, their racial/ethnic origins, their age, ability, level of education, etc., all of which impact on

their degree of power within Canadian society, and on their capacity to obtain work, and own property. Similarly, there are differences among men along class and racial/ethnic lines. However, it is interesting to note that the value placed on men's work, even at the non-professional or "blue collar" level, is still usually higher than the value of women's work at similar levels, as revealed in their remuneration. This is also reflected in the degree of concern placed on occupational health issues for men's jobs as compared with women's jobs, as will become more evident throughout this paper.

Capitalist and patriarchal values regarding work influence the paradigms which guide research and affect the questions asked as well as the particular methods used. As a result, there are two key factors which are reflected in how research is done. Firstly, women's work is undervalued in both the productive and reproductive spheres resulting in the virtual exclusion of women's interests in the dominant research paradigms. Secondly, there is a greater tendency to place a high value on quantitative, rational research methods. This is linked to patriarchal and capitalist thinking which tend to undervalue those things which are not logical, which are emotional, or which are not quantifiable. These factors are part of the dominant paradigms in health research that have emerged over time and are discussed in the following section.

Health Research in an Historical Context

As indicated by numerous researchers (Messing, 1998; Sherwin, 1998; Doyal, 1981; Kellough, 1996, etc.) a legacy of androcentric (male-dominated, male-focussed) research

and paradigms influence the acceptance or rejection of feminist health research today. This certainly applies to occupational health research. Science, defined here in general terms as both pure and applied science (biology, physics, natural science, etc.) with its preference for quantitative, objective methods of inquiry has historically been the basis for what is seen as acceptable research. Theoretically, objectivity is achieved when research is free of values, or subjective influence on the part of the researcher. It is believed that through scientific and statistical methods, “true” results and answers can be achieved. The social sciences (sociology, psychology, history, anthropology, etc.) have drawn upon traditional scientific methods defined in particular ways in order to gain more acceptance, or “academic respectability” as objectivity is linked to such methods and is highly regarded in the scientific research tradition. (Nielsen, 1990: 4) In this case, the term scientific is used to denote research methods which follow traditional rules of inquiry and a preference for clinical experiments and quantitative analysis. Although numerous theorists and researchers have shown that the scientific methods used are not as objective as they claim to be (Messing, 1998; Haseltine, 1997; Doyal, 1995, for example) there remains a general assumption among mainstream research institutions that dominant, mainstream research is objective while feminist research is biased and subjective. I question this “objectivity” based on the fact that the dominant paradigms driving mainstream research are products of a patriarchal and capitalist research tradition which influences how mainstream researchers value women’s work. Hence feminist research continues to be marginalized while mainstream, quantitative research remains the dominant model. Although scientific feminist research uses quantitative methods, its

marginalization is likely linked to the tendency for multidisciplinary research traditions to combine qualitative with quantitative methods. It is the qualitative methods which are undervalued by the dominant research establishment.

As a model of inquiry it is important to examine some historical roots of scientific investigation, in this case what is defined as western scientific medicine and its accompanying power structures. This has formed the basis of what we recognize today as health research. It is equally important to observe the historic part women have played in the development of health knowledge. Both factors, women's roles in the productive and reproductive spheres, as well as the development of scientific inquiry have been influenced by the evolution of capitalism and have been characterized by the patriarchal structures which formed within capitalist systems.

Healers or Witches - Women and Health at the Dawn of Capitalism

In earlier periods of North American and European history, many women were the healers and the midwives and whole communities depended on their health knowledge. However, at the time of the witch-hunts in the late 16th to the early 17th centuries, much of this knowledge was taken away from women with the development of a male-dominated medical establishment. (Kellough, 1996; Barstow, 1994; Doyal, 1981) This changeover of the possession and control of health knowledge with the development of science and medicine as a mode of inquiry, can be understood through an analysis of the transformation of European and early North American society into a capitalist mode of

production. With this transformation, the sexual division of labour took on new forms, and the valued health knowledge moved from the reproductive to the productive sphere.

In pre-capitalist European societies women were healers for their families and communities. In fact, the role of healer gave some women a certain degree of power within their communities as the sole possessors of important knowledge which few understood. (Barstow, 1994: 110) However, in the mid-16th century the situation for women began to change. Not only was there a rise of witchcraft accusations, which began in about 1550, there was also a steep rise of inflation (Barstow, 1994: 99) heralding a serious economic crisis which drastically changed the role of women. Due to women's position in society, as defined by evolving patriarchal systems and a changing sexual division of labour, women were unable to take part in the newly developing capitalist modes of production in the same ways that men were. In spite of the relative power possessed by some women healers, the characteristics of women's work in 16th century Europe reflects similar patterns of undervalued work faced by women today. As women rarely received formal training, they could not qualify for highly skilled work and "therefore held the low-status, poorly paid jobs." (Barstow, 1994: 102) As the economic situation worsened, they were unable to obtain apprenticeship training, or get credit financing for small business and thus were either dependant on their husbands for survival, or were forced into poverty. (Ibid: 99)

In the context of women's poverty, the traditional role of woman as healer became increasingly important as it was for many the only means of economic survival. Labelled as "witches" these women were in fact midwives, gynecologists, physicians and herbalists. Yet, it was a combination of the professionalization of medicine and scientific inquiry, as part of the newly developing capitalist society, aided by the witch-hunt, which removed women from the realms of health and healing, thus denying them the social power they had previously possessed.

How then did the emerging capitalist system impact on research and scientific traditions? During the historic transformation into a capitalist mode of production, knowledge itself was professionalized and brought under patriarchal control with the elimination of women as midwives and healers. The newly established knowledge took a different form, and became a basis of power and control rather than a community-based source of helping and healing. "The knowledge of medicine came to be used as a kind of currency that could give the knowers a power over those they treated, thus establishing a hierarchical relationship between the treater and the treated." (Kellough, 1996: 49) Many feminist researchers have documented the historical development of scientific knowledge. For example, according to Lesley Doyal, the genesis of "western scientific medicine" originated in the scientific revolution of the seventeenth century, which coincided with a change in economic structures as a capitalist mode of production began to form. (Doyal, 1981: 28) As property and commodity ownership took on increasing importance, science and medicine became part of the realm of the capitalist, male, elite. "Under capitalism,

the 'art of healing' became the 'science of medicine' practised by men as a commodity to be sold at a high price." (Hale in Kellough, 1996: 49)

With women "out of the picture", knowledge of health took on a male focus and was developed from a male standpoint. Through their increased power to control social and medical thought, "male scientists and medical men established themselves as interpreters of women's experience and eliminated female definitions from an understanding of all human reality." (Kellough, 1996: 50) Thus, it is a combination of the economic crises and the development of early capitalism rife with patriarchal ideology, which contributed to the origins of today's androcentric medical and scientific research establishment.

Furthermore, the sexual division of labour visible in pre-capitalist and capitalist modes of production also influenced the formation of the research establishment and is reflected in two key factors: in work itself where men dominated the paid work force; and, in medicine and health research which was now dominated by men. Both kinds of the sexual division of labour were further combined with male dominance and control over research, reflecting the higher values placed on men's work and men's position in society. This combination contributed to the formation of dominant research paradigms which resulted in the exclusion of women from most research questions, assuming their applicability to the male model, and the priority given to particular research methods.

Globalization

A fourth component of my conceptual framework involves an analysis of corporate power within the current socio-economic context. Drawing from the previous discussion of capitalism and control of production, I outline in this section how the influence of corporate power on research transpires within a market economy which places priority on global markets and trade and the growth of the transnational corporation (TNC). I argue that those who possess the greatest amount of power influence the dominant paradigms and maintain the status quo as long as it is to their benefit.

In the current context, the Canadian capitalist patriarchal social and economic structures take on new forms through the process of globalization and economic restructuring. As neo-liberal ideologies permeate the globe, governments are being restructured and restructure themselves to meet the demands of the changing global economic trade scenario. Government restructuring is played out in major cutbacks to social spending and a transformation of political power which enables corporations to have greater influence on social structures and processes, including research paradigms. In fact, this emerging world order is placing greater decision-making power in the hands of the corporate elite on an international scale. As Isabella Bakker explains: "The economic becomes self-regulating and depoliticized in the sense that the imperatives of efficiency and competition become inevitable, imposed by some external force over which people have no control" (Bakker, 1996: 4).

What is globalization and why is it important to my argument to analyse its progress and development? I see globalization as the transformation of economic rules of trade where the production of goods is now done within a global arena and the power and control of production is not held by nation states but by corporations. The new international rules of trade and investment are highly advantageous to transnational corporations (TNCs), as they can more easily avoid the regulation of nation states. The formation of one vast global market is the result (Cohen, 1997). This can be illustrated through the concept of the “global production line” where the product of a certain company is produced by workers in different countries (usually in the “developing world” where wage rates are much lower than in Canada). Tony Clarke clearly illustrates the incredible power that TNCs possess:

Today, forty-seven of the top one hundred economies in the world are actually transnational corporations; 70 percent of global trade is controlled by just five hundred corporations; and a mere 1 percent of the TNCs on this planet own half the total stock of foreign direct investment. At the same time, the new free market and free trade regimes (such as GATT and NAFTA) have created global conditions in which TNCs and banks can move their capital, technology, goods, and services freely throughout the world, unfettered by the regulations of nation-states or democratically elected governments.(Clarke, 1996: 298)

This degree of power enables companies to increase their profits and to trade their products in an economic system which is regulated to meet their interests, according to Clarke. The danger of such power is that it is not limited to an economic sphere, but it crosses over into the political and social realms and directly affects domestic legislation. This is not only with regard to trade and imports/exports but also with regard to social

infrastructures and policies⁷, as well as paradigms.

Returning now to the concept of paradigms, it is important to consider the power and control which these corporations possess when investigating which paradigms dominate. It is their ability to influence the paradigms of society in general, and more specifically government and university research communities, that threatens the survival of “renegade” paradigms such as those from feminist communities. In a capitalist society such as ours, with the power of money as a key factor, “(t)he prohibition of unwanted paradigms...and the promotion and financing of preferred paradigms indicate how political elites and funding agencies control the nature of growth of the social sciences.” (Chekki, 1991: xi) This is equally true for research in general, and not limited to the social sciences. Companies that exploit women workers will not be supportive of feminist research which exposes the health problems involved in the work these women do.

The Fraser Institute provides a practical example of corporate power and the influence of that power on research paradigms. It was established approximately 25 years ago as a “think tank” and has been financially supported by right-wing elites, a list of whom is not available to the public. (Dobbin, 1998: 186) The Fraser Institute, and other lobby groups

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Imbedded in the design of trade agreements such as the North American Free Trade Agreement (NAFTA) are rules which force individual countries to restructure their social systems by, for example, cutting back on health and education budgets. (Gabriel and Macdonald, 1994: 548)

like it, wield incredible power and influence over Canadian values. According to Murray Dobbin, the Fraser Institute has “targeted all the major institutions in the country that influence how Canadians think: the media, churches, political parties, non-governmental organizations, and universities.” (Dobbin, 1998: 192) Underfunded academic institutions can hardly resist financial support in spite of the paradigm-control factors which are inherent in that support and influence.

Pharmaceutical companies possess a similar level of control and power over scientific research. Our medical system is strongly influenced by this industry, due in part to the capitalist roots of that system which promote dominant paradigms, and in part to cutbacks that increase reliance on other funding sources such as corporate grants. The pharmaceutical industry provides many incentives for medical researchers and indeed possesses the ability to control the type of research undertaken. This is reflected in the experience of Dr. Nancy Olivieri, a research scientist at the Hospital for Sick Children, Toronto who chose to expose her funder, Apotex, in relation to the safety concerns about their drug. This company attempted to control the reports on her research, initially through a gag clause in her contract and later through numerous attempts to destroy her professional reputation. It becomes clear, therefore, that corporations are an important factor in this analysis of paradigms. As part of a capitalist and patriarchal system, where a high value is placed on profit and production, they possess the power to influence the very institutions where health research is funded and implemented: government, universities and hospitals. The dominant paradigms prevail in an atmosphere which is

characterized by male-dominated priorities and ideologies based on profit-driven motives.

Conclusion

The framework outlined above is based on a political economy approach to the analysis of paradigms. Although a discussion of paradigms could involve frameworks from discourse analysis, a political economy approach allows for the identification of research paradigms through an analysis of the context of socio-political structures which influence the origins of scientific investigation. Conversely, discourse analysis would say that *language* is the paradigm. I would argue that language is an *indicator* of which paradigms prevail (such as the list of words I use as indicators of gender-blind research outlined in Chapter 4). Discourse analysis does not explain why research is done in a gender-blind manner by mainstream researchers. This gender-blindness cannot be explained solely through linguistic analysis since larger social, economic and political factors are at play and it is these factors, or context, which affect language. (Georgakapoloulou and Goutsos, 1997: viii) Thus, research paradigms can only be discussed on a particular level using an analysis of text and the terminology used in research. Such analysis cannot explain why these terms are used in the first place, nor can it explain the essence of the paradigms which are at work; i.e. which conceptual frameworks involve the use or choice of such terms.

Feminists conceive language as 'a symbolical reflection of androcentric structures', as one of the means of patriarchal society to discriminate, disregard and incapacitate women. In their view the language system already reflects the patriarchal structure of Western societies. (Wodak, 1997: 10)

The socio-economic and political structures which are patriarchal by nature influence the paradigms held by the dominant class, in this case, mainstream researchers. The language or discourse used to describe the work undertaken by this group is a reflection of the paradigms.

In summary, I have outlined the interconnected components upon which I base my analysis of occupational health research and of the paradigms which structure research and funding. I began with a definition of paradigms to be used throughout my research. Following this, I described what I would argue are four key components which help explain the creation and perpetuation of dominant paradigms. I have illustrated that there are both historical and materialist factors which are involved: from the origins of an androcentric research establishment and medical establishment, within patriarchal structures, to the sexual division of labour as well as the current political-economic climate of globalization and restructuring. Each of these factors play a significant role in the dominance of particular paradigms. Before an analysis of the paradigms which influence occupational health research is possible, it is necessary to describe the social, economic and political context within which the research is situated. The following chapter discusses the structural characteristics of women's work which impact on women's health, and links this to the body of feminist research which is devoted to the study of women's health. It is evident that the value placed on women's work, and women's position in society is reflected in the value placed on research on women's health.

CHAPTER 3 - CONTEXT: WOMEN'S WORK, WOMEN'S HEALTH

The previous chapter presented the framework upon which the present analysis is based.

It is now important to present the social context for my analysis of paradigms which impact on the research undertaken on occupational health. The first section of this chapter considers the segregation of the labour force as a factor which can have an impact on women's health, drawing upon the discussion of the sexual division of labour in Chapter 2. This section introduces a number of work-related social factors which influence the health of women workers: 1) what the segregation entails, and the related value placed on women's work; 2) the practical implications of a sexual division of labour, such as the "double day", unpaid work, caregiving, etc.; 3) globalization and workplace restructuring.

A second important contextual feature is the growing field of women's health research. It is through an awareness of social inequalities resulting from a segregated work force, as well as from a male-dominated health system and research tradition, which prompted the development of women's health research. This section therefore includes: 1) an outline of the origins of women's health research, revealing the gender biases of mainstream research; 2) a discussion of basic principles of feminist research paradigms; 3) a current Canadian example of the growth of the women's health research community and its involvement in a new funding opportunity; and 4) a discussion to show the distinct nature of feminist methodology and research methods as they apply to women's health.

Segregation of the Labour Force

The Value of Women's Work

“There is women’s work and there is men’s work. And women continue to be disproportionately segregated into many of the least attractive jobs.” (Armstrong and Armstrong, 1994: 15)

In order to fully appreciate the significance of the lack of research on women’s occupational health in Canada undertaken by mainstream research bodies, it is important to first gain a clear understanding of the position and value of women’s work in Canadian society. I would argue that whatever value is placed on particular jobs or occupations, the same value system is placed on the type of health research that is undertaken regarding those jobs and occupations. I would also argue that the work done by women whether in the home or the labour force is considerably undervalued by mainstream Canadian society, including employers and employees alike.

As the quotation from Armstrong and Armstrong indicates, there is a clear sexual division of labour in Canadian society and a systemic tendency of placing women in less attractive work. As explained in the previous chapter, women’s work has been traditionally associated with work in the home, or the reproductive sphere, in contrast with men’s work which has been associated with the productive sphere. Although women also work in the productive sphere, their work is undervalued due to the associations with the reproductive work deemed appropriate for women by capitalist patriarchal paradigms. Women are often segregated into and dominate jobs which are socially defined as “feminine”. For example, as Pat and Hugh Armstrong establish in *The Double Ghetto*, the

leading occupations for women between 1971 and 1991 include: Stenographers and typists (98% female), sales clerks (53% female), personal service workers (babysitter, chambermaids and housemen) (93.2% female), elementary school teachers (81% female), graduate nurses (94.9% female), sewing machine operators (92.2% female) (Ibid, 34).

(See Appendix 1 for further details) These and other “female” occupations tend to be low paid, with little security, lacking health and safety benefits, and are often part-time. Many jobs reflect to a certain degree the type of work normally associated with the home or the reproductive sphere: bookkeeping, childcare, cleaning, service work, teaching children, health care, sewing. This is another contributing factor to the undervaluing of these jobs because work associated with the reproductive sphere is not counted as a source of profit or power within a capitalist market economy.

Within industries of various kinds, women are also segregated into different jobs from men, which usually involve processing and fabricating in contrast with the more highly skilled and highly paid machining occupations reserved for men. (Armstrong and Armstrong, 1983: 9) Similarly, although more women are moving into management positions, rarely does this mean senior management, and these jobs can be characterized as involving more responsibility with very little power. (Ibid:13)

There is another level of segregation among women which is evident through an analysis of race and ethnicity and in a recent article, Pat Armstrong reveals certain racial disparities. For example, within professional and managerial work, immigrant women are

slightly under represented, although they are found in greater proportions in manufacturing work. Similarly, visible minority women with university degrees are disproportionately in clerical, sales, service and manual jobs as compared to other women with university degrees. In addition, Aboriginal women have the lowest rates of job placement at the professional or managerial level, and women with disabilities “face higher rates of unemployment than other women.” (Armstrong, 1997: 49)

Practical Implications

This segregation of the labour force has numerous practical implications for women with respect to both their paid and unpaid work, which can impact on their health. For example, historically women have been responsible for childcare and “tending the hearth” as part of their reproductive work. Today, this responsibility translates into a “double day” which many working women have to face. If women enter the paid labour force, they are not relieved of their responsibilities at home, which may include childcare, care of an elderly parent, as well as the usual household work of cleaning, laundry, shopping, meal preparation, household budgeting, etc. A study by Armstrong and Armstrong on women and work supports this claim and illustrates how women are often required to make complicated arrangements in their lives to juggle their work both inside and outside the home. Women’s domestic work “...often means that they take part-time, seasonal, or odd-hour labour force work, juggle vacations and sick days to fit family needs....” (Armstrong and Armstrong, 1983: 202) This dual responsibility affects the extent to which many women can participate in the paid labour market, and thus has an impact on

how their work in the productive sphere is valued.

To illustrate, the Canadian Labour Congress initiated a project in 1995, "The Women and Work Project", which was mandated to examine the impact of workplace restructuring on women, a phenomenon which is discussed in the next section. Their findings mirror those of earlier studies undertaken by Armstrong and Armstrong and support the claim that more women than men face the burden of the "double day." For example, of their sample of 600 working women, 52% of those who were employed full-time had all the responsibility for daily housework, while 28% had most of this responsibility. This is in contrast with 10% of dual-earning couples who shared housework responsibilities equally, and 10% of households where the man had all or most of the responsibility. (CLC 1997: 43)

It has been widely documented within women's health literature that the amount of pressure on women who have to live this continuous "double day" has profound affects on their health. (Doyal, 1995, for example) However, due to the unpaid and unrecognized nature of domestic work, it is undervalued and thus under-researched outside of the feminist research community. As Jeanne Mager Stellman states, the nature of the work women do at home and in the workplace is conducive to illness, yet due to the lack of baseline data (because of the exclusion of women from investigations of work-related health impacts) it is difficult to draw any conclusions or definite links between ill health and women's dual responsibilities. (Stellman 1977: 34) Each of these examples support

the claim that there are practical implications of a sexual division of labour which influence the health of women workers. Unfortunately, this is a reality of women's lives which dominant research paradigms fail to recognize as an important factor to consider in the analysis of women's health. In short, context matters.

Globalization and Workplace Restructuring .

A third aspect of the sexual division of labour which warrants discussion is globalization and the effects of restructuring on women's paid and unpaid (domestic) labour. What other consequences beyond those mentioned in the Canadian Labour Congress project cited above does restructuring have on women's work? A mainstream, patriarchal analysis sees restructuring of the workplace as a necessary element of the processes of globalization. Priority is placed on competitiveness and economies of scale, and on global sourcing of research and development to access international expertise. (Conference Board of Canada, 1993: 1) According to a study undertaken by the Conference Board of Canada, there are a number of steps taken by companies to improve their international competitiveness. These include: specific corporate strategies focussing on structure and production: automation, specialization, diversification and mergers; rationalization or adjustment, where firms lower costs and improve efficiency by downsizing, closing plants and reducing staff; international, cross-border corporate strategies including expansion abroad. (Conference Board of Canada, 1993: 4) What some may accept as necessary steps to be taken to improve competitiveness in new market structures, feminists would question, especially in terms of the impact such measures have on

women workers' status and, subsequently, on women's health.

In general, women's position in the labour market has worsened over the past ten years. Workplace restructuring has created more part-time and casual or self-employed jobs, which are more economical for the employer because they are often non-unionized, thus enabling employers to avoid the provision of benefits such as health coverage. This also means there is less protection for workers in terms of the number of working hours or job security. For many reasons, including childcare responsibilities, women have formed the majority of part-time workers (Armstrong, 1996: 34). Part-time work is generally poorly paid, insecure (i.e. layoffs are easily enacted by managers) and offers little room for career advancement. "One in five Canadian women today is either unemployed or underemployed and the 49% of women who work on less than a full-time, full year basis suffered an 8.2% fall in real earnings between 1989 and 1991" (Gabriel and MacDonald, 1996: 167).

Women of colour in particular feel the effects of restructuring due to their relative lack of power in the patriarchal workplace structure. There are racial implications inherent to this economic restructuring process. As part of a "global division of labour," many women of colour have come to Canada in search of work and improved lives, and due to the racist mechanisms within hiring practices, coupled with language difficulties experienced by many new Canadians, many become workers in the lowest rungs of the manufacturing and service industries. The textile industry located in inner city Toronto, for example,

employs large numbers of immigrant and visible minority women in highly exploitative working conditions. The garment trade has traditionally been an employer of female immigrant workers and according to Statistics Canada data, in 1986, 94% of sewing machine operators, 83% of pattern-makers and cutters, and 83% of the employees of various textile industry occupations were immigrant women. (Ng, 1998: 21) With current restructuring measures, much of this work is now done in the homes of women, thus facilitating further exploitation of workers. For example, under Ontario labour legislation, “homeworkers are seen to be self-employed, and are therefore not able to unionize. In fact, they work in isolation, with no labour standard protection or workers’ benefits....” (Ng, 1998: 2). The lack of labour standard protection will invariably impact on women’s health. Women of colour have an unemployment rate of 13.4%. Additionally, they are forced into making up the bulk of the cheap labour force (factories, domestic work, hotels, restaurants, clerical) and earn 16% less than other women workers. (Grant-Cummings, 1998: 9)

Restructuring also results in job loss for many women workers. The number of women machine operators in the manufacturing sector employed full-time dropped by 10% from 1984 to 1995. In the clothing industry, which is dominated by immigrant and visible minority women, full-time employment was reduced by 17% within this same time period. (Canadian Labour Congress, 1997: 5) Wages provide a further indication of the over-representation of immigrant and visible minority women in exploitative jobs. “On average, persons belonging to equity seeking groups earn less than other workers - \$1.75

per hour or 12% less for members of racial minority groups, \$0.84 or 5.8% for workers with disabilities, and \$1.92 per hour or 13.3% less for Aboriginal workers.” (Ibid:52)

Another well-known aspect of globalization is the use of “third world” women workers as a source of cheap labour for companies striving for improved competitiveness. NAFTA and other international agreements has facilitated this by enabling Canadian companies to set up offshore production and hire women workers at comparatively low wages, providing no job security or union protection, while exposing women to horrendous working conditions which have direct effects on their health. Thus, we see the exploitation of women of colour nationally and internationally caused by the profit maximization policies of employers, which pose serious threats to the well-being of the workers.

Janine Brodie succinctly draws together the ideas developed above when she states:

Women’s labour-force participation, although increasing, continues to be characterized by female job ghettos, while the current trends toward smaller firms, smaller workplaces, and declining unionization have eroded women’s working conditions, job security, and wages. (Brodie, 1996: 15)

However, the ensuing discussions in her book do not expand on the working conditions in the context of health. These eroded working conditions, loss of job security and lower wages are themselves determinants of women’s physical and mental health due to the increased stresses felt by women workers. Furthermore, I would argue that if employers are downsizing and cost-cutting, any form of occupational health measures that might be

in place would invariably be cut back, reflecting similar health care cutbacks within Canadian society as a whole. These affects are only worsened by the experience of the “double day” which for many women is a daily reality.

The above discussion has outlined the context of women’s work, both paid and unpaid in order to situate my analysis of research paradigms. I identify the value placed on women’s work in Canadian society in order to show in the next chapter the impact this has on the kind of research undertaken. I also indicate that the segregation of the labour force and globalization have practical implications for women’s work which can impact on their health. These are important factors to consider when researching women’s health but, as we shall see, they are often ignored by dominant research paradigms.

As feminists became aware of the social inequalities between women and men which created different working conditions for women and men, they began to question the inequalities in other aspects of women’s lives, including their health and the research undertaken regarding their health. As women are systematically undervalued in society in relation to their work, so too is their health undervalued. This undervaluing is a significant factor for health research pertaining to women. It is this context of the segregation of women’s work which sets the stage for the discussion of research paradigms for occupational health. Linked to this segregation is “women’s health research”, research that is part of the general context for my examination of paradigms.

Women's Health Research

Women's health research investigates how sex interacts with gender to create health conditions, situations and problems that are unique, more prevalent, more serious, or have different risk factors or interventions for women. (Greaves et al., 1999: 3)

Some might question why a statement such as this needs to be articulated, why the consideration of specific realities or situations for women needs to be emphasized.

Unfortunately, the historical evolution of health research, complete with its androcentric paradigms has necessitated a feminist critique of its methods and outcomes in order to correct past shortcomings. Drawing on the analysis of paradigms presented in the previous chapter, this section of the paper demonstrates how the feminist research and activist communities responded to a tradition of androcentric (male-dominated) health research in an attempt to rectify the shortcomings of established research paradigms.

Origins of Feminist Health Research

According to Yvonne Lefebvre, a prominent Canadian researcher, the main origins of feminist health research can be linked to the efforts of the women's health movement of the 1960s and 1970s which revealed the need for more research on women's health, and for researchers to link women's life experiences with the status of their health. (Lefebvre, 1996: 2) As evidenced through the creation of books such as *Our Bodies, Ourselves*⁸ in

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Our Bodies, Ourselves is a comprehensive reference book on women's health initially written in 1969, with subsequent updates in 1984 and 1992, and is an ongoing project of the Boston Women's Health Book Collective.

the U.S. and of various publications by the Montreal Women's Health Press, the women's movement began to question why, for example, information on birth control was illegal and why hundreds of women were dying from botched, illegal abortions. It became clear that research emanating from the medical establishment was severely limited in the attention paid to issues of health specific to women. More recently, international consensus was reached by women activists, researchers and workers worldwide in the *Report of the Fourth World Conference on Women* (Beijing, 4-15 September, 1995). In this declaration, women have articulated the need for more research using a broader understanding of health by proposing actions to be taken by "...governments, the United Nations system, health professions, research institutions, non-governmental organizations, donors, pharmaceutical industries and the mass media." (See Appendix 2 for details) This broader understanding of health would go beyond the traditional tendency to focus only on medical aspects of reproductive health, and would incorporate social factors in women's lives which impact on health.

According to a number of feminist researchers, the scientific and medical establishments have traditionally used a particularly narrow definition of women's health which places an albeit important, but undue focus on women's reproductive health. (Lefebvre, 1996; Greaves et al., 1999; Dan, 1994; Doyal, 1995; Haseltine, 1997, for example) This historical tendency on the part of scientists and medical researchers to focus on women's childbearing and mothering roles has encouraged them to virtually ignore the other aspects of women's health. If women are defined as incubators and baby machines, their

health will be similarly defined in such terms. Occupational health research is no exception and has led to protectionist measures safeguarding the reproductive health of women. The term “reproductive” is used here to denote health of women’s reproductive organs, their experience of pregnancy and childbirth, etc. This, in itself, is important, but the focus on reproduction in health research raises questions regarding the sexism and limitations of such research. This is discussed further in subsequent chapters.

This focus on women’s reproductive capacities is not surprising, given women’s traditional child rearing responsibilities and the traditional link between women and the reproductive sphere, as well as the medical focus of health evident in dominant research paradigms. In response to this narrow focus on women’s health, feminists have developed a body of research which critiques the narrow research paradigms plaguing the health research establishment. As explained in Chapter 2, the research traditions of science and medicine have been highly influenced by capitalist and patriarchal structures and modes of thought. These influences have resulted in serious biases evident in the research. Some specific examples of those identified by feminists are outlined below.

There has traditionally been a bio-medical focus in health research. The emphasis is on the malfunction of a particular organ within the body, in isolation from the body and person as a whole. (Doyal, 1995) Feminists have criticized this focus and have revealed its limitations. Its treatment of ill health as a mechanical failure of body parts, using an “engineering metaphor” means that the “complex relationship between mind and body is

rarely explored and individuals are separated from both the social and cultural contexts of their lives.” (Doyal, 1995: 15) Feminists have insisted that health is determined by not only genetic makeup, but also by social activities, our level of education, where we live, and other structural and material factors.

Yet, traditional research paradigms ignore the social factors, including gender-based inequalities, which can have serious impacts on women’s health. For example, the physical and emotional burden of the “double day” as discussed above, can impact on the health of a woman who works full-time, or has to run between two part-time jobs. Similarly, the presence of children and the pressures of finding childcare, especially for single mothers, can have consequences for women’s health. Even where a woman lives is an important factor for researchers to consider. If a woman is forced by financial constraints to live in a neighbourhood in close proximity to a factory which emits toxic chemicals into the air, her exposure to these toxins will affect her health, and may even interact with other exposures from her work to create further impacts on her health. Social factors such as these should not be ignored in health research, and feminist researchers stress the importance of their inclusion or consideration in health research. Carmen Barroso argues that “bringing a gender perspective to reframing women’s health will illuminate the social conditions that shape health and stimulate the creativity needed to solve old problems.” (Barroso, 1994: 99)

Another issue for feminists is the personal biases and structural constraints of mainstream researchers. Sue V. Rosser's work (Rosser,1994) shows how the definition of a problem to be studied, or the choice of what to research, is highly dependent upon what a researcher defines as worthy for study. Researchers are highly influenced by national and personal agenda, sources of funding such as government or pharmaceutical companies and even their own attitudes and paradigms. "The scientific research that is undertaken reflects the societal bias toward the powerful, who are overwhelmingly white, middle- to upper-class men in the United States." (Rosser,1994: 254) Their particular perspective on health will influence their decision on what warrants further research. As Kuhn makes clear, particular research paradigms could influence the decision to reject research problems because they are not considered solvable within that paradigm.

Another example of bias in health research is the exclusion of females as experimental subjects. This issue is widely documented within the feminist literature and feminists in Canada and elsewhere have taken issue with the practice of excluding women or female animals from clinical trials. The mainstream research community has offered a number of explanations for this exclusion, all of which feminists have refuted. For example, researchers have argued that women's cyclical hormonal changes introduced too many uncontrollable variables thus confounding research results. (Johnson and Fee, 1997: 14) This is not a legitimate objection because men have cyclical hormonal changes as well, although this is not considered to be a confounding factor for the bulk of health research undertaken. I would argue that it is bad science to ignore the different

variables which may be presented during different times of the hormonal cycles, in women and in men. Unfortunately, this avoidance of testing particular drugs and medications during different times of female hormonal cycles has prevented us from knowing the impacts of different medications on women. In addition, the use of white males as the norm in clinical trials, has ensured that the effects of race/ethnicity, education, ability and socio-economic status, not to mention sex and gender, on the outcomes of drug usage are unknown for individuals who do not fit the normative model. (Ibid.; Doyal, 1995; Nechas and Foley, 1994)

Another argument for excluding women from research studies is linked to the fear of harming pregnant women and their fetuses. (Johnson and Fee, 1997: 16; Nechas and Foley, 1994: 28) Thus, pregnant and fertile non-pregnant women have been excluded revealing a paradigm which assumes that women are unable or not willing to control their fertility. This narrow thinking also ignores the fact that there are many celibate, lesbian and sterile women who could be suitable for studies. (Johnson and Fee, 1997; Nechas and Foley, 1994) However, such assumptions have resulted in data produced from years of health research which excludes pertinent information about women.

In addition to these obvious biases, a bio-medical focus produces limited results in research because it cannot account for societal factors which impact on health. Such a model cannot explain socio-economic factors affecting certain population groups, or “why population distributions of disease generally follow the contours of

power....standard of living and degree of social inequalities.” (Greaves et al., 1999: 3)

As a result of such oversights, there are critical data gaps for diseases and chronic illnesses which women experience, especially with regard to Aboriginal women, women with disabilities, immigrant women, women of colour, older women, and lesbians. (Ibid: 6)

In the context of paradigms reflecting the material and historical conditions of the capitalist and patriarchal social structures which formed the basis for science and medicine as we know them today, health researchers often simply fail to recognize women's health issues. They are social beings whose ideas, language and beliefs are affected by their positions in society, their education, and specific research paradigms. (Lefebvre, 1996: 7) This has been aptly expressed by Rosser:

By the exclusion of females as experimental subjects, a focus on problems of primary interest to males, faulty experimental designs, and interpretations of data based in language or ideas constricted by patriarchal values, experimental results in several areas of biology are biased or flawed. (Rosser, 1994: 253)

Basic Principles of Feminist Research Paradigms

The discussion above has revealed some of the problems and limitations of mainstream health research and has indicated the importance of recognizing social factors as having an impact on health. Through a critique of mainstream research methods and paradigms, feminists have developed alternative research paradigms which attempt to address problems of the established tradition.

One of the key concepts within feminist research paradigms is the importance placed on the influence of sex and gender on health. A definition of these terms in the context of feminist research is warranted. I draw upon the work of Greaves et al., in their report entitled *CIHR 2000: Sex, Gender and Women's Health* to explain this concept further, as their writings are representative of much of the current feminist literature on women's health in Canada. Sex refers to biological characteristics which are distinctly male or female, and is a variable which enables investigations to compare these characteristics for possible differentiation between the sexes. (Greaves et al., 1999: 2) "Gender refers to a variety of socially and culturally determined roles, personality traits, attitudes, behaviours, values, relative power, and influence that society ascribes to the two sexes on a differential basis." (Ibid.) Research that ignores variables relating to either sex or gender fails to reveal the critical influences of biology or social factors related to sex which can have drastic impacts on the health of individuals or demographic groups. For example, risk factors for breast cancer may be defined from a purely genetic stance which simply shows that a certain percentage of women are genetically predisposed to having breast cancer. What this claim does not account for is the impact that race/ethnicity, geography, degree of wealth or poverty, or the type of food available and consumed by women depending on socio-economic status can have on a woman's propensity for the disease.⁹

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For an extensive analysis on social and environmental factors which influence breast cancer see Sharon Batt, (1994) *Patient No More*. Charlottetown: gynergy books, and Judy Brady, (ed.) (1991) *3 Women With Cancer Confront an Epidemic*. San Fransisco: Cleis Press Inc.

The research model espoused by feminists is one which incorporates a number of social and economic factors into the definition of health or ill health. This concept is known as a “determinants of health” model and is used (albeit in a limited way) in current Canadian federal health policy and research. The 12 health determinants which Health Canada has identified are: income and social status; employment; education; social environments; physical environments; healthy child development; personal health practices and coping skills; health services; social support networks; biology and genetic endowment; gender; and culture. Feminists define determinants of health in a more comprehensive manner than is currently used by mainstream policy makers and government researchers and insist that the gender component should be considered throughout the different determinants and not on its own. The report *Women’s Health in the Context of Women’s Lives* by Vivienne Walters et al., provides a succinct explanation of this approach, emphasizing the importance of structures of inequality, social class, race and ethnicity, age, work, etc., from the standpoint of gender in the analysis of women’s (and men’s) health. (Walters et al., 1995) This report analyses numerous studies of women’s health, including the 1990 Health Promotion Survey, using the determinants of health framework as a measure of comparison. This study, because of the questions it asked, revealed key patterns in women’s health which include, among other factors, a consistent association between social class and health, where the levels of income and education reflect the levels of health status; the relationship between aging and poor health; and, the positive association of women’s participation in the labour force with better health. (Ibid: 2) This is an interesting finding, which illustrates that although the workplace can have negative

impacts on workers' health, women who are unemployed report an even worse status of health. When researchers are aware of the potential impacts of social factors as experienced by women on their health, they ask the appropriate questions which help to reveal such relationships. Feminist research paradigms facilitate this process through the use of multidisciplinary research methods which combine quantitative and qualitative data and ask questions drawn from various research disciplines. Mainstream research paradigms often fail to do this, and result in gender-blind research which ignores these critical factors in women's and men's lives.

The work of Walters et al., is significant for women's health, and especially in this particular analysis of research paradigms, because it demonstrates how structural explanations can be used to reveal the underlying causes of ill health for women. It demonstrates that health is not only based on individual factors, predispositions, or genetic codes, but it also involves a more complex interrelationship of many factors in the context of our lives.

Current Situation

Having outlined some of the key principles of feminist health research paradigms, it is important to discuss the current situation of women's health research in Canada in order to gain a more complete picture. Feminist research paradigms and methods are still generally undervalued and even ignored by the mainstream health research community. I illustrate this using as an indicator the continued use of old paradigms by mainstream

researchers which ignore gender effects. In spite of the extensive literature by feminist researchers, the mainstream research establishment fails to see beyond its own limited scope.

One current example comes from The Society for Women's Health Research, a national not-for-profit organization in the U.S. which is mandated to improve the health of women through the promotion of gender-based research. A study of theirs was reported in recent articles from the *Washington Post* and the *New York Times*, and published in the *Journal for Women's Health and Gender-Based Medicine*. The Society reported that the National Institutes of Health (NIH) has not enforced a 1993 regulation requiring researchers to analyse clinical trial data by sex. Although this is not a Canadian example, its inclusion in my analysis is important because Canadian researchers submit their research to the same peer-reviewed journals which publish NIH-funded research. The Society analysed a number of federally-funded studies appearing in peer-reviewed medical journals and found that "analysis by sex was occurring in the minority of clinical research that is currently published." (Greenberger, 2000)

This study and similar findings in the May 2000 report of the General Accounting Office (an investigative arm for the U.S. Congress), shows that the NIH does not actively enforce this regulation. (Society for Women's Health Research, 2000) In a recent online interview with the *Washington Post*, Phyllis Greenberger (Executive Director, Society for Women's Health Research) presents some concerns which I would argue indicate the

gender-blind paradigms under which mainstream researchers work. For example, in response to the question of researchers' reluctance to analyse for sex-related differences, she states that "...many still do not believe that there are differences worth noting. Many have been educated and trained to research a certain way and it is difficult to make changes." (Greenberger, 2000) It is interesting to note, in the context of research paradigms, that of the 32 Journals that researchers from the Society contacted to question their use of gender analysis, only one responded. The Journal of the National Cancer Institute has now changed its editorial policy and instructs authors to include sex analysis whenever appropriate. (Ibid) Although this appears to be a positive response, I would question the use of the term "whenever appropriate" which could facilitate the continuation of the avoidance of a sex- and gender-based analysis.

Canada does have a similar policy for the inclusion of women in clinical trials. *The Food and Drugs Act and Regulations* require that the Drugs Directorate of Health Canada ensures that clinical trials are done according to Health Canada guidelines. In April 1997, the Therapeutic Products Programme Guidelines of Health Canada published a revision to the guidelines to ensure the inclusion of women in clinical trials. (Health Canada, 1997) The Statement of Purpose asserts the following: "It is important to ensure that women are enrolled in clinical trials at all stages of drug development in order to define risks and benefits associated with drug therapy in this segment of the population." (Ibid: 1) The document explains the importance of testing for the differential responses to drugs depending on hormonal changes and the use of oral contraceptives, which is certainly a

positive step for research undertaken in Canada.

Although such regulations suggest a paradigm shift, there is evidence that funding institutions still fail to take women into account. A study by one of Canada's major funding agencies indicated that most research undertaken in Canada does not include sex or gender analyses unless it is done within a women-specific theme. The "Women and Work Strategic Grant Program", a women-specific thematic program of the Social Sciences and Humanities Research Council of Canada (SSHRC) was reviewed upon the request of the SSHRC. Although the thematic program had a positive impact, enabling a number of women-specific research projects to be funded, the review expressed concern that all research funded by the SSHRC was not required to take sex or gender into consideration. (Christiansen-Ruffman et al., 1993: 145) The review recommended that: "a policy of non-sexist research be endorsed by Council. Council should begin by ensuring that all documents produced by the SSHRC and especially the Guides addressed to candidates are not biased against women in their language and examples." (Ibid: 144)

The SSHRC is a major funding mechanism for Canadian health research in social science and the humanities, yet the only assurance for sex- and gender-based research was through a thematic program, which lasted for a limited period of time. Although special research programs such as the Women and Work Program are important in assuring that some research is undertaken on issues specific to women, it is not adequate compared to the amount of funds available for health research in general.

It should be noted that it is not enough to simply include or count women in a study. The key issue is the type of research and analysis done. Appropriate research should involve a gender analysis of the numerous factors which impact on a woman's life. Effective gender-aware research takes the social context into consideration, and asks key questions which aim to reveal the impacts of that social context, recognizing the difference of women's experiences. Numbers are not enough, yet the findings in Chapter 6 reveal that when mainstream researchers even consider women in their studies of occupational health, they are most likely to report numeric results without the inclusion of any meaningful analysis.

The amount of funding allotted to feminist or women-specific research is one indicator of the current state to which feminist research paradigms are undervalued. Greaves et al., have created a useful summary of funding allocations provided for women's health research in Canada between 1997-1998 (See Appendix 3). Taking three major funding mechanisms, they have demonstrated the appallingly low numbers of research projects focussed specifically on women's health. Only 20% were funded through NHRDP funds, 12.2 % through MRC funds (or 41. 3% for more "broadly defined" women's health issues), and 18% were funded through SSHRC. (Greaves et al., 1999: 29) The situation in the U.S. is similar. In 1988, the NIH allocated 13.5% of its total budget to research illnesses of major consequences for women. (Rosser, 1994: 255) Although one should compare statistics for similar time periods, this 10-year difference may not be of consequence in light of the findings outlined above regarding NIH-funded projects.

Some might defend these numbers by stating that both the U.S. and Canadian governments have corrected for the disparity in sex and gender specific research through the installation of the Canadian Centres of Excellence for Women's Health Programme, and the U.S. Office of Research on Women's Health. These are certainly very positive endeavours and in the case for Canada, the Centres are producing excellent research on numerous topics of importance to women's health. However, the programme is temporary, and has a finite amount of funding. It also does not ensure that all health research in Canada is undertaken using feminist paradigms and research methods. I would also question the extent to which the research findings of the Centres will be "mainstreamed" into the body of health research literature in Canada. As long as the principal funders, the peer-reviewed journals and other control mechanisms of research are working within non-feminist paradigms, the work of the Centres will continue to be marginalized. This happens because the "value of particular research endeavours has often been determined by those who are under the influence of historical biases (received wisdom) about that which is significant and that which is trivial." (Tomm, 1989: 2) The dominant funding institutions and journals influence the degree to which research is valued or not, and their decisions are driven by these historical biases or paradigms. In order to recognize potential blocks to their research, and to devise strategies to overcome such blocks, feminists need to investigate professional gatekeeping practices, especially those which prevent publication and dissemination of feminist research through mainstream channels, which influence topic selection and research funding. (Cook and Fonow, 1990: 78) In other words, feminists must undertake the extra task of

understanding the research priorities of the dominant funders or journals in order to find creative ways to overcome the barriers in an attempt to avoid marginalization. As demonstrated in the CINBIOSE example of this thesis, many feminist researchers simply can't access funding or publish their research through mainstream mechanisms and resort to submitting their work to lesser-known feminist or women-friendly journals and funding opportunities.

The creation of a new funding mechanism for health research in Canada could be seen as an opportunity for positive change for women's health research. A core group of feminist researchers in Canada has been working for a number of months to push for the creation of a women's health research institute within the newly formed Canadian Institutes for Health Research (CIHR). This group proposed that a women's health institute be formed which would produce health research with a focus on women's health issues, as well as a "gender mainstreaming" mechanism for ensuring that a sex and gender analysis form part of all CIHR-funded projects. Greaves et al. describe this process and state "We need a comprehensive strategy that involves both women-oriented programming as well as integrating women into existing programmes, both agenda-setting activities as well as those that incorporate women into mainstream structures." (Greaves et al., 1999: 16)

After much pushing and lobbying by feminists, a Gender and Health Institute has finally been approved (not Women and Health). However, the purpose and overall vision of the Institute has not yet been defined. If feminist researchers are able to provide input into the development of the mandate of the Institute, they could help to ensure that it would

operate from a similar framework as described above, which would place a focus on the social context of women's lives and the impact this has on their health. This is a critical situation for women's health research in Canada and could mean either a refreshing new look for research, or a continuation of inadequate funding decisions based on gender-blind paradigms which continue to marginalize and undervalue research on women's health. This will depend on the extent to which the Institutes incorporate a gender focus in their mandates. Chapter 6 provides a further critique on the CIHR and its research paradigms as evidence that dominant paradigms still prevail in Canadian health research, which suggests the further marginalization of feminist research.

In spite of the structural barriers faced, this new feminist effort is also an important indication of the extent to which the women's health research community has grown in Canada. Behind the core group of feminists who have strategized and proposed a design for a women's health institute, is a huge body of women's health researchers and activists indicating the research capacity in this country. According to Greaves et al., there are over 500 self-identified, multidisciplinary women's health researchers in Canada, including nine chairs in women's health at various universities and hospitals, and over 25 women's health-related centres, organizations, and government departments. (Greaves et al., 1999: 11) However, their influence remains limited due to the marginalization of feminist research in Canada.

Methods and Methodology in Health Research

In the analysis of research paradigms it is important to consider methods. Different research paradigms use different methods, and the preference for particular methods can be an indicator of the paradigm under investigation. The final section of this chapter is dedicated to a brief discussion of feminist methodology and an analysis of what differentiates feminist research methods from mainstream methods. Such a discussion assists in a further understanding of paradigms of occupational health research. There is a large body of feminist literature dedicated to the discussion of research methodology and methods. My review of some key writings in this area (DeVault, 1999; Tomm, 1989; Eichler and Lapointe, 1985; Nielsen, 1990) leads me to conclude that a major difference between feminist and other research is its degree of self-awareness and self-consciousness, rather than the claim that it is value-free or bias-free. Feminist theorists are conscious of their 'perspective', a perspective that informs the use of a range of standard research tools. (DeVault, 1999: 21) This is in contrast to the claims of objectivity which mainstream scientific research paradigms possess. This perspective influences how research is undertaken. Drawing from this body of feminist writings, I use the term "methodology" to denote this feminist study and awareness of research practices, and the term "methods" to denote particular tools or ways of doing research.

The previous pages have outlined some of the critiques of mainstream/traditional research paradigms as compared to some of the principles of feminist health research paradigms. Similar comparisons can be made between research methods used by feminist and non-

feminist researchers. In the feminist critique of mainstream/dominant research methods, there is an ongoing debate regarding the value of subjectivity versus objectivity, and qualitative versus quantitative methods. Feminist research is often accused of being too subjective, since it places high importance on the experiences of those being researched to the point of sometimes involving research subjects in the design and implementation of some studies. In contrast, the mainstream research establishment places a greater value on “objective” research, which is achieved through the use of research methods which are thought to ensure bias-free results: quantitative, statistical, experiment-based, for example, which distance the researcher from the research subjects. No research (feminist or non-feminist) is free of bias and feminist research acknowledges this. Feminist researchers also use quantitative, statistical and experiment-based methods, but they use them in different ways, and combine them with qualitative methods, incorporating the experiences of their research subjects. The difference is in the questions feminist researchers ask which relate to the issues important to the lives of the women they study, issues which are often ignored or unrecognized by mainstream researchers. Feminists reject the idea of the existence of pure and objective sciences and research being an unquestioned source of information and knowledge, and relate this rejection to the sexist and socio-economic origins of these research traditions. (DeVault, 1999; Tamm, 1989; Nielsen, 1990)

“The heart of feminist methodology is a critique that views the apparatus of knowledge production as one site that has constructed and sustained women’s oppression. This

critical understanding provides, by implication, criteria for a different research practice.”

(DeVault, 1999: 30) The issue here is the assertion that research is not pure and value-free but is highly influenced by where the research originates, based on the individual researcher’s interests, beliefs and historical location. (Tomm, 1989: 11) Feminist methodology demonstrates how economic realities such as politics or globalization can influence research to result in sexist and classist biases. When feminists question the biases in health research, some of which are outlined in the previous section, they must also question the methods used which result in such research. Feminist research methods stress the importance of the experience of both the researcher and the researched, of contextualizing the research process, and of maintaining a self-consciousness of that process. (Driscoll and McFarland, 1989: 187, for example) The validity of women’s experiences, visible mainly through qualitative and non-traditional methods, inform the research and provide a more complete image of women’s lives.

Numerous innovative multidisciplinary methods can be used to learn about and gain insights into women’s experience. Such methods go beyond the comparatively limited traditional statistical data gathering. Methods such as participatory action research, which involves both researcher and researched in the entire research process including formulation of the problem, collection of data, interpretation of findings and implementation of results (Cook and Fonow, 1990: 76) provide information that is much richer than that gathered through standard questionnaires or clinical trials.

In addition, there are also issues to be raised around the context of quantitative research. Researchers such as Margrit Eichler have raised awareness within feminist scholarship as to the problems with statistics. These centre around the types of questions asked, and who is asked in quantitative research. For example, "householdism"¹⁰ a term she coined implies that when official census questions are asked of the household, specific realities for different members of the household may be hidden. In many cases, the "man of the house" is interviewed thus injecting a one-person bias into the information gleaned on that particular household. (Health Canada: In Press; Eichler and Lapointe, 1985: 11)

The research methods used are clearly a product of the paradigm of the researcher and it is evident from the above discussion that feminist research methods possess particular qualities. These qualities enable feminists to ask different questions, and to glean important information otherwise hidden to non-feminist researchers. It is a creative and self-questioning body of research which has grown out of feminist paradigms that has enabled the development of a growing body of women's health knowledge. This research

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Margrit Eichler coined the term "householdism." "This occurs when the household or family is taken as the smallest unit of analysis in situations in which individuals within this unit may be differently affected by policies, situations, events, etc. Of course, it does not mean that one should never use the household or family as a unit of analysis. It is only when we are making statements about matters that may affect household/family members differently on the basis of sex that we are dealing with a gender bias. The point is to ensure that the unity of analysis corresponds to the level at which observations are made." (Moving Toward Equality: Improving the Health of All People: Recognizing and Eliminating Gender Bias in Health. A Health Canada Training Package. In Press)

in some ways contradicts and certainly critiques traditional health knowledge previously available to women.

Conclusion

I have presented the general social context within which women's health research is situated in Canada. The sexual division of labour influences how women's work is valued. This, in turn, has consequences for how research on women's occupational health is valued. In response to the failure of mainstream health research to adequately investigate key health issues for women, a feminist health research movement developed which began to critique how research was done. A number of current examples were provided to illustrate how mainstream researchers and funders undervalue women's health research, and how through the CIHR Canada now has an opportunity to correct past wrongs and enable feminists to influence future research in a gender balanced manner. I have focussed mostly on clinical and statistical research because, as discussed in Chapters 5 and 6, the vast majority of occupational health research is undertaken using methods based on clinical and statistical models. A comparison of feminist and mainstream research methods helps to situate the feminist occupational health research to be discussed in Chapter 5 and reveals the ability of feminist methods to unearth crucial health issues for women. A crucial feature of the research emanating from the women's health movement is the importance placed on social context in the lives of women. Feminist researchers incorporate this social context into an analysis of women's health, to assess the impacts of these factors on women's health. This is not usually done within

dominant research paradigms which ignore the importance of social factors in women's and men's lives which can have an impact on their health. The following chapter describes the methods used in this study of paradigms and presents the list of indicators used throughout the analysis.

CHAPTER 4 - METHODOLOGY

This thesis presents a qualitative analysis of occupational health research in order to reveal the different paradigms which shape the type of research undertaken. It argues that the outcomes of occupational health research are directly related to the paradigms under which researchers work, and as the dominant paradigms are gender-blind, key aspects of workplace health are ignored by mainstream researchers who perpetuate these dominant paradigms.

This analysis focusses on three key areas: 1) which methods are widely accepted and used; 2) whether the consideration of social context is included in mainstream research methods; and, 3) if and how women are considered in mainstream research. A focus on these three areas is necessary in order to reveal the dominant paradigms in occupational health research. This is done through an assessment of the treatment of women's health issues by mainstream researchers based on how women are included in research, and involving a comparison between feminist and non-feminist occupational health research. A review of the literature and other sources of relevant data, both feminist and non-feminist, is undertaken to ascertain the occupational health research paradigms at work. Dominant research paradigms are revealed through the use of indicators which demonstrate where these paradigms are most prevalent in occupational health research. For example, my investigation assesses when and how feminist research is accepted by mainstream research bodies, such as funding institutions and academic journals. In addition, a search of occupational health research is undertaken to assess the prevalence

of studies using feminist methods and paradigms, such as the consideration of social context in workers' lives as a determinant of health.

I have chosen to focus my study on CINBIOSE (Centre pour l'étude des interactions biologiques entre la santé et l'environnement / The Centre for the Study of Biological Interactions in Environmental Health). The example allows me to examine the claims and experiences of researchers who employ feminist research paradigms in occupational health. Their experiences are analysed in relation to the research in the broader occupational health literature in order to expose and analyse the mainstream research paradigms within the area of occupational health.

Why focus on this particular organization? CINBIOSE is a centre of biological research, based in the Université du Québec à Montréal (UQAM) which uses feminist research methods, including participatory research and union collaboration in workplace-based studies. The context of their research is based on the following definition of health:

Human health goes beyond the simple notion of absence of illness. It is an optimal state of physical, mental and social comfort, that is maintained and thrives under the effect of interactions between the genetic storehouse of knowledge and the environment. (CINBIOSE, 2000).

The Centre investigates the impacts of environment, such as the workplace, on the health of workers and much of the research has focussed on women workers. CINBIOSE researchers have a long history of collaboration with both government policy analysts, and community-based researchers in the promotion and development of women-centred

occupational health research. My review of the health research literature has revealed that CINBIOSE is the main source of Canadian research on women's occupational health, and thus plays an important role in the promotion of feminist and women-centred research in this area of women's health. In spite of this unique contribution to occupational health research, the work of CINBIOSE remains marginalized by dominant research entities and its researchers must seek feminist-friendly journals and funders to promote their work. It is due to the exemplary quality of their research, and the contrasting marginalization of that research, that I have chosen CINBIOSE as a focus of my study on paradigms.

Sources of data

In order to effectively analyse the dominant research paradigms, I have utilized a variety of different sources of data to undertake this study. I have also developed indicators to be used in the identification of paradigms, based on my readings of the literature.

CINBIOSE Literature Review

The first source of data is a review of CINBIOSE research which includes both specific research projects undertaken by them, as well as critiques and analyses of how scientific and occupational health research is undertaken by mainstream institutions and researchers. Researchers at CINBIOSE have written numerous critiques of mainstream research methods based on their own experiences with academic journals and funding institutions. These are incorporated into the analysis. It should be noted that the CINBIOSE example of critiques and research projects includes works of colleagues who

work with CINBIOSE, but who are not necessarily based in the Université du Québec à Montréal (UQAM).

Five Refusal Letters

For the second source of data, I met with Dr. Karen Messing and Dr. Donna Mergler on October 24, 2000 to discuss their experiences with proposal and journal article submissions. Dr. Messing, a biologist and specialist in ergonomics, is the Director of CINBIOSE. Dr. Mergler is also a biologist specialising in physiology and neurophysiology, and is a key researcher of the Centre working closely with Dr. Messing. They have collaborated on numerous studies, incorporating women-centred research methods into their analyses. I was provided with five research articles and their corresponding letters of refusal (or in some cases letters of acceptance with major revisions) selected by them, from international academic occupational health and safety-related journals. Due to the past rate of rejection of their research by mainstream science-based funders in Canada they now submit proposals to funders working in the social sciences and international studies with much greater success and acceptance. (Messing, personal communication)

CINBIOSE Email Interview

In consideration of the small number of letters available for analysis, it was appropriate to undertake interviews with CINBIOSE researchers (my third source of data) to gain further insight into their experiences in the submission of their research to funding

institutions or academic journals. I was interested in knowing how mainstream journals and funders judged their work, and whether they accepted the feminist research methods utilized by CINBIOSE researchers. Upon approval from Karen Messing, and ethics approval from the School of Canadian Studies, I sent 9 interview questions (see Appendix 4) by email to 20 CINBIOSE researchers whose names and addresses were provided by Dr. Messing.

Mainstream Sources

A fourth source of data is a systematic search of other sources of occupational health research, both published articles as well as research funding institutions, to verify if they confirm the claims and critiques made by CINBIOSE, and if they reflect the dominant research paradigms. This involved a search of the Medline Advanced database which provided me with abstracts of articles from occupational medicine journals. Following that, I also undertook a web-based search of organizations which represent the production and promotion of mainstream health research, in order to better assess its origins. The details of these searches are outlined below.

Method of Analysis

Literature Review

I began my research with an extensive reading of CINBIOSE literature as well as feminist sociological studies of methodology in order to strengthen my knowledge of feminist research paradigms and methods and I have applied this body of knowledge to my

analysis. The reading of this literature has revealed to me key elements of feminist research which when applied to mainstream research illustrate, from a feminist perspective, gaps and shortcomings of that research. I draw upon some of the writings of CINBIOSE researchers which illustrate their experiences and challenges in presenting feminist research to a non-feminist research body. Due to the large number of research articles published by CINBIOSE, I narrowed my selection to those studies which were published in English and which were recommended to me by Dr. Messing as being exemplary sources of gender-based research and critiques of mainstream methods. This review also includes the work of other feminist scientists and occupational health researchers cited in Messing's book, *One-Eyed Science*, in order to locate the CINBIOSE literature and its critiques within the larger body of research in this area.

In my reading of the CINBIOSE literature, I separated the articles into two types: those which discussed research and methodology, and those which described actual research projects and studies. The project-based articles provide a demonstration of the types of research problems and methods described in the research and methodology articles. The knowledge I have gained from this literature review enabled an informed initial reading of the five refusal letters received by CINBIOSE and the creation of a list of key terms and indicators for paradigms. I apply these indicators to the four sources of data in order to reveal the feminist or non-feminist paradigms which prevail.

Key Terms / Indicators for Paradigms

The following is the list of indicators which were applied to the various sources of data described in the following sections. These are not mutually exclusive categories and any number of them may be visible in samples of mainstream research. Although the following list shows my indicators for mainstream research, it should be noted that a key indicator for feminist research is the use of multidisciplinary research methods and data gathering tools. Such methods enable the researcher to avoid the limitations to their research results which the following practices promote.

1. Rejection of “anecdotal” evidence¹¹.

This indicates mainstream methods which do not consider the expressed experiences of the workers themselves as a source of evidence.

2. Priority to clinical trials without both male/female subjects.

Traditional mainstream studies do not usually include female subjects in clinical trials whereas feminist or gender-aware studies would insist on their inclusion when appropriate.

3. Preference for scientific-based, quantitative, traditional research.

Journals which place greater value on studies which use traditional scientific research methods and reject studies which incorporate feminist methods (qualitative, participatory for example) reveal their non-feminist paradigms.

4. Rejection of experience-based research.

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The term “anecdotal” is often used by mainstream researchers in a derogatory sense to describe (and undervalue) evidence which is provided by women, based on their own experience, expressed in their own words, reflective of the realities in their lives. Feminist research places a priority on this type of evidence.

Feminist research places a high value on evidence gleaned from the experiences of research subjects, whereas mainstream research tends to reject personal experience as evidence.

5. Lack of a requirement to specify women or sex disaggregated analysis.

If journals or funders do not require researchers to specify women in their studies, or incorporate a gender-based analysis they are working from non-feminist paradigms.

6. Rejection of contextual information and qualitative analysis.

Context matters in feminist health research, and qualitative methods are often incorporated even in studies which might normally be done using traditional quantitative methods. A rejection of these methods could indicate mainstream paradigms.

7. Lack of understanding of key work issues for women: flexible scheduling, part-time work, restructured work environment .

Researchers working from non-feminist paradigms would not be aware of specific issues for women which are evident in feminist literature.

8. Preference for proof of pathology rather than research based on symptoms to recommend preventive measures.

A key characteristic of feminist occupational health research is the focus on symptoms, not simply pathology thus making the absence of symptom analysis a very clear indicator.

9. Preference for laboratory-based studies.

Another key characteristic of feminist occupational health research is the practice of research within the workplace, involving the participation of actual workers. Laboratory simulation studies indicate mainstream paradigms.

10. Rejection of workplace-situated studies.

This indicates mainstream paradigms in a similar manner as the previous criterion.

Analysis of Five Refusal Letters

A second component of this study, to test the CINBIOSE critiques emanating from the literature review, involves an analysis of the comments received by CINBIOSE from academic journals who have rejected their research articles. This analysis helps to reveal the paradigms of mainstream researchers by indicating the style of research they value. The mainstream paradigms are recognized and identified through indicators developed on the basis of feminist critiques. My own critique of these refusal letters is enhanced through references to the CINBIOSE critique of comments and refusals which appears in a number of their articles. My analysis expands on their critiques through the examination of paradigms and their significance to research outcomes.

The method of analysis of the letters and their corresponding submitted articles involved the following steps: 1) a reading of the article to familiarize myself with the subject matter and research question; 2) a reading of the rejection/revision letter and any comments made in the margins of the submitted paper; 3) a search for key terms and concepts, based on indicators, which would demonstrate non-feminist research paradigms; 4) final analysis indicating research paradigms based on the findings. It should be noted that all names of journals, reviewers, and article authors remain anonymous throughout this study.

Mainstream Sources Search

In order to gain further understanding of the mainstream research point of view, I have

done a systematic search of mainstream occupational health research using the Medline Advanced database, through Webspirs software. The search was limited to occupational medicine journals and I used a number of search terms which would locate articles which used gender analysis, and those which used mainstream research methods. Some searches resulted in a large sample of articles, and other searches resulted in very few articles. The articles for final analysis were selected from the samples of mainstream studies, and those studies which appeared to use gender-based methods. Where the sample size was large, I selected the first 30 articles for analysis. The various searches undertaken, and the criteria for selection of articles and abstracts is explained in greater detail in Chapter 6. Through a reading of the search results, I have done a comparison of the numbers of studies, and types of study done within two different time periods: 1990-2000 and 1970-1980 in order to ascertain the extent to which gender is incorporated into research. I chose the earlier time period to determine if feminist knowledge developed in the early stages of the women's movement would be reflected in the research. The second time period was chosen to ascertain if current occupational health research would show a difference in the awareness of gender analysis after 30 years of feminist research and scholarship. I reviewed and critiqued the abstracts and a small sample of actual articles which represent mainstream methods and priorities, my analysis of which further supports my argument.

In order to locate other sources of mainstream research, as well as to gain insight into the priorities and requirements of funding institutions and academic journals, I searched key websites using the Canadian Centre for Occupational Health and Safety as the initial

starting place. Although this site itself did not provide specific samples of research which could be analysed, its extensive external links section did lead to other sites which presented research samples, as well as funding and publishing guidelines, which demonstrate mainstream paradigms through an application of the list of key indicators. I included both Canadian and American websites in this scan in order to obtain a wider range of sources to analyse. I narrowed the analysis to three major health research and funding institutions: the Institute for Work and Health, the Canadian Institutes for Health Research, and the National Institutes of Health.

The following chapter presents the findings from the literature review which focusses on the critiques of occupational health research based on the work of CINBIOSE researchers. This involves an analysis of the academic and socio-economic origins of occupational health researchers, and how these factors impact on their research paradigms. An examination of specific research methods is also be undertaken to further reveal the paradigms at work.

CHAPTER 5 - FEMINIST CRITIQUES: THE CINBIOSE EXAMPLE

**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.
(Messing, 1998: xvii)**

CINBIOSE, as described in Chapter 1, is a research centre dedicated to the study of occupational health issues specific to women workers. The researchers who are part of this centre have developed a significant body of literature on the subject of women's occupational health, as well as on their own experiences and challenges in conducting feminist scientific research in a non-feminist scientific world. The CINBIOSE website provides the opportunity to calculate the numbers of academic projects undertaken by the seven researchers and to appreciate the magnitude of their work. Since 1996 they have produced 111 academic articles, 51 book chapters, and 35 abstracts. They have been invited speakers 43 times, and have contributed to conference proceedings 34 times. In spite of this tremendous output, they have faced numerous struggles and roadblocks when they attempt to present their research to the mainstream occupational health, scientific, and medical institutions. Yet the work they produce has revealed crucial evidence indicating the need for the promotion and protection of women in their workplaces. My study builds upon their work through the analysis of paradigms and the influence of those paradigms on occupational health research.

This chapter reviews selected CINBIOSE literature and is divided into three sections. The first section sets out the CINBIOSE critique of the research environment created by the scientific academic establishment. As CINBIOSE makes clear, women's issues have been

until quite recently virtually absent from occupational health research (Messing, 1998: 41), an absence that can be explained at least in part by the presence of dominant gender-blind research paradigms. Specifically, in this section I first outline the CINBIOSE critique of “scientific objectivity” through their discussion of who scientists and researchers are, indicating how their social origins and training affect their research paradigms. Secondly, the critique reveals how research is selected for funding and what funders or academic journals seek in their selection of research. This is followed by a discussion of the types of barriers many feminist scientists experience, as described in the CINBIOSE literature, when attempting to publish or gain funding within mainstream institutions.

In order to illustrate the differences between feminist and non-feminist research paradigms, the second section of the chapter sets out the CINBIOSE critique of mainstream research methods, juxtaposed with their own alternative methods of doing occupational health research. This, combined with the list of indicators in Chapter 4, provides the basis for my analysis of the mainstream occupational health literature in Chapter 6. Specifically, I discuss in this second section the lack of data available on women and work, the tendency for mainstream research to focus on pathology rather than symptoms, and the focus of mainstream methods on a single unit of analysis. To continue the analysis of mainstream methods, I present the critique that a focus on job title limits the results of a study, followed by a discussion on the importance of looking at the social context in a worker’s life for factors which may interact with workplace exposures to

impact on health. Finally, the failure of mainstream research to incorporate women's experiences in the collection of data, and the tendency to adjust for sex/gender are two other critiques of mainstream methods which are found in CINBIOSE literature. The section concludes with examples of similar critiques made by other feminists, which support the claims made by CINBIOSE researchers.

The third section of this chapter considers how feminists do occupational health research and provides some examples of the successful implementation of feminist research methods by CINBIOSE researchers. The examples illustrate the necessity for using feminist methods to reveal important issues for women's health. In order to situate feminist methodology in occupational health research, this discussion is followed by a brief examination of the role of women in science throughout history, and raises the question as to whether the involvement of feminist researchers can be a catalyst to a paradigm shift in health research.

The Research Environment

According to CINBIOSE, and my assessment of their evidence, mainstream occupational health researchers (scientists) and the methods they use reflect the sexist, profit-driven, classist bias of science and medicine research and methodology. These define the dominant paradigms at work in research on occupational health and safety. Through their experiences in submitting studies to mainstream journals and presenting their work at scientific conferences, CINBIOSE researchers and some of their feminist peers have

gained insight into the numerous biases and resulting limitations of mainstream occupational health research. Before looking at specific critiques of who the scientists are, I set out three initial examples of the limitations of their work. These examples reflect some of the key critiques of feminist researchers and form the basis of the indicators used in my study.

Firstly, Karen Messing (1998) has shown that the bio-medical focus of traditional occupational health research places great importance on pathology and tends to overlook the other factors which contribute to unsafe work conditions or unhealthy conditions among workers. A combination of social, political and economic factors must be analysed in relation to race, class and gender, to reveal their effects on the well-being of workers. An omission of these factors, intentional or otherwise, leads to what many feminist researchers would call inconclusive or inadequate research.

Secondly, it is common for employers and mainstream researchers to perceive occupational illness as caused by workers' personal habits, ignoring the possibilities of workplace impacts on the illness or symptoms thereof (Messing, 1998: 90). In addition, as Levenstein and Wooding show, occupational illness has also been interpreted as being a result of "inferior" racial stock or of lower class social behaviour. (1997: 8) Such assumptions are short sighted and are based on the racist and classist biases characteristic of some mainstream occupational health research.

A third example shows how financial implications can impact on how research is done. Notions of efficiency in research methodology reflecting economic constraints on researchers frequently influence the conduct of research (Levenstein and Wooding, 1997: 15). If a study is provided with limited funds and researchers decide to exclude women in order to save time and money, then important questions relating to the situation for women workers will not be asked. It thus becomes clear that it is important to question the type of research being done and by whom. The implications for women workers, and indeed all workers, can be serious.

Who are the Scientists and How do they get Funded?

The implications of such biases as indicated in the previous examples are evident in the experience of CINBIOSE, which is the focus of this chapter. It is important to understand who was originally responsible for occupational health research before feminist researchers like those at CINBIOSE began to question the status quo. CINBIOSE literature sheds some light on who these scientists are, what scientific rigour means for funding and the selection of research topics, and how scientific knowledge is constructed.

The socio-economic status of occupational health scientists and researchers is an important starting point in this analysis, since training and education can have a strong impact on values, attitudes and ideologies. According to Messing and Mergler, most occupational health professionals originate from either engineering or medicine, both of which seriously limit their knowledge relevant to occupational health. Engineers have

little or no training in the workings of the human body, and those with medical training have focussed on the importance of pathology or disease, usually without much knowledge or experience of factories or other non-academic workplaces. (Messing and Mergler, 1995: 26) In addition, most occupational health scientists and researchers are men, since the very nature of professional training presents barriers for women, especially visible minority women, or those with disabilities or restricted incomes. Until the 1960s it was mainly young, white men from upper-middle and upper classes who had access to graduate and postgraduate education. (Hubbard, 1990: 23) Although today there are more women and people of colour who are able to gain access to higher education, the class origins of scientists have still not changed dramatically. (Ibid.)

Socio-economic status places scientists or researchers at a distance from workers, creating an environment in which researchers can ignore the health needs of many workers.

The culture is not only male, but also far from familiar with the experience and environment of the working class. Financial and cultural barriers limit access to the ranks of scientists, and the demands of scientific research restrict social contacts and community involvement. (Messing, 1998: 53)

This reflects the classist, racist origins of medicine and medical research as described in Chapter 2, when the “ruling classes” of white men took over the healing roles in pre-industrial capitalist societies.

It is not surprising then, that the literature indicates that a vast majority of male mainstream occupational scientists and professionals come from higher socio-economic strata. They are further integrated into research institutions, journals or decision-making bodies through the exclusive practices of hiring and publishing, ensuring that the research paradigms of the dominant research institution/establishment are carried on.

“Occupational health scientists are trained and molded by scientific institutions whose evolution has not equipped them to meet the needs of women workers.” (Messing, 1998: 42)

Based on this description of the background of the researchers, and the elite academic world of which they are a part, I argue that those scientists responsible for mainstream occupational health research originate from within a system that promotes particular paradigms. In a system which places a high value on laboratory experimentation, for example, researchers are not encouraged to seek out women workers and their problems for investigation. These dominant paradigms drive the bulk of occupational health research which produces findings that are not relevant to the lives of women workers. Another characteristic of the mainstream research environment, which can result in gender-blind research, is related to the professional affiliation of the scientists. Some scientists are employed by industry and undertake all their research projects on behalf of their employer. (Messing, 1998: 46) This could have serious ramifications for occupational health research if a particular industry wishes to protect its own interests, in spite of workers' complaints about their working conditions, or exposure to risks. What

would prevent that industry from using its own scientists to produce research which denies hazards to workers? This is not mere speculation, for in the context of compensation battles between workers and employers, scientists are often hired to give expert testimony on behalf of either the employer or the worker. However, employers have more financial power to hire high profile scientists and, in the experience of Messing (1998), are able to win cases against employees through the presentation of convincing scientific evidence, but evidence that feminist research would challenge. In her particular example, a pregnant radiologist had asked for paid leave to prevent possible malformations of her baby, as had happened with her first child. The employer hired a well known specialist in radiation effects on humans, who testified against the woman with evidence that the workplace presented no risks to her fetus, in spite of her past experience, and the woman lost her case. (Messing, 1998: 82) By contrast, the worker's union was unable to hire a similar high-level scientist to testify on her behalf due to the costs involved, and although the union had literature to support her claims, it was unable to match the arguments of the employer-hired scientist.

In addition to possessing power over the outcomes of compensation claims, corporate control or influence over research is evident on a grander scale.

...[M]ajor companies sit on the boards of many universities, provide much of the support for scientific associations and scientific meetings, and are influential in government-appointed commissions; they can make difficulties for scientists who take the part of workers. (Messing and Mergler, 1995: 23)

It could be argued that this environment provides further impetus for scientists, funders

and peer reviewers who are a product of the mainstream science and engineering establishment to work from the particular paradigms supported and indeed nurtured by their institutional surroundings.

How Research is Selected for Funding

Research selection for funding or publication and the resulting omission or neglect of women's occupational health research is discussed at length in the CINBIOSE literature. Peer reviews are the basis for research selection, and so-called objective committees are, as described by Messing, an embodiment of the "old boy's network." The peer review process is surrounded in secrecy. The names of committee members are unknown to applicants, judgements are final and refused proposals cannot be appealed. Even the discussions of the committees are confidential, and judgement is sometimes made by secret ballot. (Messing, 1998: 49) The "peers" involved in the selection of fund-worthy projects are "chosen through various processes, but most involve some degree of 'incest,' since peer-review members are asked to suggest names for their replacements when their term expires" (Ibid: 49). Sometimes judgement is made based on the reputation of the applicant and those with higher prestige are more likely to get funding or have their work published. For example, reputation could be based on the number of times the applicant's work has been cited in mainstream academic journals, thus privileging what has already been done and accepted. (Ibid: 49) Projects are chosen based on what the committee deems worthy, or who they deem worthy, or what has already been deemed worthy by other similar committees. Needless to say, a researcher writing from a perspective which

is outside the boundaries of mainstream paradigms will have more difficulty being accepted by such peer committees.

Often there must be sufficient previous evidence to even justify a study before it is selected for funding or publishing. For example, when workers and their unions wish to expose the health effects of the workplace for compensation claims, the causal links between a given substance and a particular effect must be demonstrated. Messing argues that studies have eliminated women as subjects because their problems have not been previously demonstrated, and quotes one researcher claiming a study was not worth doing because "... women don't get many occupational cancers." (Messing, 1998: 62) If no previous evidence exists within mainstream scientific literature, then a proposed study could simply be rejected, regardless of how one might question what defines "evidence". This has obvious implications for women workers whose specific workplace health concerns continue to be ignored by mainstream research paradigms.

There are other examples of how the stated requirement for scientific rigour creates barriers for possible funding or publishing for projects that employ alternative methods or theories. These rules for conduct, described by Messing in *One-Eyed Science*, were taken from occupational health textbooks as well as from comments received on grant requests or submissions to academic journals. Rigour is primary to ensuring a certain level of quality in research. However, how rigour is defined can result in sexist or classist biases. It depends on the paradigms of the researchers or journal editors, many of whom pay little

attention to women's health. This is demonstrated more fully in the second section of this chapter which deals with actual research methods. However, the following example illustrates the limitations of an emphasis on scientific rigour in the context of dominant paradigms.

The Occupational Health and Safety Commission defines the priority groups of workers which are to be studied, as one of the explicit criteria used in the acceptance or rejection of research proposals. (Messing, 1998: 56) The priority groups consist of miners, construction workers, chemical factory workers and "others who have a high rate of compensated occupational injury." Women make up only 15 percent of these groups. (Ibid.) Messing explains that occupations which do not lead to compensation claims are not considered priority cases. This illustrates the argument of notions of efficiency in research mentioned above.

The original development of occupational health research, as Messing and her colleagues explain, has its origins in the workers' compensation system. "Research in occupational health has been directed by the need to establish causality, since problems which do not or could not result in compensation are not considered to be occupational health problems." (Messing and Mergler, 1995: 23) This is an indication where, I would argue, the requirement or application of scientific rigour can be influenced by corporate or economic interests, thus creating a negative atmosphere for feminist research. The result of such practices is described by Messing and colleagues as a vicious circle: women's

occupational health issues are not researched because they are not deemed worthy of study, so there is a limited body of research on women's workplace health issues, thus creating the impression that women's work is not dangerous and that health problems are due to women's "nature" and are therefore not worthy of receiving research funding.

(Messing, 1998: 19)

There are other structural reasons why research on women's workplace issues are not deemed worthy for funding. To draw from the theoretical framework outlined above, I would argue that the sexual division of labour, combined with the undervaluing of women's work is perpetuated and reinforced by health research priorities. Researchers working within the dominant paradigms do not acknowledge the dangers to health involved in women's work. As a result, they fail to develop questions for analysis which pertain to it. Also, as argued above, women's work often does not produce visible symptoms that are easily linked to causes that require compensation. This leads to a failure to take women's health compensation claims seriously, especially if they are represented by less powerful unions or have no representation at all.

Messing relates the concept of sexual division of labour directly to occupational health research. Task assignment "...often represents a prediction about the compatibility of demands and capacities, and task assignments by sex thus result[ing] from representations of the capacity of each." (Messing, 1995: 180) Tasks or jobs are assigned to workers based on their sex; what is defined as "lighter" work is assigned to women, and is thus

considered safe and unworthy of occupational health research. Although the dangers of a specific job might be researched when women are involved in non-traditional work, dangers specific to women workers may not be considered a priority (except where concerns of a fetus might be relevant). Yet, CINBIOSE has produced research which challenges the assumption that women's work is light work and that it poses little danger or discomfort to workers.

Barriers for Feminist Researchers

The CINBIOSE literature is rife with examples of feminist researchers' experiences with the mainstream occupational health science establishment. These experiences serve to reveal the numerous barriers for feminist scientists which are linked to the paradigms which drive the dominant research establishment.

One barrier for women relates to the difficulties many have in gaining access to the major sites of academic research. Messing points out that even when women succeed in obtaining graduate or post-graduate level degrees, they have difficulty obtaining jobs within academic institutions where they could continue their research. She indicates that women make up only 20 percent of PhD scientists in the United States and only 6 percent of the 120,000 listed in the "Who's Who" of science, *American Men and Women of Science*. (Messing, 1998: 44) She explains that not only do women experience blatant bias, such as a male researcher being hired instead of a woman in spite of her higher qualifications, but they also experience other structural constraints. For example, when

applying for academic positions a researcher is judged on the list of publications and grants on their CV. However, women who decide to have children may have a gap in their publishing during those childbearing years, a gap which is regarded in a negative light by some institutions. In addition, some studies of hiring practices have shown that researchers who must deal with childcare responsibilities are not taken as seriously by their employers and are sometimes asked to leave. (Ibid: 47) Messing and Mergler discuss a similar situation in regard to the concept of “excellence”. This system of judging candidates for academic positions based on “*proven grant-getting ability and the ability to publish in peer-reviewed journals with high impact factors*” (Messing and Mergler, 1995: 41, my emphasis) can work against women. This creates a vicious circle for anyone without the right connections or whose work may not attract the most coveted journals or funders. For example, a journal or funder might not recognize the significance of the research done by a feminist researcher and refuse to publish or fund her work, yet without a history of published papers and funded projects, a researcher can’t easily gain an academic position based on the criteria outlined above. As a result, many feminist researchers are blocked from gaining access to higher level academic positions, thus preventing them from influencing departmental curricula and research foci.

In a similar vein, the issue of union partnerships and worker involvement in research provides a particularly telling example of barriers experienced by feminist researchers. The union partnerships which CINBIOSE has nurtured has created quite a stir among mainstream scientists and reviewers. Yet CINBIOSE researchers have discovered that

workers' input is crucial in the definition of research problems, as well as throughout all stages of research; only the workers know how their work makes them feel. Although this would indicate the possibility for research outcomes which are more appropriate than those which emanate from a laboratory experiment, members of the mainstream research establishment often disagree. In fact, the work of CINBIOSE has been criticized because unions and workers are involved in their studies. Studies initiated by workers and their unions are thought to lead to bias. (Messing, 1998: 69) Grant requests were refused due to this type of criticism. "A funny atmosphere around the table" of peer reviewers was evident when the topic of union collaboration was raised. A 20-page CV with one reference to a joint union-university publication was interpreted as having unions mentioned "all over" it. (Ibid: 70) I would argue that these indicators of some reviewers' attitudes toward union involvement in research are linked to a paradigmatic assumption that if a study is not clinical or laboratory based, it does not possess scientific merit. Or if a study involves unions it may be biased toward workers, producing results which could damage an employer. In contrast, there is little evidence of similar suspicions of partnerships with employers. I would argue further that this reflects the influence of corporate funding on research. Many scientific reviewers themselves are dependant on such funding for their own work, and thus feel some allegiance to corporate interests. Both examples of suspicion of union collaboration in research reflect the dominant paradigms held by mainstream researchers, and in this case reviewers, who reject methods which are contrary to their own worldview.

In another instance which illustrates mainstream paradigms blocking feminist research, a grant was refused on the grounds of “scientific responsibility”. CINBIOSE researchers wished to reveal serious risks to workers at a particular plant, but reviewers decided that it would give workers information they “didn’t need.” (Messing and Mergler, 1995: 40)

This example suggests the extent of corporate control over scientific research and a disregard for the workers themselves. Industry funding, for example, could be jeopardized with the exposure of controversial research results. The scientific research establishment is strongly influenced by capitalist interests. Corporations, through global economic structures, are in a privileged position in our society and have significant influence over both government and university research entities. Feminist research which could be seen as too controversial because it goes against corporate interests, is then blocked.

In spite of the barriers for those (mostly women) scientists who do wish to investigate issues important to women as noted above, not all women researchers are the same nor experience these barriers in the same way. The male bias of the scientific world is confirmed by Messing’s assertion that women scientists are largely outnumbered, and that women have rarely been subjects of mainstream occupational health studies.

However, it should be noted that not all women scientists are feminist and many, in fact, reflect in their work the male-oriented tendencies of their profession. I would add that the patriarchal roots of science ensure the perpetuation of its sexist structures, and such structures (and the attitudes which accompany them) are difficult to uproot or even

recognize.

As has been indicated, the structural barriers to feminist research and the paradigms from which they are formed become evident through an analysis of who makes up the mainstream research establishment, and upon what priorities funding and publication of occupational health studies are based. These mainstream paradigms and the resulting obstacles for alternative research are further visible through closer analysis of the actual research methods coveted by mainstream institutions.

Mainstream Occupational Health Research Methods - A Critique

CINBIOSE has undertaken some unique and cutting edge research over the past 20 years, research which is based on specific needs and problems as expressed by workers themselves. Yet, mainstream research bodies still place emphasis and priority (and financial backing) on more traditional methods which, upon closer analysis, cannot possibly reveal what the CINBIOSE research offers. For example, many studies are done in laboratories rather than on the workshop floor as evidenced by classic ergonomic studies on load lifting which were done using college students or army volunteers rather than actual workers. (Messing, 1990: 355)

As Messing (1998: 72) makes clear, “interpreting scientific results is a social process that depends on the point of view of the researcher.” (Messing, 1998: 72) I would add to this statement that the methods of data collection also depend on the researcher. A discussion

of research methods should incorporate an awareness of who implements those methods, and the discussion above has shed some light on a number of important characteristics of scientific occupational health researchers. It becomes apparent that if a researcher has no awareness of gender differences which affect the occupational health of women and men, then the research methods and results will reflect that paradigm. To some of us, ignoring gender difference is obviously a very short-sighted approach to research, and reflecting on the “big picture” of research, science has a historic reputation for being objective and a source of “truths”. This is not a rejection of all past scientific research and discovery, as our lives have greatly benefited from such research. It is merely an assertion that its limitations must be questioned.

I draw from and build upon the CINBIOSE critique and questioning of mainstream research methods to indicate the dominant paradigms in occupational health research, with a focus on their limitations as revealed through feminist research paradigms. This is followed by selected examples of alternative methods as suggested and implemented by CINBIOSE researchers and their colleagues. These examples were chosen from the literature because they are indicative of appropriate gender-based research which reveals specific health factors for women. Throughout the discussion, particular attention is paid to the following characteristics of research methods: to what extent do researchers consider, as part of their method, the social context of workers’ lives, to what extent are women considered, and if they are considered, in what way are they considered.

The Limitations of Non-Feminist Methods

Throughout my review of CINBIOSE literature, I became aware of a number of repeated criticisms of mainstream research methods and examples of where studies fell short of their potential for revealing serious threats to women's health in the workplace. One overarching problem which prompted feminist researchers to question occupational health research in the first place is the outright lack of data regarding women and work. Simply put, scientists have focussed their studies on traditional men's work, such as mining and "heavy" factory work and there has been a consistent exclusion of women and their work in occupational health research. Messing cites a number of studies which reveal the dearth of research on women, such as the Zahm study which "found that of 1233 cancer studies published in 1971-1990 in the 8 major occupational health journals, only 14% presented analyses of data on white women and only 10% on non-white women." (Messing, 1996: 2) Messing's main critiques are that in addition to the exclusion of women in occupational health studies, data collection and data analysis have been gender-insensitive because analysed health outcomes have not included effects from women's jobs. (Ibid.) Gender-sensitive research would take specific situations for women into account, rather than providing data which is generalised for women and men together.

Even if researchers decide to include women in their studies, often the data available to them are incomplete or make women invisible. Messing provides the example where identified farmers on provincial records included only men; women were not classified as

farmers. Similarly, death certificates often do not contain information on women's profession due to assumptions pertaining to their reproductive "housewife" roles. This poses difficulties for occupational health researchers who wish to study possible long term effects of work on women, but who have no knowledge of the work they did. The National Population Health Survey for 1996-97 did not include questions which asked respondents about their work. There are two questions about injury and repetitive strain which ask if they were caused at home or work, but there is no question anywhere in the survey which asks what type of work respondents do. This is cause for serious concern when a national health survey fails to search for such information.

Similarly, little occupational health research has specifically involved visible minority women, women with disabilities, or lesbian women and, as Messing makes clear, more research is needed in this area. Researchers at CINBIOSE, for example, do most of their research in Québec, and their concern with French-English relations has overshadowed other questions of race and ethnicity in research. (Messing, 1998: 173)

Turning now to specific methods used in occupational health research, a recurring criticism from CINBIOSE researchers relates to the requirement in scientific research paradigms for medically-defined pathology, rather than indicators or symptoms of illness, to justify a study. I would argue that this stems from medical definitions of health or ill health in mainstream scientific and medical training where the emphasis is on disease. Messing describes certain limitations to this method. For example, it is rare to encounter

pathologies among current workers - those who are ill would have already left the workplace making it difficult to derive links of their illness to their work. A second problem she identifies relates to the requirement for a 5% significance level for a scientific study on pathology. In order to find a few cases of illness, studies must involve a large working population, which increases the costs and studies "are restricted to the largest workplaces, the best recognized scientists, and the most clearly defined risks." (Messing 1998: 81) Since many women work in smaller workplaces and their problems do not interest the best-known scientists, there are not adequate funds to study disease among women workers. (Ibid; Carlan and Keil, 1995: 295)

Linked with the requirement for pathology, is the requirement for a single unit of analysis - a single factor or chemical which may be the cause of the pathology. Scientists seek "specificity of a response" to a working condition or exposure in order to ascertain cause and effect. However, as Messing and Mergler indicate, very high levels of a particular substance are needed before an effect results in pathology. Such a link would only be clearly evident after a chemical spill, for example. (Messing and Mergler, 1995: 31) This type of requirement for research misses many workplace exposures because most are at lower levels, and occur over longer periods of time causing what mainstream scientists call "nonspecific symptoms" such as discomfort or malaise. (Ibid.)

A specific example revealed through CINBIOSE research involves numerous studies of chemical exposures in the microelectronics industry; a female-dominated industry with a

reputation of being clean and safe. Women workers experienced mood changes, loss of memory, visual loss and menstrual difficulties. Mainstream research concluded that symptoms were linked to mass hysteria; simply put, women complaining of ailments which were “all in their head.” Due to the numerous toxic chemicals used in microelectronics work, it was difficult for researchers to point to specific causal effects:

Given the multiplicity of risk factors and the wide range of symptoms, the methods developed within the context of the dominant medical model of one causal agent/one disease cannot provide evidence of a link between women’s working conditions and their symptoms. (Messing and Mergler, 1995: 32)

Yet, feminist researchers through alternative methods such as listening to workers’ experiences, for example, were able to link some disorders with some chemical exposures.

The use of job title as a criterion for occupational exposure is another method used by mainstream researchers which results in incomplete and incorrect data. The first problem with this method derives from the inaccuracy of information on women’s job titles, described above in the example of death certificates and the exclusion of farm women in census collecting. A second problem relates to the work done within a job title. Hospital cleaners be they men or women share the same job title, yet do vastly different work. (Messing et al., 1998a) Similarly, secretaries who work in factories have different chemical exposures than executive secretaries working for the CEO of a large corporation on Bay Street. Messing also indicates that tools and equipment are not always suited to women’s dimensions creating different health effects for women and men who do the

same task. "Therefore, the same tasks do not necessarily interact the same ways with men's and women's bodies." (Messing, 1996: 4) The use of job title as a criterion for exposure thus could lead to inaccurate and biased results in occupational health studies.

The consideration of social context is an important feature of feminist occupational health research methods, and CINBIOSE research has exposed the failure to consider this as yet another shortcoming in mainstream research methods. The women's health movement has also raised awareness of the importance of including social context in the analysis of women's health, whether that be work, home life, race/ethnicity, ability, sexual preference, geography, etc. Mainstream occupational health research has not often considered these factors to be important determinants of health status, as its methods frequently do not allow for such analysis. How can the mental and emotional effects coupled with physiological effects of a double work day be quantified through a laboratory experiment, especially when the double work day may not be even recognized in the first place? How can the cause of breast cancer be diagnosed without looking at where a woman lives, works, what food she eats, information which could only be drawn from a more qualitative methodology.

One method for obtaining qualitative, social context information is through questionnaires, yet this method is undervalued by mainstream funders and journals. For example, Messing and her colleagues discuss numerous occasions in their own work where their use of questionnaires to assess workers' judgements of their own health was

flatly refused or ignored by mainstream scientists. In fact Messing asserts that in 1990 CINBIOSE was in the possession of over \$400,000 in grants from agencies outside their university, yet none of their studies funded by these grants could involve any type of questionnaire seeking information on working conditions. (Messing, 1990: 355)

Mainstream methods overlook important health information through a failure to consider women workers' experience as relevant information. Using feminist research methods, such as questionnaires and personal interviews which place emphasis on women's experience, occupational health researchers (within CINBIOSE and beyond) have insisted on the importance of asking women workers about their work, and how it makes them feel. However, mainstream research paradigms reject this method citing the problem as "recall bias" suggesting that workers may have "an ax to grind" and thus might present an inflated impression of their health or effects of their job on their well-being. "Although scientists are not sure that recall bias exists, worker reports of exposure are not usually accepted as a good source of information." (Messing 1998: 68)

A final methodological criticism of the dominant paradigms concerns the common practice of adjusting for sex/gender. (I include both terms here, as they are often used interchangeably by some researchers.) According to Mergler, research has shown that women workers report more symptoms of poor physical or mental health than their male counterparts. However, in spite of evidence revealing different health effects in women's and men's work, "most researchers will automatically 'adjust' or 'control' for observed

gender differences when examining the relation between work and health.” (Mergler, 1995: 238) This statistical procedure is used to isolate a factor, and to eliminate confounding effects of other factors. This is acceptable when, as Mergler illustrates, researchers study the effects of workplace dust on lung cancer and adjust for smoking to eliminate the effects of smoking on lung damage. However, problems arise when researchers adjust for gender/sex in order to pool women and men workers’ exposure data without looking at the data separately. This results in the consideration of gender/sex as an independent variable, which often results in the conclusion that the biological condition of being female is considered a determinant of poor health. The error of this method points to biology, rather than social and structural conditions of women in the workplace (or the interaction between the two) which lead to ill health. To illustrate, a woman in a fish plant might have back injuries, not because she is female and thus predisposed to back injuries (as controlling for sex might indicate), but because the equipment is not suited to her stature, or she has never had the opportunity for adequate training on the use of the equipment. These findings would not be made visible if results for men and women are simply pooled together, rather than considered separately.

Messing provides clear examples of the resulting effects of adjustment. Some studies “adjusted the analysis for gender without reporting any details on symptoms or exposure by gender. The authors of one of the studies concluded their article by insisting on the necessity to control for gender....Another laconically reported ‘female’ as one of a list of associations with symptoms that also included ‘handling carbonless paper’ ‘hay fever’

and ‘clerk.’” (Messing, 1996: 6) The problem with methods such as these, is that they link the cause of symptoms to being female, reinforcing age-old paradigmatic assumptions in the “weaker sex” or “hysterical females”, rather than pointing to other social or structural effects.

The scientific requirement for uniformity encourages such mathematical adjustments, a procedure which has been commonly used, yet unquestioned in mainstream research methodology. “Uniformity is ensured by eliminating any unusual parts of the population” and might be sought by “...requiring study subjects to share an urban or rural environment, some nutritional habits, or medical history.” (Messing and Mergler, 1995: 30) Women are frequently eliminated from studies in order to comply with the uniformity requirement, as is evident in numerous studies quoted by Messing and Mergler. For example, in one study of 3,400 workers, 173 women were eliminated because they only accounted for 5 percent of the study population, yet an even smaller population of male workers in a separate area of the plant were not considered to be too small for inclusion in a study. (Ibid: 31) This could reflect the historical tendency of scientific research to avoid the inclusion of women because their hormonal cycles were seen to complicate data collection and interpretation. The use of a uniform study population was deemed more correct, and less complicated. The shortcomings of this method are quite obvious.

Other Feminist Critiques

The researchers at CINBIOSE are not the only feminist researchers to critique how

science is done. In fact their work both finds roots in and indeed has contributed to a tradition of feminist scientific criticism which has turned mainstream (“malestream”) science on its head. Biologist Ruth Hubbard has for many years devoted her work to revealing science for what it is, through an exposure of its upper-middle class roots, to its direct links to capitalist structures in Western societies. Her work shows how science is a product of the social context within which it was created, and the creators of scientific “fact” possess values and beliefs which are reflected in the scientific research they do:

We recognize that science was begun, and has been practiced, primarily by men from the educated upper classes in Europe and the U.S. and that it therefore embodies their values and views about how the natural world functions and should function. (Hubbard, 1990: 16)

Her work reflects the multidisciplinary qualities of feminist methodology which incorporates an analysis of socio-economic and political factors into the object of study, and demonstrates that this is possible, even when studying science itself, or a subset such as biology. Her own words aptly define her research and that of feminist science criticism in general:

In the current debate within feminist science criticism, I stand with those who argue that the political insights feminism provides can lead us to more accurate, hence truer, accounts of nature than we now have. But we must rigorously analyse the assumptions scientists make and specify as best we can the political, economic, and social realities that inform these assumptions. (Hubbard, 1990: 5)

Hubbard has written about occupational health and insists that this is an area of research which seriously overlooks the health status of women workers. Her analysis echos the work of Messing, in the assertion that women’s jobs although assumed to be safer, can present serious health risks for women workers.

Anne Fausto-Sterling is another feminist researcher who has contributed to this tradition of feminist critique. She analyses general assumptions of biology, and critiques them from a feminist perspective by presenting a women-centred approach. In doing this she demonstrates the limitations of mainstream methods, and how feminist analyses are more complex and comprehensive, describing the ways "...in which an individual's capacities emerge from a web of interactions between the biological being and the social environment." (Fausto-Sterling, 1985: 8) Like her colleagues, she exposes the male-dominated paradigms of mainstream, or "conventional" science:

In analyzing male/female differences these scientists peer through the prism of everyday culture, using the colors so separated to highlight their questions, design their experiments, and interpret their results. More often than not their hidden agendas, non-conscious and thus unarticulated, bear strong resemblances to broader social agendas. (Ibid: 9)

Central to the critique of science by feminist scientists (I would include both natural scientists and social scientists within this rubric) is the challenge to what has been assumed for hundreds of years as the source of so-called absolute truths, based on "objective" inquiry. As Fausto-Sterling explains, this feminist critique developed in stages over time and presents very simple and basic questions which we must keep asking: "But where are the women?" and "If you take women into account, doesn't that change the whole conclusion?" (Ibid: 9)

A feminist scientist who can be considered one of the "founding mothers" of the feminist critique of occupational health research, Jeanne Mager Stellman, combined scientific and biological explanations regarding factors of human health with the social aspects of

women's work, women's roles in society, and the double day to explore how they together influence women's health. She describes how women have been traditionally excluded from occupational health research, based on sexual stereotyping and the inability to recognize the importance of women workers. (Stellman, 1977: 34) Scientific paradigms are clearly illuminated in her analysis of this exclusion:

On the one hand, when it is convenient to consider women biologically superior, their superiority is used as an exclusion from studies on chronic diseases. When it is convenient to regard women as weaker and to stereotype them as homemakers and not as workers, they are then omitted from occupational health studies as well. (Ibid: 35)

Stellman's research has also revealed the mainstream research paradigms which result in the focus on women's reproductive capacity as the only consideration of occupational health, as well as the tendency for chronic, long term symptoms to be ignored due to a focus on acute, accident-based or rapid responses to occupational hazards.

Women's Ways of Researching

Feminist Methods used by CINBIOSE

Having outlined some of the main critiques of mainstream occupational health research methods based on the experience of CINBIOSE researchers and their feminist peers, it is important to discuss alternative, feminist methods. If used appropriately, such methods can ensure that the health issues specific to women workers are revealed. The following describes some of these methods which CINBIOSE researchers have successfully utilized. As mentioned in Chapter 1, CINBIOSE is made up of researchers from various academic professions: sociologists, biologists, geneticists, neurophysiologists, and legal

specialists. Thus, they bring to their work a combination of research backgrounds which is reflected in their multidisciplinary research methods, a feature uncommon to the dominant research paradigms.

In their book *Invisible: Issues in Women's Occupational Health*, Messing et al. present numerous examples of alternative methods for occupational health research. It is quite telling that the researchers with scientific backgrounds who are featured in this book, indicate the weaknesses of traditional methods used in their particular professions and suggest the use of revised methods including some borrowed from the social sciences, in order to enable a focus on women's occupational health issues. Those researchers with social science backgrounds similarly highlight the limitations of methodologies within their discipline which prevent the true study of gender issues. This indicates that although the social sciences are more accepting of some of the methods valued by feminist researchers, such as qualitative analysis, the dominant paradigms are still prevalent.

In consideration of key scientific research problems, such as finding adequate evidence for a work-related health effect, or assessing risk in a workplace, it is important to avoid giving exclusive priority to one approach or method. Different methods are appropriate for different situations and different foci and multiple methods may be the most useful. When assessing risk, for example, it is important not to rely completely on scientific-based methods, the shortfalls of which were discussed above. Similarly, for some researchers purely "anecdotal" evidence, or what Messing's team would define as

workers' judgement of their own health, may have its limitations as well, depending on how it is used. I would argue, as do the researchers at CINBIOSE, that when researchers assess risk or workplace hazards, a multidisciplinary approach using a variety of methodologies can be applied in order to account for the variations which are inevitable when researching humans, enabling a more complete picture and the implementation of appropriate measures of action.

I have suggested that when researchers analyse occupational health hazards for women, the social and societal issues should never be overlooked. Even when a scientific methodology is utilized, variables such as diversity, home life and unpaid work, education, language, and ability should be included in the research to ensure that all aspects of a woman's life are being observed. This would include the societal and systemic impacts which could change the effects that certain workplace hazards might have on an individual, thus changing the risks. However, the biases and agendas of the researchers can still prevent important gender and diversity issues from being addressed. Feminist methods of analysis as presented in *Invisible*, and elsewhere in the CINBIOSE literature, are important in assuring that the outcomes of the research do not overlook the issues and concerns of women workers and that biases be made explicit.

For example, Carlan and Keil describe their involvement with the development of a working women's survey funded by the now defunct Ontario Industrial Disease Standards Panel. In consultation with unions, the planning committee decided against the

use of a general survey of workers, but would use instead small focus groups which would allow for “input by the participants and a flexible structure; inclusion of non-unionized women in a non-threatening environment; inclusion of women whose first language was not English; and a diverse sampling of workers.” (Carlan and Keil, 1995: 298) The types of information sought by the study involved physiologic, sociologic and economic variables which all affect working women’s health such as: menstruation, lactation, sexual and sexist harassment, pregnancy, underemployment, body size and shape, degree of worker control over work activity, double workdays, job security, and low pay. (Ibid: 300) Through the use of focus groups, plus a telephone questionnaire and case studies, the researchers were able to combine different methods from different disciplines in order to gain a more complete picture of various social and biological effects of the workplace on women’s health.

Similarly, Susan Stock an epidemiologist and occupational health specialist has described the benefits of participatory action research methods. In this approach, the participation of workers at all stages of the research, including the initial design and question formulation, is the key to its success. As she states: “Participation of workers is necessary for truly good science to take place, because actively listening to workers’ experience is essential to understanding the problem and asking the right questions.” (Stock, 1995: 64) This particular study was of a day-care centre and was designed to investigate work-related musculoskeletal symptoms among workers, to identify contributing factors with the goal to finding corrective solutions to avoid further physiological damage. Stock’s study

involved a combination of qualitative and quantitative methods, including a questionnaire, a structured epidemiologic interview of all workers, as well as small-group problem-solving sessions. In this way, the study could use scientific measurements of specific ergonomic constraints of the job (sustained bending over or crouching over low child-sized chairs and tables, for example) as well as qualitative measures to investigate other effects such as noise level, workers' involvement or influence in decision making, workers' judgement of workload, ability to communicate with the supervisor, etc. Stock espoused the benefits of multidisciplinary research, stating that epidemiologists, ergonomists and social scientists can learn from each other, and can enhance each other's research through collaborative projects. "The collaborative nature of action research, the increased levels of trust between the workplace parties and researchers...and the detailed observational methods in ergonomics and some of the social sciences can provide insights unavailable through traditional epidemiologic methods." (Ibid: 73)

As a further example of feminist methods which reveal specific health issues for women workers, I turn to a CINBIOSE study which investigated the work of the housekeeping service of a major Montreal hospital. Here researchers questioned the label of "light" and "heavy" work for hospital cleaners, the "light" work delegated to the women, and the "heavy" delegated to the men. "Work is organized based in part on the perceptions, by managers and workers, of workers, their abilities and the characteristics of the work to be done." (Messing et al., 1998a: 451) The study was prompted by ergonomic and epidemiological studies undertaken by CINBIOSE and others which revealed particular

risks to women workers in “light” work done in factories and other workplaces which had not been accounted for in previous research. In the hospital study, qualitative analysis was combined with ergonomic methods to measure changing postures, flexibility and force. “This method integrates observation of work activity in the workplace and collection of perceptions of work in order to create a portrait of the working conditions and to improve work organization and the design of work spaces.” (Ibid: 452) They used qualitative methods instead of more commonly used physiological and biomechanical methods because of the difficulty in finding indicators of the cumulative effects of the less visible pressures of “light” work. (Ibid.) For example, hospital rules state that women workers cannot use ladders due to insurance coverage limitations, resulting in women workers having to sustain over time high-reaching positions to clean ceilings and other high places. Traditional research did not take this into account, and it was through discussions with women workers that Messing and her team learned of this particular problem. Where “heavy” work was seen as more difficult and damaging by traditional research because of the possibility of lifting heavy objects or the use of large cleaning equipment, the “light” work’s sustained bent postures and rapid repetitive movements resulted in different types of physiological damage previously ignored by traditional research methods. The study concluded with the assertion that there was not a “compelling reason to divide cleaning into ‘light’ and ‘heavy’ work, either based on the routine physical demands of both cleaning jobs or on efficiency.” (Ibid: 458) Feminist paradigms prompted researchers to ask different questions, to use a multidisciplinary approach, to listen to women workers, and to gain a qualitative understanding of all that

was involved in the different tasks held by men and women which has resulted in the creation of new knowledge about task division based on sex/gender and has dashed previous assumptions about workers' capabilities.

These are a few examples of alternative research methods utilized in occupational health studies. However, there are numerous particular methods which CINBIOSE researchers use, and have attempted to promote within their fields. They can be best summed up through an outline of research challenges which Karen Messing presented at the Canada-U.S.A. women's health forum in Ottawa, 1996. According to Messing, the following kinds of data collection and analysis relevant to women's occupational health must be produced in order to reveal the health problems and their sources:

- Gather information on risks in jobs usually assigned to women; disaggregate and analyse data by age and sex.
- Improve the database for women's occupational health (job indications on death certificates and in government and hospital records).
- Ensure use of data-gathering instruments which have been validated with and standardized for both sexes.
- Develop sensitivity to the implications of employment segregation for data collection (different tasks may involve different health effects).
- Develop qualitative methods for identifying employment-related risks.
- To identify women's occupational health problems, gender-sensitive and women-centred research should be done which must be innovative and involve the active participation of working women.
- Guidelines for gender sensitivity in health research should be developed by bodies responsible for research grants. (Messing, 1996: 16)

In addition to the above, Messing has put forward other challenges with respect to getting attention paid to various women's occupational health problems; challenges that are both general and specific (such as musculoskeletal disorders, stress reduction and reproductive

health beyond fetal protection). (See Messing, 1996: 16-19)

The Participation of Women in Science - Catalyst for a Paradigm Shift?

Having outlined some specific alternative research methods, it is worthwhile to take a step back to observe the realm of scientific research as a whole to see where women fit in. More specifically, as the focus of this thesis is on research paradigms, it is important to observe the role of women researchers in the promotion of paradigm shifts in research methods and approaches. In her article on the participation of women in science, Lucie Dumais presents five “stages or generations of questions concerning the import of women in science.” (Dumais, 1992: 14) An observation of these stages of questioning among what I would label “progressive” researchers (because not all of them would describe themselves as feminist) reveals the ongoing development of an environment which has enabled the growth of the feminist critique of scientific research. In the first stage, researchers noted the historic absence of women in graduate studies and in the sciences. Dumais outlines that at the turn of the 20th century the nature of women was believed to have made them inadequate for higher learning. Yet a few pioneering women such as Alice Hamilton and Harriet Hardy were able to break free of social limitations to produce early work in occupational health research. A second stage involved the partial inclusion of women as subjects of scientific research as researchers began to note that this was absent. A third stage presented by Dumais, involves the inclusion of variables relevant to women (versus applying factors to women based on men’s experience). The fourth stage focuses on the contribution of women in science, which I would argue is where we

currently sit, and constitutes “a completely new research agenda” (Ibid: 17) which criticizes the existing research tools due to their limitations in drawing out the complexities of women’s workplace health issues. The fifth stage involves a complete questioning of the values on which traditional science has been based, and a re-orientation of research according to feminist values. “This stage recasts all scientific epistemology (or methodology), based on clarification of the values which guide scientific research.” (Ibid: 20) I would argue that to reach this stage, a major paradigm shift is required on the part of the scientific, medical and occupational health research establishments, and the corporate, government and institutional powers which influence the research bodies.

I make this assertion in the context of the current political and economic environment where corporate power is on the rise and globalization is drastically changing the structures of the workplace and the research laboratory, not to mention the priorities for research funding. Yet, as Dumais’ five stages of questioning make clear, change is possible and it has happened over the past 100 years thanks to the work of women scientists who have questioned the status quo. In the spirit of the work undertaken by CINBIOSE and other researchers like them, it is important to investigate ways to create a paradigm shift in occupational health research. Feminist research is certainly marginalized, yet it is very much alive and growing.

Conclusion

This chapter has discussed key characteristics of scientific occupational health researchers, and the structural processes for obtaining funding or publication within the mainstream occupational health establishment. Using the CINBIOSE example, specific critiques of mainstream research methods have illustrated the limitations of this research, and the paradigms which drive the researchers. Although feminist researchers have made an important contribution to occupational health research through their insistence on using women-centred methods, they continue to face many structural barriers within the mainstream scientific establishment. In the next chapter, an analysis of reviewer's comments from academic journals, as well as a scan of articles and abstracts in mainstream journals clearly reveals the paradigms which drive mainstream researchers and their journals. Through this analysis, linked with the above survey of methodological and paradigmatic critiques, it is possible to develop some ideas for enabling a shift to happen, or at least enabling the possibility for educational opportunities with the hopes of changing current research practice.

CHAPTER 6 - A QUESTION OF PARADIGMS

The preceding literature review has presented numerous concepts and ideas regarding a variety of research methodologies and the related paradigms. Researchers who are aware of the gender differences prevalent in workplace health effects, utilize methodologies which enable those differences to be made visible. Researchers who work from gender-blind paradigms are often not aware of the importance of gender differences and the alternate research methods which acknowledge these differences. It is often not an intended oversight but rather ignorance of feminist or women-centred research methods and research questions which prevents this awareness of gender issues in research. In other cases, there may be an awareness of the need to analyse the situation for both sexes, but there is a belief that this results in extra costs, complications and inconvenience linked to female hormonal cycles or the lack of large numbers of women in some workplace settings.

This chapter investigates a number of different sources to reveal the non-feminist paradigms which dominate the current occupational health research establishment, the prevalence of which confirms my earlier claims that these are dominant paradigms and are promoted by those who control both the publication and funding of research. The chapter begins with an analysis of five refusal letters received by CINBIOSE researchers from academic journals, to ascertain reasons for rejection/revision and how reviewers' comments reflect dominant gender-blind research paradigms. The second section of the chapter presents an analysis of the email interviews with CINBIOSE researchers to

elaborate through the experience of the researchers themselves the impact of reviewer's paradigms on feminist research. The third section presents the findings from a systematic search of published occupational health articles found in mainstream journals. Drawing from a scan of abstracts, and a closer analysis of a sample of articles from the search, I illustrate how these studies confirm the claims made by CINBIOSE regarding gender-blind research. This analysis reveals the dominant paradigms evident in the vast majority of studies published in academic occupational health journals. The final stage of my search involves an analysis of three institutions which promote health research: The Institute for Work and Health, The Canadian Institutes for Health Research, and the National Institutes of Health. I present a critique of these organizations as representative of the research which appears in the journals, and organizations which promote and maintain the dominant research paradigms.

Analysis of Five Refusal Letters

This thesis argues that feminist or women-centred occupational health research is not fully accepted or understood by mainstream, dominant research and funding institutions. This is due to gender-blind, and sometimes anti-feminist paradigms under which researchers and decision makers in these institutions function. Using CINBIOSE as an example, and building on critiques made by its researchers in the literature, these paradigms can be revealed through a reading of the refusal letters from mainstream occupational health academic journals. The five letters were provided by Dr. Messing and were selected for their absence of highly technical language which would have been

difficult for anyone without a background in Biology to decipher. Unfortunately there were only five letters available to me, as letters from earlier years are not kept on file. This small number of letters received is a possible limitation of my analysis. A larger sample size would have facilitated a comparative analysis between different types of journals or funders. However, I do not draw conclusions from this sample of letters, but rather refer to them as an indication of the paradigms which are present in mainstream journals. I am confident that they illustrate the paradigms based on the critiques I have read in the CINBIOSE literature, as well as on the personal discussions I have had with Dr. Messing and her colleagues.

Using the list of indicators outlined in Chapter 4, I have read through the five sample letters provided to me by CINBIOSE researchers which were written by various journals and I have identified where the reviewers reveal their paradigms. I have also read through the actual article submitted, in order to make an informed analysis of reviewers' comments. I would argue that gender-blind dominant paradigms are revealed by the reviewer's failure to appreciate either the methods of the study which are designed to expose specific health effects for women, or the research question posed which raises issues relevant to women's realities, but which may not be considered relevant by journal reviewers. The following summarizes my findings from this analysis of letters and to maintain anonymity I have made no reference to the source of comments.

In the first study, which was accepted after some amendment to the article, the reviewer expresses a fear of a perceived weakness or susceptibility to illness or injury in women may lead to job loss. This demonstrates the view that studies should not focus on susceptibility to injury or disease. I would argue that this suggests a lack of understanding of an appropriate feminist analysis of occupational health issues, and places the focus on purely biological factors. Feminist analysis shows that women's susceptibility to a particular injury, for example, is related to numerous factors such as the types of tasks they do (which may differ from men); the equipment used which is sometimes not suited to their sizes or measurements; or social factors like a double workload where housework could impact on the physical strains acquired from their work. A reviewer who expresses concern for women being excluded from work based on reports of their injuries, works from bio-medical assumptions and fails to see the impact of social context on women's health. In this particular example, the reviewer claims that when studies control for strength, stature and exposure, "women are not at any greater risk than men." This indicates gender-blind paradigms where there is no consideration for the differential effect of social context on women and men.

In relation to the above comment, the reviewer instructed the researchers to "de-emphasize the gender issue" because "gender is often treated in the ergonomics literature as a substitute term to refer to a class of people who are of smaller stature and less physical strength." This not only illustrates how mainstream ergonomics research uses the term gender, but also reveals the particular reviewer's bias through acceptance of this

usage, rather than acknowledging other definitions of the term as used in feminist literature. The reviewer also exposes a preference for a bio-medical approach through the recommendation that the researchers use biomechanical models to predict the capability for particular populations, and even recommends job simulation in the laboratory to adjust the research findings. Although CINBIOSE researchers use traditional scientific methods and statistical analysis in their studies, they also rely on other methods such as studies within the workplace, based on the realities of the workers there, not on artificial models which may have been developed based on male standards or which ignore the social context. Hence, the reviewer's limited view is demonstrated through their inability to appreciate the richness of the research methods used in the study.

CINBIOSE researchers have stressed the importance of learning about injury and illness from workers' experience, yet the reviewer in this example failed to see the significance of their statement regarding women reporting more pain than men. The reviewer stresses the need for information on exposure and dose levels, and claims that if these are equivalent at the tissue level for men and women, then pain reports should be similar. This reveals a lack of awareness of one documented gender difference with regard to health and pain; the fact that women are greater users of health services, they may feel more comfortable reporting pain or illness than men. It also reveals a paradigm which undervalues workers' experience and self-reported health status, and places a focus on the clinical, bio-medical evidence (tissue level) rather than on what a worker is feeling or experiencing.

The second sample of reviewer comments on a different article reveals mainstream research paradigms which involve a rejection of qualitative, contextual information. In this case, the reviewer instructed the researchers to remove large sections of their analysis which described the workplace context, where they presented results from qualitative research methods, differentiating between male and female workers. I would argue that this type of discussion is crucial to the provision of a clear understanding of the workplace setting, the gender balance of the workers, their particular tasks and the gender division of those tasks. This is especially significant where the researchers provide direct comments from the workers describing their work situation, a method highly valued within feminist methodology, but one not recognized or valued by mainstream researchers. This is demonstrated in the request that these data be removed from the article, and their dismissal as being merely “anecdotal”. The curt remarks from the reviewer also suggest a complete disregard for the value of the research methods used, and reveals their gender-blind tendencies. For example, on a checklist which asks how relevant the paper is to industrial problems the reviewer wrote “very little”, which reveals their particular bias concerning what constitutes industrial problems. As this study was based in a workplace within the healthcare sector which is not considered “heavy industry” but which has high rates of occupational injury and illness (Messing et al., 1998, for example) a paradigm which places a priority on male dominated, heavy industry is evident. A central feature of the study is a detailed comparison between women and men workers in numerous work settings; a different approach than that taken by mainstream articles. The significance of this method was not fully appreciated by the

reviewer, as evidenced through the rejection of the key gender comparisons in the text. In fact, this reviewer demonstrates a preference for pooled research results which combine male and female data, although the study provides results of worker-rated levels of difficulty of tasks based on male and female reports. Studies such as this remain unpublished in mainstream journals, as a result of such limited views, or they must seek publication in less widely-read feminist journals or books.

A further example of traditional paradigms of the reviewer is the rejection of a section of the study which introduces a new alternative method for the study of ergonomics in the workplace, one which takes gender differences into consideration. It is also interesting to note that the term “flexible scheduling” in the context of work situations for women (in addition to part-time and occasional work) was not recognized or understood by the reviewers, yet this is a common way of describing characteristics of women’s work within feminist literature. Had the reviewers been more exposed to feminist research, they would not have been troubled by this term.

A number of the tables based on qualitative methods provided by the researchers were deemed irrelevant by the reviewers. In one case, the table reveals the type of equipment used, the number of workers using it, and the type of patients (i.e. level of care needed). These are key contextual features which clarify the actual workplace setting, and the specific tasks of male and female workers. In another table indicating level of difficulty ratings of specific tasks for male and female workers, the reviewer stated that the

numerical differences between men and women were not significant. I would argue that this reflects a preference for large scale, statistically analysed studies, versus this smaller, workplace-situated study.

In a third sample refusal letter, the reviewer demonstrates similar indicators of working within a mainstream paradigm. In this case, there is a clear preference for clinical, laboratory-based research in contrast to the methods chosen by CINBIOSE researchers. The study involved personal interviews with workers and a questionnaire which requested information on work conditions, social and demographic characteristics and living conditions. In spite of this rich source of information, the reviewer required “more specific methods” to be used. Specific methods as defined by the reviewer were laboratory based studies to clinically assess ovulation, although this was not the focus of the study.

In the context of this particular case, a study on the effects of a workplace on menstrual cycle characteristics, the observed abnormalities were based on reports from the workers themselves as well as on a medical questionnaire and consultation with an occupational health physician. It thus combined both scientific, bio-medical analyses, with experiential, worker-centred investigation. However, this did not satisfy the reviewer who claimed that the abnormalities were not “marked”, an indication of a preference for large numbers in study results, and the requirement for proof of serious pathology before a workplace effect is accepted. In addition, I would argue that this is a comment revealing a

lack of sensitivity to qualitative, experience-based reports, i.e. not placing value in the degree of discomfort, pain or abnormality in menstrual function as expressed by the worker herself. The greater value given to pathology rather than symptom is also demonstrated through the reviewer's comment stating that this type of study is not particularly useful in providing information about problems with reproduction. This reflects a common research paradigm which focusses on pregnancy and fertility outcomes, rather than menstrual characteristics, in the assessment of reproduction problems. This is linked to the historical tendency to place a priority on women's childbearing "role", given our society's fear of declining birth rates. In contrast, menstrual health has not been given such importance. However, in recent years, feminist researchers have stressed the importance to health research of the analysis of menstrual function by revealing the gaps left by traditional studies. (Messing, personal communication).

The next study under review combined data from municipal accident records with personal interviews, a method which enables researchers to gain more information than is possible from simply depending on data from general surveys. The reviewers, however, criticized the study for its lack of data gleaned from the municipality. The researchers worked with what was available to them, but the data were not disaggregated by sex (Messing, personal communication) thus it did not provide the researchers with the level of detail they would have preferred. The reviewer's rejection of the qualitative data derived from the interviews to supplement the lack of data from the municipality, reveals

a paradigm which places greater value on quantitative studies. This includes a rejection of workplace-based studies which obtain data from interviews, or visual observation rather than large, census-type methods.

The reviewer's claim that the information presented in the study is invalidated by the results which show that the actual job contents and physical exposure of specific jobs identified, differ for women and men further indicates the paradigm at work. Many mainstream occupational health studies use job title as a reference point for comparison, yet feminist researchers indicate that men and women may do different tasks within the same job title, as mentioned in previous chapters. This critical feature of the study was completely disregarded by the reviewer. Indeed, the reviewer states that the findings of the study are insignificant in relation to current knowledge, which I would argue is based on knowledge of the mainstream body of research which excludes the findings from previous feminist or women-centred studies which would support the current study results.

The fifth submission for analysis is accompanied by a series of letters from the journal, which reveal the various stages of refusal and revision before the article was finally accepted for publication six years later! Similar paradigm indicators prevail in the reviewer's comments as have been discussed above, such as a rejection of personal comments by workers. In addition, reviewers instructed the researchers to present the study more briefly due to its "caractère monographique et exploratoire" and request that

less detail be given on context. I would argue that this is simply a rejection of qualitative research which places more importance on the context of the worker, than is the case in traditional research methods.

In sum, as evidenced from these five cases, mainstream occupational health journals demonstrate a tendency to work from a particular framework or paradigm which prevents full acceptance or understanding of feminist research paradigms. The reviewers' comments demonstrate a tendency to undervalue the multidisciplinary methods used by feminist researchers. It is clear that the reviewers base their critiques on a particular body of research, or research tradition, which I would argue represents dominant research paradigms. In short, they fail to consider the value of the women-centred questions investigated by CINBIOSE researchers. It became apparent that feminist researchers are often forced to conform to the methods acceptable to mainstream journals through major revisions of their research, or else they must seek alternate venues for publication.

This conclusion is also relevant to funding proposals submitted to mainstream institutions, which must conform to the paradigms or priorities of a particular funding institution. CINBIOSE researchers provided me with a poster presentation they had prepared a number of years ago, which offered an analysis of the "track record" of the proposals they made to federal, provincial and private funding sources over a 10-year period in order to find ways of improving their success rate (approximately one-half of their funding proposals had been refused). Their findings support my argument that

mainstream funders and journals are driven by paradigms which reflect their bio-medical, scientific, and androcentric roots. The study showed that success of research proposals was positively associated with the presence of a male collaborator, where “hamster or fungal cells rather than live humans” were used, and where proposals were for experimental or simulation studies rather than actual workplace studies. Other variables associated with success were the absence of worker opinions or perception of workplace dangers, as well as the absence of direct union involvement.

CINBIOSE Email Interview

Although a common pattern has emerged in the sample of letters regarding research paradigms held by funders and journal reviewers, it is prudent not to draw conclusions without seeking further evidence. There are other important sources of information which provide further evidence to support the main argument of this paper, and this section of the chapter presents the results of the email-based questionnaire sent to CINBIOSE researchers. (Appendix 4) A total of 20 researchers were contacted via email, the names and addresses of whom were provided by Karen Messing, Director of CINBIOSE. There was a low response rate to my questionnaire, in spite of my efforts to establish a simple email response process. I translated the questionnaire and accompanying letter into French to further facilitate its application. A total of two female researchers responded to the nine questions, whose academic disciplines I am unable to reveal for reasons of confidentiality. Three other researchers responded to my introductory email stating that they were unable to answer the questions as they have had little involvement with journal

and funding submissions. Two other researchers wrote to say that they were unable to respond to my questions due to time limitations. I surmise that the low response rate from the researchers is due to the time of year when my study was undertaken, as they faced end of term marking deadlines and exams. However, the high quality of the responses makes it possible to use them to further support the analysis above.

Gender-blind paradigms held by academic journals or funding institutions were clearly revealed through the responses based on researchers' experiences. According to those responding, once researchers gain experience with journals or funders, they learn what types of studies will be refused and thus submit their work in a more strategic manner, knowing more about the preferences or mandates of the particular journal/funder. Among the respondents' articles and projects which have been under review, multidisciplinary research is one style which is less accepted by mainstream journals, especially legal journals. Among general occupational health journals, studies which were qualitative or based on the experience and self-reports of workers were more likely to be refused. Similarly, feminist or women-centred studies as well as those using questionnaires were not as well accepted, nor were studies which involved participatory research or which were based on symptoms rather than pathology. Studies which were based on quantitative methods and had a bio-medical focus had a very high rate of acceptance. This again shows that feminist research methods are based on vastly different conceptual models or paradigms than those used by mainstream researchers, journals or funders and are not understood or accepted by those with the power to make decisions regarding the

publication and funding of research.

Of the projects refused for funding, the reasons given were related to either a general lack of interest on the part of the funder, or else the methods used were not deemed acceptable. One researcher responded that in order for a proposal/article to be accepted they have had to make major sacrifices in the methodology, focus or analysis. This was certainly demonstrated in my reading of refusal letters from journals. One other researcher, though, responded that such sacrifices have not been necessary in their experience. However, unlike the first example this work had not been submitted to the scientific-based occupational health journals.

With regard to the type of research preferred by funders or journals, in the experience of one researcher, it is necessary to specify bio-medical analysis in order for research to be deemed acceptable. In general, mainstream journals and funders do not like “anecdotal” or experience-based evidence, and prefer more traditional quantitative methods of analysis, as well as laboratory-based studies. Gender analysis, or an analysis specifically focussed on women is considered irrelevant by journals. One researcher stated that there is an increasing awareness of the value of qualitative research among bio-medical researchers/journals, but there is considerable room for improvement in this regard. One researcher’s comment regarding the key issues for women workers, such as flexible hours, part-time work, and restructured workplaces, for example, is that there is “total ignorance on the part of all”. This reveals a general lack of understanding of key issues

related to women's lives among non-feminist researchers.

In spite of negative responses from journals and funders, both of the researchers reported that they continue to submit their work to mainstream journals, although one researcher commented that they also find alternative sources of funding and publication. I was interested to know how women-centred research is regarded within the general occupational health community, which would indicate the degree to which this community operates from traditional male-dominated research paradigms. As suspected, there is a general lack of acceptance of feminist research among peers, and a preference for large studies based on pathology which disregard social context. One researcher commented on the involvement of unions, which in the past remained distrustful of studies based on women workers. However, recently through collaborative projects with CINBIOSE researchers, unions are slowly becoming convinced of the importance of women-centred research. Interestingly, studies based on legal questions seem to gain more acceptance among journal editors, perhaps due to the research traditions of legal academe which consider issues of discrimination as relevant objects of study.

I conclude from the responses received that my earlier claims and assumptions regarding the paradigms held by mainstream research bodies prevent them from fully appreciating the values of feminist or women-centred research. My questionnaire builds upon the poster presentation done by CINBIOSE which indicates the numbers of studies or projects rejected by funders, and the possible criteria for rejection (involvement of

workers, field study, male collaborator). My research goes a step further and seeks to understand the significance of this criteria and to explain why mainstream reviewers consider them as unacceptable research methods. The gender-blindness evident among mainstream funders and journals as demonstrated here, creates barriers preventing feminist research from being published or funded, thus resulting in the marginalization of feminist research from the occupational health research community. These claims are further demonstrated in my subsequent analyses of other indicators of paradigms.

Mainstream Sources Search

Journal Search

A systematic search on the Medline database is another important means to reveal the tendency and prevalence of mainstream paradigms among published occupational health journals, and to assess the evidence provided through the CINBIOSE example. This search on Medline was limited to occupational medicine journals from two specific time periods, 1990-2000 and 1970-1980, in order to compare the extent to which gender factors have been analysed in research over two distinct time periods. I had hypothesized that the more recent studies would reflect some knowledge of gender issues after researchers' exposure to thirty years of the women's movement. I used specific search terms to compare what I would describe as standard, bio-medical occupational health studies with those that include women, social factors and qualitative methods of analysis. The search terms which I used to locate articles which might reveal feminist or women-centred studies included: "women and gender", "social and context", "social and status",

“pregnancy”, “childcare”, “housework”. These were chosen due to the multidisciplinary nature of much feminist occupational health research which includes social factors. As can be seen on the charts on the following pages, the terms “childcare” and “housework” resulted in very few articles, a possible indicator that the bulk of occupational health research does not involve these issues which are important determinants of women’s health. The search of journals from the 1970-1980 period using the term “women and gender” resulted in no articles, so the terms “occupational health” and “pregnancy” were used as an alternative. I decided to combine the terms “women” and “gender” as a method to locate articles which may have used gender analysis. In contrast, when using the term “women” alone the articles were not necessarily about women’s health and were no different from the sample of general occupational health studies.

Although a total of 27 searches was undertaken, nine were selected for analysis which were further narrowed to seven. This was done to avoid the duplication and repetition that many of these articles presented. My analysis is a comparison of those articles which I categorized as mainstream, bio-medical occupational health studies, against those articles which I categorized as involving some form of gender analysis or consideration of women’s health. These categories were selected on the basis of the list of key terms and indicators presented in Chapter 4. The search histories selected for final analysis were chosen for their representation of these two categories. Where the sample size of journals was large, I limited the search results to the first 30 records appearing in the search. An exception was made for Search 1 where I read through all 52 search records, since these

would be most reflective of any articles which might involve gender. This analysis is not meant to be a comprehensive critique of a large sample of Medline records, but rather a sample to illustrate the occurrence of paradigms in occupational health research.

Therefore, I limited my final searches for analysis to those outlined on the following charts, which provide comparisons of those abstracts/articles which emphasize the following: a focus on medical or clinical analyses versus those that involve some social context analysis; and those which include women or some form of gender analysis versus those which are gender-blind. Although I argue that the dominant research paradigms are gender-blind and that women are excluded from the majority of studies, I was cognizant that my hypothesis could be challenged through the search results. I used numerous search terms related to gender and women's issues to reveal all possible articles which involved gender analysis. I hoped that this search would reveal greater numbers of gender-based research to demonstrate the possibility of a paradigm shift. However, based on the findings, there were fewer gender-based studies than expected.

SEARCH RECORD**STAGE 1**

Medline Advanced 1990-November 2000

Search Limit: articles dating 1990-2000, Occupational Medicine Journals

Search Term	Total Journal Articles
A. occupational and health	7903
B. women and gender	84
C. (occupational & health) + (women & gender)	52
D. social and context and health and impact	1
E. social and context	17
F. (occupational & health) + (social & context)	12
G. pregnancy	392
H. (occupational & health) + (pregnancy)	214
I. (occupational & health) + (women & gender) + pregnancy	2

Search History Collected for Analysis:

Search 1 - C (52 articles)

Search 2 - A (1-30 of 7903 articles)

Search 3 - E (17 articles)

Search 4 - F (12 articles)

Search 5 - H (1-30 of 214 articles)

STAGE 2

Medline Advanced 1966-72 - 1988-89

Search limit: articles dating 1970-1980, occupational medicine journals

Search Term	Total Journal Articles
J. occupational and health	1904
K. women and gender	0
L. social and context	0
M. pregnancy	109
N. (occupational & health) + (pregnancy)	29
O. women	69
P. (occupational & health) + (women)	32

Search History Collected for Analysis

Search 6 - N (29 articles)

Search 7 - J (1-30 of 1904 articles)

STAGE 3

Medline Advanced 1990-November 2000

Search Limit: Articles dating 1990-2000, Occupational Medicine Journals

Search Term	Total Journal Articles
A. Occupational and health	7903
Q. housework	2
R. (occupational and health) + (housework)	2
S. childcare	0
T. social and status	79
U. (occupational & health) + (social & status)	54

Search History Collected for Analysis

Search 8 - T (1-30 of 79 articles)

STAGE 4

Medline Advanced 1966-72 - 1988-89

Search limit: articles dating 1970-1980, occupational medicine journals

Search Term	Total Journal Articles
J. occupational and health	1904
V. housework	1
W. (occupational & health) + (housework)	0
X. childcare	0
Y. social and status	37

Search History Collected for Analysis

Search 9 - Y (37 articles)

Before embarking on an analysis of journal abstracts and selected articles, it is useful to comment on the numeric results of the searches outlined above. In Stage 1, of the 7903 articles regarding occupational health in general (these are what I would define as the standard studies), only 52 include something about women and gender and occupational health, whereas 214 involve pregnancy. I would argue that this reflects the bio-medical paradigm where the majority of health-related studies done on women are related to reproduction and pregnancy, reflecting traditional beliefs which focus on women's reproductive role in society. As seen in a critique of the methodological aspects of the studies found in the various searches, the vast majority of research is gender-blind and does not ask appropriate questions relevant to women's occupational health issues. In addition, the vast majority would appear, from these numbers, to be based on bio-medical models which do not take social context into consideration, as only 12 articles out of 7903 use these key terms.

It is telling that a similar comparison of key search terms for STAGE 2 reveals similar gaps in the research. Thirty years ago, the occupational health research appearing in Medline did not use the term "gender", and although women appeared in some studies of occupational health (32 articles) the majority of those studies related to pregnancy (29 articles) reflecting a sex role bias as mentioned above.

I included other search terms such as "housework" and "childcare" as a method to locate occupational health studies done from a feminist or women-centred perspective by taking

contextual factors of women's lives into account. Yet for both time periods studied, these drew very poor results (0 articles which mention childcare in both time periods, and 1 and 2 articles which mention housework for the 1970-1980 and 1990-2000 time periods respectively.) This reveals paradigms which do not recognize important social context issues for women, an exclusion which can have a serious impact on their occupational health.

Relatively few articles appeared when the key term "social status" was used in my search (79 of 7903 in 1990-2000 articles, and 37 of 1904 of the 1970-1980 studies). I would argue that this also reflects mainstream scientific paradigms in occupational health research when such a small number incorporate socio-economic status of workers in their studies. This becomes more evident in the critique of abstracts and articles which follows.

Abstract Analysis

I have recorded the details of my analysis of relevant abstracts in Appendix 5, with a series of charts which include the abstract source, my gender-based critique of the abstract and key terms found within the abstract which were indicators of research paradigms. I based my analysis on the key indicators listed in Chapter 4, focussing specifically on the extent to which occupational health studies incorporated social context, women, and qualitative methods. Some abstracts were excluded from this analysis if they were not deemed relevant to workplace health research (some journals include general environmental health research). In addition, some abstracts were not

related to studies, per se, but rather summarized an editorial comment or report and were thus excluded from my analysis. A number of journal records, especially in the 1970-1980 time period, did not include abstracts, thus further limiting the number available for analysis.

The following chart summarizes the total analysis of the abstracts, and indicates the frequency of gender-blind studies and the frequency of studies involving male-dominated workplaces and heavy industry (an indicator of mainstream paradigms). I defined gender-blind studies as those which included no gender breakdown at all, or no mention of the sex of the participants. I also included in this definition those studies which did indicate the numbers of women and men involved, but which failed to report results for each sex within this category. I would argue that if an illness is not sex-specific (prostate cancer, or ovarian cancer) studies involving the health of workers should look at the effects of workplace exposure on both women and men. However, as illustrated in this analysis, the vast majority of studies in this sample exclude women.

Abstract Search Summary

Search	Key Search Term	Total Relevant Abstracts	% Gender-blind	% Male dominated Workplace
Search 1	(occupational health) + (women and gender) 1990-2000 set	17	30%	35%
Search 2	(occupational and health) 1990-2000 set	14	93%	79%
Search 3	(social) + (context) 1990-2000 set	13	92%	15%
Search 6	(occupational health) + (pregnancy) 1970-1980 set	6	0%*	33%
Search 7	(occupational and health) 1970-1980 set	10	90%	70%
Search 8	(social and status) 1990-2000	23	74%	26%
Search 9	(social and status) 1970-1980 set	19	74%	42%

* Although these articles are not considered gender-blind as per the working definition, their analysis is not adequate in the context of appropriate gender analysis, but rather follows traditional methods and paradigms.

My first comparison is between those studies which I categorize as representing mainstream, bio-medical paradigms and which make part of Search 2 and Search 7 in contrast with those studies that involve gender or women, found in Search 1 and Search 6.

There is a significant difference between the types of articles which appear in the standard occupational health studies as opposed to those studies involving women. In general, the standard, bio-medical studies involve quantitative methods using data from large surveys or databases, rather than smaller questionnaires or personal interviews. They also rely more on laboratory experiments rather than investigation based in the workplace, and they often use rats or mice to test the effects of particular compounds. The industries represented in these studies are mainly male-dominated, heavy industry. To illustrate, among the original 30 standard occupational health studies in the sample (before selection for abstract analysis) four use rats or mice, 15 pertain to a male-dominated industry, one involves health care, and the remainder fail to specify workplaces. The industries in this sample include: shipyard, chloralkali producer, asbestos and cement factory, steel mill, chemical plant, motor vehicle production, coal mining and pulp and paper. By comparison, among the original 52 studies which included gender and women, none use rats or mice, nine pertain to a male-dominated industry, and three involve other workplaces (textile factory, for example). This reflects the claims made by Messing and her colleagues at CINBIOSE that more research is needed on workplaces or jobs which are not traditionally assumed to be dangerous. This does not

discount the importance of studying the toxic effects of heavy industry on workers, but other studies on other workplaces such as hospitals, schools, and offices need to be undertaken. However, current occupational health research is largely dependant on the paradigms of the researchers, and as evidenced in this study the dominant mainstream, bio-medical research paradigms produce the bulk of occupational health studies, creating gender-blind research.

Those studies in the sample which involve women or gender are not completely free of gender-blindness, but they do involve more examples of women's work situations. Some consider social context, and some involve a combination of qualitative and quantitative methods. However, one serious limitation to these studies (and those appearing in the other searches) is the use of death certificate data to obtain occupational information on deceased workers in order to evaluate the safety of a workplace for those currently employed. As reflected in the CINBIOSE literature above, this is not an entirely reliable source of information for women, due to the tendency for death certificates to exclude complete information on women's work. Gaps are especially prevalent if a woman has spent a number of years out of the workforce (but still maintaining a household) which would be considered as unemployed status by mainstream evaluators. In these cases, the occupation of the husband (if applicable) would be recorded. Yet, this is a common source of data used by occupational health researchers, who it could be argued are not aware of the limitations inherent in such a method. In addition, contrary to the research methods preferred by researchers at CINBIOSE who involve the workers at most stages

of a study, and who undertake the studies within the workplace, virtually all of the studies in the entire search sample fail to involve workers in the research. Many of the studies report skepticism of the value of self-reported illness, and rely instead on expert opinion based on medical or psychological examinations.

In those studies from the 1970-1980 time period which involve women, the main focus is on the effects of workplace exposure on pregnancy (Search 6). The majority of these studies resemble the standard occupational health studies (Search 7) in their use of statistical, quantitative methods, based on bio-medical models. Very few of these studies relate social context as a source of factors which can interact with workplace exposures to affect workers' health. For example, studies involving pregnancy and working mothers fail to investigate the health effects of childcare responsibilities, or the double burden of housework on a pregnant worker. It is evident that the study designs in this sample are products of mainstream research paradigms which exclude key questions of importance to women, but which focus on traditional views of women's reproductive roles, and which place greater value on scientific, quantitative research methods. In both samples many of the articles mention gender or women, or that the participants of the study are divided by sex, yet the analysis is done for the men only, or else the results are generalized for both women and men. Only a very few abstracts actually involve gender analysis using feminist or women-centred methods, an indication of the considerable lack of occupational health information from other paradigms. The implication for women of such gaps is a reinforcement of the notion that women's work is not dangerous based on

the assumption that if workplace health effects do not appear in the research, then they do not exist.

The next stage of the analysis of abstracts relates to Searches 3, 8 and 9. In this analysis I investigated whether studies that look at social context or socio-economic status pay more attention to gender. As noted in the chart above, 92% of the abstracts in Search 3 are gender-blind. The studies do involve some qualitative analysis, in contrast to many of the standard occupational health studies. For example, one study investigates the work-family research agenda while another explains the importance of the involvement of social scientists in occupational health research. Yet, they all fail to indicate the importance of gender-related factors in their analysis.

One study on breast cancer by Blair, Zham et al., does involve gender analysis and is undertaken from a feminist perspective, one of a number of studies undertaken by this particular team, according to their references. Yet, there are two studies on men and breast cancer in the sample which make no mention of previous research done by Blair, Zham et al. The male breast cancer studies refer to a completely different body of research in their literature reviews. This supports Sandra Burt's analysis of feminist research within the context of the mainstream research environment indicating that the work of feminist researchers is ignored by those who do not share their research paradigms. "This research segregation has been fuelled by the continued resistance of traditional researchers to feminist approaches expressed in publication decisions...."

(Burt, 1995: 374) I would question the judgement of the peer review process which accepted the male cancer studies in spite of the blatant avoidance of feminist research in the literature review. Although this indicates a gap in their literature review, I would argue that the researchers and the publisher work within similar research paradigms which ignore the feminist cancer literature and thus disregard the gap.

Article Critique

In order to further illustrate the prevalence of mainstream paradigms in occupational health research, a closer analysis of a small selection of randomly chosen articles provides further insight into the extent to which women are considered in research, and how that research is undertaken. Due to the relative unavailability of articles from the 1970-1980 time period, the focus of this analysis is on a selection of articles from Searches 1 and 2 from the 1990-2000 time period.

The articles which involved more women-centred research, although few in number, clearly reflect a tendency toward the use of feminist paradigms in both the methods used and the questions asked. For example, some of these studies take into consideration external factors relating to the social context of workers' lives which could impact workplace exposures. They also look at specific job tasks, rather than simply depending on job titles which fail to reveal the different work done by women and men within the same job. Some of the studies investigate repetitive motion, or the amount of time spent standing, rather than placing an emphasis on heavy loads as does mainstream research, a

reflection of paradigms which assume different qualities for male and female work.

Other indicators of feminist research methods involve the use of custom-made questionnaires. Feminist researchers (Roberts, 1990, for example) question the validity of large surveys or census studies, which tend to be based on gender-blind questions and design. Studies which create their own questionnaires and which use the participation of the workers tend to allow for more women-centred information, as was reflected in some of the studies in this sample.

An article (Loewenson, 1999: 34-42) which reflects a feminist research paradigm demonstrates the author's insistence that the socio-political and economic context is crucial to occupational health research, especially for women in developing countries. This research paradigm forces the researcher to ask questions about globalization and its effects on women's employment patterns which impact on their health (poor working conditions, assembly line work, home based piece work, maquiladora work).

As indicated in the chart above, the search sample reveals a majority of mainstream, standard occupational health studies which are gender-blind and rarely involve women. For example, one study (Weiderpass et al., 1999: 48-53) adjusts for social class to remove what the researchers consider to be confounders, such as lifestyle habits (smoking, diet, alcohol consumption, use of oral contraceptives etc). In contrast, a researcher working within feminist paradigms might consider social class to be an important variable for

studying women's occupational health. In reality, women live in different social contexts, thus I would argue that a study of workplace exposure is meaningless without consideration of these contexts. Research paradigms which prevent the researcher from understanding this produce gender-blind research results.

Another indicator of research paradigms which exclude important questions for women, is the high value placed on large sample studies. One study in the sample admits to this exclusion by stating that "the analysis was based only on cases among men because of the relatively low number of cases among women." (Kjaegaard and Andersson, 2000: 112-117) Yet, feminist researchers claim that this is not an acceptable excuse. Although many workplaces where women dominate are relatively small, and within male-dominated workplaces women are a minority, their occupational health should not be ignored. I would argue that methods must be devised to suit this reality, and the example of CINBIOSE research practices outlined in Chapter 5 illustrates that this is possible.

I conclude from this analysis that mainstream bio-medical research paradigms are clearly reflected in the articles from this sample where the majority glean the results from statistical analyses, often with the use of clinical experiments involving male animals. Results are often only provided for the men in the study sample, even if there were women and men involved, an indication of the widely-held belief that research results can be generalized for both sexes. This is clearly a serious limitation in the research and can have significant ramifications for women's health. Although paradigms are visible

through an analysis of the research published, it is useful to look at the origins of the research to reveal possible sources of gender-blind paradigms. This could include key research and funding institutions which possess the power to set research priorities and parameters.

Research and Funding Institutions

As a further source of evidence in this study of paradigms, I have chosen three particular research and funding institutions for analysis due to their level of importance within the health research community in both Canada and the U.S. Firstly, the Institute for Work and Health is based in Toronto, Ontario and, although is an independent research organization, it receives most of its funding from the Workplace Safety and Insurance Board of Ontario (WSIB) formerly known as the Workers' Compensation Board. (IWH, 2000a) The IWH claims to have some degree of influence over health policy and plays an important role in health research in Ontario. The second organization, The Canadian Institutes for Health Research (CIHR), is now the main source of federal government health research funding in Canada, replacing the NHRDP (National Health Research and Development Program) and MRC (Medical Research Council) sources. The third organization, the National Institutes of Health (NIH) is the main U.S. government research and funding body for health. The recent study mentioned in Chapter 3 revealing the inability of the NIH to monitor the research it funds to ensure that it complies with their ruling on the inclusion of women in research allows for a further analysis of paradigms. An analysis of these mainstream research and funding institutions provides an

opportunity to examine the paradigms in practice.

The Institute for Work and Health

My examination of the IWH involved a systematic scan of the website to identify research paradigms, using the list of indicators outlined in Chapter 4 as a guideline.

Sources of information for this analysis were found in the Annual Report 2000, as well as the pages in the site which focussed on the four research areas of the Institute.

The IWH claims to be the leading independent work/health research centre in Canada with special expertise in musculoskeletal problems. Although the Institute does incorporate some social factors in the research, such as job satisfaction, workload, and job stress, (IWH, 2000b) and uses qualitative methods in some of its research, it does have an overarching bio-medical, clinical, gender-blind research paradigm. The use of qualitative methods does not guarantee research which responds to all aspects of worker health if the questions do not focus on key social context factors. Feminist research methods, such as those employed by CINBIOSE, avoid such limitations. I would argue that an imbalance in the focus of the research or the approach can result in the production of research which is blind to important social factors for workers and can overemphasize bio-medical factors. An example of the bio-medical paradigm is seen in the profiles of the institute which show an emphasis on science and scientific leadership, as opposed to a balance of medical and social science approaches. "By developing robust measures and tools, the Data and Information Systems area is a strong part of the Institute's *science foundation*

from which all work is accomplished.” (IWH 2000c, my emphasis) In addition, the Institute boasts of having a “broad clinical perspective” (Ibid.) which is reflected in its mandate. “The mandate of the Institute for Work and Health includes providing guidance to clinicians treating workers’ compensation claimants with musculoskeletal disorders and evaluating interventions for these disorders. We therefore became interested in the current state of evidence on clinical course and prognosis.” (Cole and Hudak, 1996: 658)

Another indication of an overarching bio-medical/scientific focus can be seen in the professional profiles of the “Senior Scientists” of the Institute. To their credit, there is a balance of women and men in this group. However, only one of the women scientists is involved in women’s occupational health, and her specialization is clinical psychology. There are no social scientists who work in women’s health, and none of the other scientists in this list, women or men, have any gender-related expertise mentioned in their profile.

Senior Scientists - Institute for Work and Health

Sociology (m)

Masters of Clinical Science (f)

BScOT, PhD Scientist, Health Measurement, Clinical Epidemiology (f)

MD, FRCP(C) Senior Scientist, Internal Medicine (f)

PhD, Clinical Psychology, scientist (m)

MD, MSc, FRCP(C) Senior Scientist, Clinical Epidemiology, Biostatistics (m)

PhD, Clinical Psychology, scientist, women’s occupational health (f)

MSc, MD, FRCP(C) Senior Scientist (m)

BSc, MA, PhD Associate Scientist Organizational Psychology (f)

PhD Scientist, senior Biostatistician (f)

PhD Scientist, Epidemiology (m)

MD, PhD Clinical Epidemiology, Biostatistics (m)

Scientific Director, doctoral training in Epidemiology, Health Policy, Behavioural

Sciences (m)

PhD Scientist BSc, Chemistry, MSc Community Health & Epidemiology (f)

MSc, PhD Senior Scientist, Clinical Epidemiology, Biostatistics (m)

DipP & OT, MSc Associate Scientist, Physical and Occupational Therapy, Design Measurement & Evaluation (f)

MBA, MA, PhD Associate Scientist Economics (m)

I argue that although the Institute is headed by a sociologist, the Scientific Director leads a team of purely bio-medical, clinical and mathematical scientists. There is no diversity in this list of qualifications, in the sense that the social sciences are not represented, and as lead scientists they would have a major influence on the research undertaken by this institute.

Although the Institute claims to be multidisciplinary, a brief review of the research teams headed by the senior scientists reveals otherwise. For example, Research Program 1: Health Services Research, Monitoring and Evaluation has 15 staff. There are no social scientists or gender specialists among the group, and the list of degrees possessed by the staff include BSc, MD, RN hailing from disciplines such as clinical epidemiology, occupational therapy, medicine, and kinetics. Certainly these are important disciplines in the study of occupational health, yet their tendency to focus on bio-medical models would limit their research. Similarly Research Program 2: Workplace Studies has 13 staff possessing MSc, BSc, and MD. Their work has included a back pain study at General Motors which involved no gender analysis, no indication in the report online of consideration of specific job tasks, or work outside the job which could impact workers' back pain (such as unpaid housework). (TWH, 2000d)

The research team responsible for the development of research methods and statistical expertise, The Data Information Systems program, is made up of 12 people, who possess the titles of MSc, Statistician, BA, Library Technician, MSc, Biostatistician, MSc, Epidemiologist, etc. As with the above groups, these disciplines are important for health research, but they lack expertise from the social sciences which indicates a serious gap in the research resources of this Institute. As a final comparison, the fourth Research Program, Population/Workforce Studies is similarly unbalanced: with nine staff, possessing PhD Associate Scientist (Economics), PhD Senior Scientist (Management) MD (Clinical Epidemiology, Biostatistics), ScD (Public Health Sciences) etc. I question the claim made by the Institute that the research teams are multidisciplinary when there is an obvious imbalance of research fields toward a bio-medical focus which would indicate the use of traditional, scientific research paradigms by the staff. Although this cannot be confirmed without further study of this organization, which is beyond the limits of this thesis, this assessment is supported through the analysis of the research outputs of these teams discussed below.

To its credit, the IWH does some of its work with union representation. However there is a glaring lack of gender-based research within its mandate, and its published papers. For example, the Annual Report 2000 discusses the changing workplace, and the transition to service and knowledge-based work from industrial manufacturing. The new area of focus is on non-standard, contingent work and outsourcing “a development that gives rise to concerns for workers’ compensation since these increasingly popular work arrangements

present unique challenges for health and safety efforts.” (IWH, 2000a) Firstly, this could indicate a focus based on concerns of insurers (who are stated among the key stakeholders of the Institute) rather than the well-being of workers. Secondly, since many women’s jobs such as textile workers involve working from home, this is an important issue for women workers. However, there is no mention of this concern in the Report. In addition, the Report discusses the increase of “disability and disease” related to work-related musculoskeletal disorders (WMSDs). This indicates a focus on pathology rather than symptoms, and for many women who suffer chronic repetitive strain injuries whose symptoms may not be recognized due to the apparent lack of pathology, this overlooks key issues for women. In fact, WMSDs are a specialty of the Institute, yet there is no reference made in any of their research to the work of Karen Messing or CINBIOSE, clearly a shortcoming in their review of relevant literature.

The Annual Report does make one reference to women’s health, however it falls under the title of “Unique Approaches” which clearly indicates that this is considered to be a special approach, rather than a regular, integrated research approach. It also indicates the failure of the Institute to recognize previous research on women’s occupational health done by CINBIOSE, and other feminist researchers mentioned in this thesis. The Report correctly states that women’s occupational health is poorly studied leaving unanswered many questions such as “why do women appear to file relatively few compensation claims? And why, when they do, do they remain off work for longer than men do?” (IWH, 2000a) In response, the Institute launched in 1999 a workplace study officially

known as “An Exploration of the Psycho-social Environment and how it Varies Across Hierarchy and Gender in a Service Sector Environment” (Ibid.) This study is based on interviews with employees in the service sector and investigates the role of work-related stress in health problems, with an examination of the impact of stressors on hierarchy and gender. However, the study does not clearly state that it focuses on women, it is rather a comparison of workplace stressors between women and men, and between different job-levels within a workplace hierarchy. Although this comparison is useful, it reflects a serious limitation of the research. While it is focussed on the service sector, the study summary does not mention the actual workplaces involved which would indicate if they are female-dominated workplaces. (IWH, 2000a) A study which claims to address the serious gap in research on women’s occupational health, as is proclaimed on the website, should have women workers as its focus. Unfortunately, the study has not yet been published, thus a more in-depth critique is not possible. For an institute which produces large numbers of research papers each year, and which claims to impact health policy, it is not adequate to have only one study which supposedly focusses on women’s workplace issues. The research mandate of this Institute could be greatly improved with the implementation of a requirement for gender analysis to be incorporated into all research implemented where relevant.

The description of the research mandates of each of these research programs also provides insight into the research paradigms which are promoted in the Institute. A focus on instrument/measurement research, evidence-based practice and primary research

involving cohort studies, are indicators of this. Similarly placing importance on “biomechanical and psychosocial factors in the genesis of work-related musculoskeletal disorders” without mention of social factors, indicates a research bias. The methodologies developed by the Data and Information Systems team are focussed on quantitative statistical methods involving multi-level modelling and prognostic modelling, for example. There is no mention of the development of qualitative methods, and their reference to alternative methodologies refers to “multistate hazard modes”. Based on my readings of Messing and others who also specialize in musculoskeletal disorders, I would argue that the Institute is not assisting in narrowing the gaps in the research as it claims to do. Messing has shown numerous factors which influence workers’ health which go beyond the biomechanical indicators, especially in the context of women workers, which an androcentric focus on the bio-medical ignores, resulting in serious limitations to the research of the Institute. Yet, the work is accepted into peer-reviewed journals, and is funded by Ontario’s main body of worker compensation coverage which leads me to question the paradigms which are at work among these mainstream bodies.

One final indicator of the paradigms which drive the institute is the research which they have had published in peer review journals. My analysis of four research papers using the list of indicators to assess the degree of bio-medical, gender-blind, androcentric research methods used is summarized below.

One study (Brooker et al., 429-439) did take into consideration the external socio-

economic context, but in a limited way which doesn't clearly relate to women-specific contexts such as the double burden of housework and paid work. In addition, the main source of data is also limited to Worker's Compensation Board claims (a fairly popular source of worker illness or injury statistics). However, feminist researchers criticize a dependence on these data because there is a tendency for fewer claims by women to be accepted and processed. This results in the provision of inadequate data on women workers. As this is not mentioned as a limitation to the research results in this particular study, I would argue that the researchers work within a mainstream paradigm which is blind to this data gap.

Another study (Juha P. Lura, Harry S. Shannon et al., 382-387) presented gender-blind results. It controlled for sex (among other variables) which makes it impossible to reveal specific information about women's and men's jobs, exposures and resultant health conditions. Instead, the study generalizes for all and in the final results women are barely considered. There is a breakdown by sex to show prevalence of back problems, but all other aspects and variables are not broken down by sex. This is especially problematic for some study participants who are listed as not at work (data taken from the Ontario Health Survey) which could mean that some of these individuals are unpaid caregivers or homemakers, or are injured in ways not recognized as work related. However, this remains unknown if it is not considered in the analysis. Researchers who work from a paradigm which is blind to conditions and health effects of unpaid work, as experienced by many women, would not consider this to be a critical factor, resulting in what I would

describe as inadequate research findings. In addition, as this study was based on data from a household survey, there is the possibility that the problem of householdism could be in effect, a phenomenon recognized by feminists but which remains ignored and misunderstood by mainstream researchers.

A similar problem which results from a dependence on mainstream standard data sources or classification systems, such as the Standard Occupational Classification, is that the classifications are often made from a male work perspective. In this case, the researchers use nine job categories but fail to recognize that job tasks could vary for women and men within the broad categories. This results in a failure to provide specific information on the effects of certain jobs or tasks for women, through the generalization for both sexes.

In sum, the above studies implemented by the Institute for Work and Health are done in a gender-blind manner, involve a heavy reliance on statistical methods of analysis, and fail to make reference to previous studies done by CINBIOSE or other non-mainstream researchers. The studies reflect a dependence on large surveys or census data, and data emanating from compensation claims, even though both sources are limited in their relevance to women's realities. Similar paradigms become evident in my critique of the Canadian Institutes for Health Research in the following section.

Canadian Institutes for Health Research (CIHR)

In order to get a sense of the paradigms which drive the work of the CIHR, I searched through the website for descriptions of those areas which I would argue shape the type of research to be promoted by the CIHR. I reviewed the mandate, the members of the Governing Council, and the establishment of the 13 specific research institutes, one of which relates to gender. I then reviewed the peer review process and the committees involved in that process to assess the paradigms at work.

Firstly, the mandate of the CIHR places an emphasis on science although scientific research is not the only type of research funded through this organization. “The CIHR is Canada's major federal funding agency for health research. Its objective is to excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health care system.” (CIHR, 2000a) Secondly, although the “Backgrounder” section of the website describes the CIHR as an agency whose “concept is an innovative one - a multi-disciplinary approach organized through a framework of ‘virtual’ institutes”, there is still an emphasis on science. For example, of the four main research themes, three are of a bio-medical, scientific, and clinical nature. The fourth combines broad themes involving social influences on health, themes which I would argue should be integrated into the other themes as overarching influences on health. The themes are as follows: 1) Basic Bio-medical 2) Applied Clinical 3) Health Services and Health Systems 4) Society, Culture

and Health of Populations. This focus on the bio-medical and clinical aspects of health indicates research paradigms which avoid social context analysis, and thus ignore or downplay other aspects of workers' lives beyond the biological factors. I would argue that a bio-medical, scientific focus of the organization will promote research which fits that paradigm, placing studies based on social factors or determinants at a disadvantage.

I would also question the current process of the development of the institutes. As mentioned in a previous chapter, a group of women's health specialists have lobbied for input into the design and mandate of a gender institute, an issue which at the time of writing was not yet resolved. A step towards defining the institutes' mandates is the appointment of the Scientific Directors whose task will be to set up advisory boards, strategic plans and ultimately the mandates of the institutes. The list of Scientific Directors could be seen as a reflection of the biases of the CIHR as an institution. Of the 13 Scientific Directors, only two are women. In addition, the professional backgrounds are mainly limited to bio-medical and economics training. Although the institutes cover broad subject areas, including Aboriginal health, the descriptive paragraph on the website reveals the scientific priorities of the Agency:

As they develop, CIHR Institutes will become a source of scientific leadership within their particular area of focus and establish priorities that will facilitate research efforts in this area. Led by Scientific Directors and guided by the wisdom of Institute Advisory Boards composed of various health stakeholders, Institutes will encourage researchers, voluntary health organizations, government and other partners to work together to shape the Canadian research agenda and translate research findings into practice within Canada's health system. (CIHR, 2000b)

This scientific focus is also evident in the membership of the Governing Council, the

highest level of decision-making in the Agency, which is made up of 19 members: 6 women and 13 men. Their expertise includes nursing/medicine, pediatrics/biochemistry, pediatric cardiology, clinical pharmacology, medicine/hyperlipidemia, pharmacology/therapeutics, health administration/provincial ministry of health, bio-ethics, science (unspecified), biochemistry, respiratory science, private sector, biochemistry/pathology, law, internal medicine, psychology/women and substance abuse. (CIHR, 2000c). Drawing from discussions in previous chapters pertaining to the paradigms of scientific and medical training, I would hypothesize that the majority of these individuals work from a bio-medical and/or an androcentric traditional point of view. I would argue that their training would influence their judgement of what research takes priority, basing a stronger focus on bio-medical models, at the cost of a failure to utilize sociological, women-centred, qualitative research which incorporates socio-economic factors into the analysis. In addition, the ties to the private sector would have an influence on what research takes priority based on global capitalist market priorities and the inevitable influences of transnational corporations, especially those in the pharmaceutical industry.

The CIHR Peer Review Process is another source of paradigm indicators since it is this process which decides on the research selected for funding, thus indicating the research priorities of the organization. Much of the critique made by Messing in *One-Eyed Science* as discussed previously, can be applied to the information regarding the CIHR peer review process. For example, there are certain factors to be taken into account in the

determination of membership on a peer review committee such as research excellence which is reflected in a member's ability to "obtain continued extramural peer-reviewed grant support for a research program" as well as "quality as a referee - breadth of knowledge, maturity of judgment." This latter criterion provides no specific basis for judging "quality" and "maturity". The requirement to have "continued peer-review grant support" is a possible limitation for women researchers who may have had a disruption in their research publishing due to child rearing. Similarly, if their research is based on feminist methodologies developed from within feminist research paradigms and has been featured in feminist journals, there is no guarantee that peer-reviewed journals would publish it. This is illustrated through the difficulties experienced by CINBIOSE and the researchers involved in my email interviews.

According to the guidelines for peer reviewers, decisions are to be based on the judgement of the Scientific Officer and review committees. Studies which show evidence of originality, clear thinking and the potential for high quality publication or impact are preferred. Those which elaborate on existing knowledge of "large numbers of not very important papers" are not well received. (CIHR, 2000d) I would question how a work qualifies as a "not very important paper". There is no rating scale nor indicators provided which might guide reviewers in their judgement of the level of importance of papers. If, for example, feminist research qualifies as "not very important" by the reviewers then new studies building on past feminist research will continue to be blocked from funding or publishing.

Reviewers must consider the following questions, which offer no clear criteria to guide reviewer's judgements:

- How *important* and/or original are the hypotheses or the questions to be addressed?
- How *important* and original are the contributions expected from the research proposed?
- How well will the *proposed experiments* address the hypotheses or questions? (CIHR, 2000e, my emphasis)

These illustrate a scientific paradigm, through the expectation of experiments. How would a study involving participatory research with a small group of women workers be judged? Similarly, on what basis is something deemed important? The effects of the workplace on menstrual function were not deemed important by one journal, in the CINBIOSE experience, yet they were crucial to the workers' well-being. Had CINBIOSE not sought alternative means to publish its study, the information would have remained hidden. This illustrates the potential for gender-blind paradigms to influence decisions and to block feminist research from either funding or publication. A review process which depends on the personal views of reviewers who work within the dominant research paradigm, will fail to recognize and promote research which is undervalued by that paradigm. Such a process is a key obstacle to the publication and funding of feminist research within the mainstream, dominant institutions, and maintains its marginalization.

There are other indicators of the male-dominated and gender-blind characteristics of the peer review process. A section of the peer review guidelines document advises reviewers

on what constitutes appropriate budget items for materials, supplies and services and suggests the following categories: animals, isotopes, chemicals, glassware, computer software packages, data analysis, etc. It is not surprising that there is no suggested budget line for daycare during worker interviews. Not only does this illustrate again a focus on scientific, experimental research, but it also indicates a lack of awareness for the particular needs of some women.

There are 32 peer review committees at the CIHR, and the vast majority are of a bio-medical nature. Although the Psychosocial, Sociocultural, and Behavioural Determinants of Health Committee is an area where qualitative, feminist research might be included, it does not indicate any requirement for gender analysis, nor a focus on women and men's health in particular. Instead, it focuses on the human experience of disease, and the social and cultural features of "patienthood". Women are greater users of health services than men, yet there is no mention made in the description of the Committee of a focus on women as patients. (CIHR, 2000d). This is another indication of the bio-medical paradigms which drive the work of the CIHR, and which I would caution will affect the type of research funded. It may result in a blocking of feminist research, or at least the promotion of gender-blind research, excluding social context and other socio-economic factors which are important features of feminist health research.

The National Institutes of Health (NIH)

A final critique in this section returns to the example of the National Institutes of Health (NIH). Recent feminist research, mentioned briefly above, which criticizes the NIH in its failure to promote gender analysis in research, provides a telling example of the influence of dominant paradigms which warrants closer analysis. Although this organization is part of the U.S. government, I include it here as an illustration of how gender-blind research continues to be implemented and funded, in spite of legislation calling for the inclusion of women in research. In contrast to the peer review guidelines for reviewers within the CIHR which do not require a gender analysis, the guidelines in the NIH do indicate a limited consideration of gender, minority and children subjects: "Examine whether the minority and gender characteristics of the sample are scientifically acceptable and consistent with the aims of the project." (NIH, 2000a) The guidelines include four categories for gender analysis: both genders, only women, only men, gender unknown. Although this shows some consideration for gender, it is in a superficial manner, as it does not ask how gender is considered. I would argue that it is still inadequate for effective health research, but it is a beginning to more inclusive research practices.

The final component to this analysis of major funding institutions involves the failure of the NIH to enforce its own policy for the inclusion of women in the research it funds. In Chapter 3 I used as an illustration the recent study published in the *Journal of Women's Health and Gender-Based Medicine* which provides evidence that the NIH does not enforce this requirement for gender analysis. The study claims that the NIH policy is

disregarded by researchers and the NIH reviewers alike. The actual policy states that:

- NIH ensure that women and minorities and their sub-populations are included in all human subject research;
- women and minorities and their sub-populations are included in Phase III clinical trials in numbers adequate to allow for valid analyses of differences in intervention effect;
- cost is not allowed as an acceptable reason for excluding these groups; and
- NIH initiate programs and support for outreach efforts to recruit and retain women and minorities and their sub-populations as volunteers in clinical studies.

(NIH, 2000b)

The study sought to determine if this policy has been reflected in the scientific literature, and focussed its analysis on four mainstream journals: the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, the *Journal of the National Cancer Institute (JNCI)*, and *Circulation*. The vast majority of human subject studies funded by the NIH were for non-sex-specific conditions, and the study found that approximately one fifth of the total non-sex-specific studies excluded women as subjects. (Vidaver et al., 2000: 497) Of these studies, the researchers found that between two thirds and three quarters made no mention of either a presence or absence of effects due to the sex of subjects. (Ibid.) A similar pattern was also reflected in my own reading of abstracts and selected articles from occupational health journals. One other key finding of the Vidaver study was that in addition to the exclusion of women from research, those studies which did include women still failed to analyse the outcomes by sex. Vidaver and her colleagues make a number of recommendations to researchers and journal editors which would aim to improve this situation. For example, efforts are required to enroll as many women as possible into studies by way of increased public

outreach, provision of childcare and transportation, as well as changing protocol designs so that the lowest sample size necessary to perform accurate analysis by sex can be achieved. I would argue that these are all important factors which would encourage the involvement of more women in future research. However, until paradigms of the researchers, funders or journal editors are changed, they will not fully understand or appreciate the importance of gender analysis. They may make a move to include women in studies in order to comply with NIH rules, yet the appropriate gender analysis may still not be accomplished. Until researchers, funders and journal editors who work from non-feminist paradigms communicate with and learn from feminist researchers and women's health advocates who promote gender analysis in health research, they will continue to produce uninformed, gender-blind research.

Conclusion

In this chapter, I have presented evidence of the prevalence of gender-blind paradigms within various locations of occupational health research. This investigation involved an analysis of whether women are considered in research, how they are considered and what methods are used, including social context as a key factor. It also indicated the particular methods which are important in ensuring that appropriate gender analysis appears in research. Whether the indicators were revealed through a scan of journal abstracts or articles, or through a reading of journal reviewer's comments on refusal letters, or through a critique of the mandate and governing structure of major research and funding institutions, it has become clear through my investigation that gender-blind paradigms are

clearly evident within mainstream institutions. This has serious ramifications for the future of women's occupational health research.

CHAPTER 7 - CONCLUSION

Before embarking on this study, I began to formulate my main thesis question based on a conversation I had with Karen Messing. She described the years of research she and her colleagues have undertaken which has demonstrated with both quantitative, scientific evidence, and qualitative, contextual evidence that it is necessary to include women workers in occupational health research. Their work has shown that women and men have different experiences in work, and have different health effects and thus, must be regarded separately. Yet, with the exception of other feminist researchers concerned with women's workplace health, the findings of this work are generally not accepted. Messing questions why, after so many years and so much evidence, is their research still not fully accepted by the occupational health community, mainstream researchers and funders. My study has attempted to answer her question.

I have argued that the paradigms of mainstream researchers, funding bodies and journal editors make them unable to accept, to see or understand the importance of women-centred occupational health research. My research has demonstrated that a combination of historical, material and structural factors ensure that the dominant paradigms within the occupational health research community are perpetuated by those who work under these paradigms. Those who possess the power to set the research agenda through funding and publishing work within traditional, mainstream gender-blind research paradigms which make them unaware of alternative worldviews. The dominant paradigms have grown within the context of a society built on patriarchal and capitalist structures, which

continue to place a lower value on women's work and women's health, and in turn on research on women's occupational health. The paradigms are influenced by economic and political processes and corporate priorities. What hope is there for a paradigm shift which would enable mainstream researchers to see occupational health issues through a different lens?

I return to the discussion in Chapter 5 which presents the concept of the stages of women's involvement in science according to Lucie Dumais. I argue that we are currently in the fourth stage which focuses on the contribution of women in science, and which criticizes the existing research methods due to their limitations in drawing out the complexities of women's workplace health issues. This is clearly evident in the examples presented throughout this thesis. The final stage involves the transformation of all scientific epistemology (or methodology), as it relates to the values which guide scientific research. I argue that this stage would constitute a paradigm shift, in other words a shift which would enable mainstream researchers to view occupational health issues as feminist researchers currently do. What would be required for such a shift to take place? I would argue that major systemic change is required to enable a paradigm shift in health research. I show that research paradigms are part of a system built on capitalist and patriarchal structures which influence the social, political and economic workings of Canada. In order for a shift in research paradigms to happen, these structures and the values which perpetuate them, will have to be challenged. Education and awareness-building is one way to begin the transformation. Those who promote the dominant

occupational health research paradigms, i.e. the mainstream researchers, funders and journal editors who continue to produce gender-blind research, must communicate with feminist researchers and advocates of women's health. There must be a willingness on their part to listen to what feminists are saying, and to reassess the values upon which they situate their own research.

I have mentioned previously that the CIHR could provide a location for such communication to take place. Members of the women's health research community have come forward to propose ideas on how the CIHR could incorporate gender analysis into the research it funds and promotes. These same feminist researches have offered their knowledge and research experience to inform the development of the CIHR gender institute. The Canadian health research establishment has the opportunity to make a substantial effort to transform the way health research is undertaken by taking advantage of this offer. Yet, based on some of the findings presented in the previous chapters, the atmosphere for such transformation has not been promoted, as can be seen in the male-dominated and bio-medical focus of the CIHR governing bodies, for example. A paradigm shift is not possible in the near future until those who represent the dominant gender-blind paradigms are willing to make fundamental changes in their approach to research.

Although education is an important step, I argue that a shift is not possible without considerable structural change within Canadian society which would involve a restraint

of corporate power as it relates to health research. As long as there is corporate control or influence over research funding, the corporations will influence the research priorities and paradigms. The federal government has a role to play and although the effects of globalization and restructuring weaken the powers of governments, government policy must establish certain standards for research. That policy should be developed in consultation with women's groups and feminist researchers who are specialists in the field of gender-based research, and could be facilitated through collaboration with federal entities such as the Women's Health Bureau of Health Canada, and Status of Women Canada. This is an area where further investigation is needed, where practical solutions to this problem of a paradigm shift can be found. Strategies need to be developed which would enable feminist researchers to "reach" their mainstream counterparts, to help them understand that there are other ways of viewing health, especially occupational health. Much can be learned from a study of the experiences of women's groups around the world who have developed "gender-based analysis guidelines" for their specific jurisdictions, and who have attempted to educate others in the appropriate integration of gender into research and analysis. Some research has already been done in this area through the Centres of Excellence for Women's Health Programme of Health Canada, but it requires the full involvement of a wider range of feminist researchers, both academic and community-based.

To conclude, using the example of CINBIOSE and building upon their research regarding gender-blind occupational health research, I have argued that gender-blind paradigms are

the main factor which has resulted in the exclusion of women from the bulk of occupational health research. I have also argued that in order for women-centred and gender-based research to be fully undertaken by occupational health research bodies, a significant paradigm shift is necessary. Until future studies are able to reveal how such a shift can be made to happen, feminist occupational health research will continue to be marginalized by the mainstream research community.

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APPENDIX 1

Statistical Overview of Female Occupations

Taken from : Armstrong, Pat, Hugh Armstrong, *The Double Ghetto: Canadian Women and Their Segregated Work*. 3rd edition. (1994) Toronto: McClelland and Stewart.

Table 6, continued

Occupation ¹	% of all female workers ²			
	1971	1981	1991	
Stenographers and typists (411) ³	12.3	10.1	7.4	
Secretaries and stenographers (411) ³	9.1	7.9	7.1	
Typists and clerk-typists (4113)	3.2	2.2	0.4	
Salespersons	6.7	6.4	6.0	
Salesmen and salespersons, commodities, n.e.c. ⁴ (5135)	0.6			
Sales clerks, commodities (5137) ³	6.0	6.3	6.0	
Service station attendants (5145) ⁴	-	0.1	0.1	
Personal service workers	3.4	2.3	3.1	
Chambermaids and housemen (6133)	0.5	0.6	0.4	
Babysitters (6147)	0.8	0.9	2.0	
Personal service workers, n.e.c. (6149) ⁴	2.1	0.8	0.7	
Teachers	6.4	4.2	3.6	
Elementary and kindergarten (2731)	4.5	3.0	2.6	
Secondary (2733)	1.9	1.2	1.0	
Fabricators, assemblers, and repairers of textiles, furs, and leather products				
Foremen (8550)	3.4	2.7	1.6	
Patternmakers, markers, and cutters (8551)	0.1	0.1	0.1	
Tailors and dressmakers (8553)	0.6	0.2	0.4	
Furriers (8555) ⁴	-	-	-	
Milliners, hat and cap makers (8557) ⁴	-	-	-	
Sewing machine operators (8563)	2.2	2.0	1.0	
Inspectors, testers, graders, and samplers	0.1	0.1	-	
Fabricators, assemblers, and repairers, n.e.c. (8569) ⁴	0.3	0.2	0.1	
Graduate nurses	3.9	4.0	4.0	
Supervisors, nursing (3130)	0.5	0.4	0.2	
Nurses, except supervisors (3131) ⁴	3.4	3.6	3.8	

Table 6
Similar Leading Female Occupations, 1971-1991

Occupation ¹	Female % of occupation			
	1971	1981	1991	
Stenographers and typists (411) ³	96.9	98.7	98.4	
Secretaries and stenographers (411) ³	97.4	98.9	98.5	
Typists and clerk-typists (4113)	95.6	97.9	95.3	
Salespersons	51.0	56.3	51.3	
Salesmen and salespersons, commodities, n.e.c. ⁴ (5135)	21.8			
Sales clerks, commodities (5137) ³	66.0	59.4	53.9	
Service station attendants (5145) ⁴	4.3	13.6	12.7	
Personal service workers	93.5	92.5	93.7	
Chambermaids and housemen (6133)	95.5	91.1	89.7	
Babysitters (6147)	96.6	96.6	96.7	
Personal service workers, n.e.c. (6149) ⁴	92.2	89.1	88.0	
Teachers	66.0	63.5	67.8	
Elementary and kindergarten (2731)	82.3	80.4	81.7	
Secondary (2733)	44.5	42.2	47.4	
Fabricators, assemblers, and repairers of textiles, furs, and leather products				
Foremen (8550)	76.0	81.2	81.7	
Patternmakers, markers, and cutters (8551)	27.4	45.5	51.3	
Tailors and dressmakers (8553)	32.6	38.0	40.0	
Furriers (8555) ⁴	73.0	67.9	85.2	
Milliners, hat and cap makers (8557) ⁴	48.8	45.6	49.2	
Sewing machine operators (8563)	57.4	61.1	74.4	
Inspectors, testers, graders, and samplers	90.1	94.8	91.8	
Fabricators, assemblers, and repairers, n.e.c. (8569) ⁴	84.1	83.5	78.9	
Graduate nurses	72.3	65.7	59.2	
Supervisors, nursing (3130)	95.4	94.9	94.5	
Nurses, except supervisors (3131) ⁴	92.8	91.3	90.6	
	95.8	95.4	94.8	

Statistical Overview, continued

<i>Occupation¹</i>	<i>Female % of occupation</i>		
	<i>1971</i>	<i>1981</i>	<i>1991</i>
Waiters and bartenders	76.6	81.5	75.8
Waiters, hostesses, and stewards (6125)	82.9	85.7	78.4
Bartenders (6123)	14.5	52.6	57.4
Nursing assistants, aides, and orderlies	79.2	83.4	83.5
Nursing assistants (3134)	91.9	91.5	92.0
Nursing aides and orderlies (3135)	74.4	79.1	80.7
Telephone operators (4175)	95.9	94.8	89.2
Janitors, charworkers, and cleaners (6191)	32.4	41.2	45.9
Totals	72.0	72.2	73.3

<i>Occupation¹</i>	<i>% of all female workers²</i>		
	<i>1971</i>	<i>1981</i>	<i>1991</i>
Waiters and bartenders	4.1	4.7	3.8
Waiters, hostesses, and stewards (6125)	4.0	4.3	3.5
Bartenders (6123)	0.1	0.4	0.4
Nursing assistants, aides, and orderlies	2.9	2.3	1.6
Nursing assistants (3134)	0.9	0.9	0.4
Nursing aides and orderlies (3135)	2.0	1.4	1.2
Telephone operators (4175)	1.2	0.7	0.4
Janitors, charworkers, and cleaners (6191)	2.1	2.1	2.0
Totals	46.4	39.5	33.7

**APPENDIX 2 Women's Health Research Clause in the Report of the Fourth
World Conference on Women, Beijing, China 4-15 September
1995 United Nations A/CONF.177/20 17 October 1995**

Strategic objective C.4. Promote research and disseminate information on women's health research

Actions to be taken:

By Governments, the United Nations system, health professions, research institutions, non-governmental organizations, donors, pharmaceutical industries and the mass media, as appropriate:

- **Train researchers and introduce systems that allow for the use of data collected, analysed and disaggregated by, among other factors, sex and age, other established demographic criteria and socio-economic variables, in policy-making, as appropriate, planning, monitoring and evaluation;**
- **Promote gender-sensitive and women-centred health research, treatment and technology and link traditional and indigenous knowledge with modern medicine, making information available to women to enable time to make informed and responsible decisions;**
- **Increase the number of women in leadership positions in the health professions, including researchers and scientists, to achieve equality at the earliest possible date;**
- **Increase financial and other support from all sources for preventive, appropriate biomedical, behavioural, epidemiological and health service research on women's health issues and for research on the social, economic and political causes of women's health problems, and their consequences, including the impact of gender and age inequalities, especially with respect to chronic and non-communicable diseases, particularly cardiovascular diseases and conditions, cancers, reproductive tract infections and injuries, HIV/AIDS and other sexually transmitted diseases, domestic violence, occupational health, disabilities, environmentally related health problems, tropical diseases and health aspects of aging;**
- **Inform women about the factors which increase the risks of developing cancers and infections of the reproductive tract, so that they can make informed decisions about their health;**
- **Support and fund social, economic, political and cultural research on how gender-based inequalities affect women's health, including etiology, epidemiology, provision and utilization of services and eventual outcome of treatment;**
- **Support health service systems and operations research to strengthen access and improve the quality of service delivery, to ensure appropriate support for women as health-care providers and to examine patterns with respect to the provision of health services to women and use of such services by women;**

Women's Health Research Clause, continued

- Provide financial and institutional support for research on safe, effective, affordable and acceptable methods and technologies for the reproductive and sexual health of women and men, including more safe, effective, affordable and acceptable methods for the regulation of fertility, including natural family planning for both sexes, methods to protect against HIV/AIDS and other sexually transmitted diseases and simple and inexpensive methods of diagnosing such diseases, among others; this research needs to be guided at all stages by users and from the perspective of gender, particularly the perspective of women, and should be carried out in strict conformity with internationally accepted legal, ethical, medical and scientific standards for biomedical research;
- Since unsafe abortion ^{16/} is a major threat to the health and life of women, research to understand and better address the determinants and consequences of induced abortion, including its effects on subsequent fertility, reproductive and mental health and contraceptive practice, should be promoted, as well as research on treatment of complications of abortions and post-abortion care;
- Acknowledge and encourage beneficial traditional health care, especially that practised by indigenous women, with a view to preserving and incorporating the value of traditional health care in the provision of health services, and support research directed towards achieving this aim;
- Develop mechanisms to evaluate and disseminate available data and research findings to researchers, policy makers, health professionals and women's groups, among others;
- Monitor human genome and related genetic research from the perspective of women's health and disseminate information and results of studies conducted in accordance with accepted ethical standards.

APPENDIX 3 Current Funding to Women's Health Research in Canada (1997-1998)

Taken from: Greaves, Lorraine et al. *CIHR 2000: Sex, Gender and Women's Health*. (2000) Vancouver: British Columbia Centre of Excellence for Women's Health.

NHRDP (Information furnished by NHRDP)

Total NHRDP expenditures on "women's health" 1997/98:		\$4,644,724
Total NHRDP expenditures in 1997/98:	N.C.I.C. (Cancer)	\$2,000,000
	Brighter Futures	\$618,911
	Seniors	\$3,083,203
	National Drug Strat.	\$712,723
	AIDS	\$905,232
	Regular Program	\$11,874,628
	Tobacco	\$276,214
	Epid/Public Health	\$3,749,476
<hr/>		
	Total 1997/98:	\$23,220,589

Percentage of funding for women's health in 1997/98: 20%

(NHRDP used the following search terms to develop this "women's health" financial profile:
women°, femme°, fertit°, reproductive°, menop°, sein°, breast°, ovar°, uter°, fetal°, pregnancy°, enceinte°,
abortion°, avortement°, matern°, osteoporo°, prenatal°, childbirth°, ovair°, foetal°, menstru°, midwifer°, ovul°,
fallop°, vagin°, trompe°, pop_sex)

MRC (Information furnished by MRC)

Investment in Narrowly-defined Women's Health Issues 1997/98:	\$19,100,000
Investment in Broadly-defined Women's Health Issues 1997/98:	\$64,800,000
MRC's total grants budget:	\$156,900,000
Percentage of funding for women's health in 1997/98 (narrow):	12.2%
Percentage of funding for women's health in 1997/98 (broad):	41.3%

Narrowly-defined category includes research related to breast cancer, female infertility, pregnancy/birth and other "gender-specific" headings.

A broader definition of women's health is obtained if we add research investment into conditions which afflict women to a significantly greater extent than men. Examples include rheumatoid arthritis, osteoporosis, lupus erythematosus, Alzheimer's disease, eating disorders and tranquilizer abuse.

SSHRC Summary of Results:

Women-specific projects:	18%
Gender Inclusive:	58%

Methodology:

Emails were sent to one of the researchers on the project team for each of the 54 projects supplied by SSHRC inquiring if they defined their project as research focused on "women's health." If so, how did they define

Current Funding to Women's Health Research in Canada, continued

"women's health" for this purpose and if not, were women included as part of their research sample? Response Rate: 80%

Data Used for Analysis (Information supplied by SSHRC):

1997/98 Competitions for Standard Research Grants and Strategic Grants: Health Related Issues (Doctoral Fellowships not included in survey due to difficulty in contacting researchers)

Results:

Health Projects supplied by SSHRC:	54	
Replies Received:	43	(80% response rate)
Self-reported as project focused on women-specific health concerns:	8	(18% of total replies)
Self-reported as including women in samples, gender is analyzed but not the focus of research, or they said if links to gender found during research those links would be analyzed:	25	(58% of total replies)
Self-reported not focused on women's health or include women in sample size:	7	(16% of total replies)
N/A (i.e. projects aren't focused on health at all – result of discrepancies in SSHRC database.):	3	(7% of total replies)

APPENDIX 4 Letters and Interview Questions for Ethics Committee Approval

Ottawa, le 20 novembre 2000
 Melissa Follen, Études canadiennes, Université Carleton
mfollen@sympatico.ca 613-234-1252
 Directrice de thèse: Pat Armstrong patarmst@yorku.ca

Madame, Monsieur,

Je m'appelle Melissa Follen, et je prépare une thèse de maîtrise à l'école des Études canadiennes à Carleton. Une partie de ma recherche consiste en une analyse des paradigmes de recherche sur la santé en milieu de travail. En fait, je prends CINBIOSE comme étude de cas, pour constater comment est perçu, dans la communauté de recherche dominante, un genre de recherche qui pose des questions inusitées, et qui étudie de nouveaux aspects de la santé en milieu de travail. (Le fichier ci-joint fournit le plan, en anglais, de la thèse.

La directrice de thèse, Pat Armstrong, m'a suggéré de faire des entrevues informelles avec des chercheuses/chercheurs de CINBIOSE, afin de mieux comprendre l'expérience particulière des chercheuses/chercheurs dans le domaine de l'analyse comparative entre les sexes par rapport à la santé en milieu de travail. J'ai rencontré Karen Messing et Donna Mergler en octobre 2000 pour discuter de ma recherche. Elles me donnèrent copies de lettres de refus de quelques revues académiques afin que j'en analyse les commentaires. Les entrevues que j'entreprends me fourniront plus de renseignements et renforceront ma méthodologie.

Comme je vous crois déjà très occupée, j'ai pensé faire les entrevues par courrier électronique. L'entrevue comprend 9 questions qui vous demanderont de 15 à 20 minutes à compléter. Laissez de côté toute question à laquelle vous préférez ne pas répondre. L'anonymat est assuré, et je ne publierai les noms ni des chercheuses/chercheurs, ni des revues, ni des bailleurs de fonds. Par ailleurs, je demande votre permission de citer vos réponses, en vous identifiant simplement comme "Chercheuse/chercheur de CINBIOSE, entrevue". Une fois tous les résultats incorporés dans mon analyse, je détruirai tous vos messages électroniques. Ces entrevues me permettront de mieux apprécier la perspective de la communauté dominante de recherche, sur l'analyse comparative entre les sexes, cela en vue d'assurer une meilleure acceptation de ce genre de recherche dans l'avenir..

Ma recherche doit satisfaire aux exigences éthiques de l'Université Carleton.. Je vous envoie donc par la Poste un formulaire "consentement de participation" que je vous prie de signer, et de me rendre dans l'enveloppe fournie (poste payée).

Si vous acceptez de participer, je vous convie à me répondre par courrier électronique

dans les meilleurs délais. Il me faut toutes les réponses au plus tard le jeudi, 30 novembre.

Je vous serais reconnaissante de votre aide. Si vous avez des questions, n'hésitez pas à communiquer avec moi.

Je vous prie d'agréer Madame/Monsieur, l'expression sincère de mes remerciements.
Melissa Follen

Ottawa, November 20, 2000

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Thesis Supervisor: Pat Armstrong patarmst@yorku.ca

Hello,

My name is Melissa Follen and I am in the process of writing my M.A. thesis at Carleton University, in the faculty of Canadian Studies. My topic involves an analysis of paradigms within occupational health research. More specifically, I am using CINBIOSE as a case-study in my observations of how research which asks different questions and studies different aspects of workplace health is received within the mainstream research community. I have attached a brief 2-page summary of my thesis proposal for more details.

My supervisor, Pat Armstrong, has suggested that I hold informal interviews with CINBIOSE researchers in order to gain more insight into specific experiences of doing gender-based occupational health research. I met with Karen and Donna in October to discuss my project, and they provided me with some copies of letters of refusal from various academic journals, upon which I may base my analysis. The informal interviews would further enhance the information I have obtained so far and will greatly strengthen my methodology.

I know that you are all extremely busy with your own research, and have thus chosen to interview by email. I have prepared 9 questions which should only take about 15 - 20 minutes to answer. You may leave unanswered any question you prefer not to answer. Anonymity is assured - I will not use specific names of researchers or funders/journals in my analysis. I request your consent to quote some responses, and will reference them as "CINBIOSE researcher, email interview". After incorporating your responses into my analysis, the actual email messages will be destroyed. I simply want to gain some qualitative insight into how the mainstream research establishment thinks in order to try to ascertain how gender-based research can gain more acceptance in future.

Carleton requires researchers to adhere to an ethics approval process, so I will mail you a "consent to participate" form which I would ask you to sign and return to me. I will send you a stamped, self-addressed envelope in the mail for this purpose.

I would ask that should you wish to participate in my study, that you please respond to my questions by email at your earliest convenience. I will require all responses by Thursday, November 30, 2000 as I am under time constraints to complete this thesis by Christmas.

I will be most grateful for your assistance in my study and if you have any questions, please feel free to contact me.

With very best regards,
Melissa Follen

QUESTIONS: ENTREVUE PAR COURRIER ÉLECTRONIQUE

Les questions suivantes portent sur votre expérience comme chercheuse/chercheur, dans le contexte soit de l'obtention de fonds, soit de la publication dans les revues du courant dominant (i.e. non-féministe). Ma recherche vise à mieux comprendre les paradigmes qui orientent le travail des établissements de recherche du courant dominant, ainsi que leur impact sur la recherche féministe ou axée sur les femmes.

1. Quel est le pourcentage approximatif de vos articles et de vos projets de recherche qui ont été refusés par les éditeurs ou agences de financement? Pour être plus clair, combien ont été refusé du premier coup, et combien ont été refusé finalement par tous les sources de fonds et de la publication?

2. Pour décrire brièvement les articles et projets refusés, cochez (avec un astérisque *) un ou plusieurs choix dans la liste qui suit (je n'ai pas besoin de pourcentages ici):

- ☐ féministe ou axé sur les femmes (méthodologie féministe)
- ☐ à l'initiative ou avec la participation importante d'un syndicat
- ☐ surtout qualitative ou basé sur le vécu des sujets de l'étude
- ☐ recherche participative, où les travailleuses sont impliquées dans la conception et la réalisation de l'étude
- ☐ conception de recherche strictement quantitative, bio-médicale
- ☐ basé sur un questionnaire
- ☐ basé sur les symptômes plutôt que sur la pathologie
- ☐ portant surtout sur le contexte socio-économique en tant que déterminant de la santé en milieu de travail
- ☐ autres facteurs (s.v.p. élaborer)

3. Lorsque'un projet ou un article est refusé, quelles sont les raisons typiques fournies par l'agence de financement ou par le réviseur?

4. Croyez-vous devoir compromettre de façon importante la méthodologie, l'objet principal ou encore la qualité de l'analyse de vos projets ou articles en vue de les faire accepter?

5. Veuillez commenter sur les situations suivantes par rapport aux priorités et préférences des agences de financement ainsi que des revues académiques:

- preuves basé sur l'expérience, faisant part à l'anecdote
- priorité aux essais cliniques
- recherche quantitative, scientifique, traditionnelle
- exigence d'une analyse comparative entre les sexes, ou sur les femmes
- rejet de la recherche qui identifie des risques pour les femmes, de peur de créer

- une perception de faiblesse de leur sexe qui peut mener à une perte du travail
 - information d'après le contexte et analyse qualitative
 - une compréhension des questions ou problèmes clefs du travail pour les femmes: horaires flexibles, emploi à temps partiel, milieu du travail restructuré
 - une importance particulière à la pathologie contre la recherche fondée sur les symptômes en vue de mesures préventives
 - études fondées sur la recherche en laboratoire
 - études conduites en milieu de travail
6. Continuez-vous à soumettre vos projets aux agences/revues du courant dominant (non-féministe, non-syndicale etc), ou est-ce que vous cherchez des alternatives?
7. Selon vous, comment la communauté de la santé en milieu de travail évalue-t-elle la recherche féministe ou axée sur la femme? Aussi, quelle priorité est accordée aux grandes études fondées sur la pathologie?
8. Comment décririez-vous votre expérience de la revue par des pairs?
9. Avez-vous d'autres commentaires qui aideraient à la compréhension des obstacles à la recherche sur la santé en milieu de travail axée sur l'analyse comparative entre les sexes?

Merci beaucoup pour votre participation.

E-MAIL INTERVIEW QUESTIONS

These questions pertain to your experience as a researcher attempting to obtain funding, or to publish within mainstream (ie non-feminist) environments. This is an attempt to gain some insight into the paradigms at work within mainstream institutions and to explore how these relate to feminist or women-centred research.

1. What approximate percentage of your proposals/articles has been rejected by funders/journals?
2. Out of those rejected, how would you describe them: (check all that apply)
 - ☐ as feminist or women-centred study - ie based on feminist methodology
 - ☐ union initiated or union involvement
 - ☐ mainly qualitative/experience-based
 - ☐ participatory research with worker involvement in study design/implementation
 - ☐ purely quantitative, bio-medical research design
 - ☐ questionnaire-based study

- ☐ study based on symptoms rather than on pathology
- ☐ major focus of study is on socio-economic context as determinants of occupational health
- ☐ other (please describe)

3. When a proposal is rejected, what are the typical reasons made by the funder/journal reviewer?

4. For a proposal/article to be accepted does experience encourage you to make major sacrifices in your methodology, focus or analysis?

5. Please comment on your experience with the following situations pertaining to funder/journal preferences or priorities:

- “anecdotal” or experience-based evidence
- priority to clinical trials
- scientific-based, quantitative, traditional research style
- requirement to specify women or gender-based analysis
- rejection of research which shows women’s risk factors due to fears that women’s perceived weakness or susceptibility will lead to job loss
- contextual information and qualitative analysis
- understanding of key work issues for women: flexible scheduling, part-time work, ie. restructured work environment
- emphasis on pathology or research based on symptoms to recommend preventive measures
- laboratory-based studies
- workplace-situated studies

6. Do you continue to submit proposals to mainstream funders/journals, or do you seek alternative fora for funding/publication?

7. In your view, how is feminist or women-centred research routinely assessed within the occupational health community, and what priority goes to large, pathology-related studies?

8. How would you describe your experiences with peer reviews?

9. Do you have any other thoughts to offer which could help illuminate barriers to gender-based occupational health research?

APPENDIX 5 Medline Search - Journal Abstract Analysis Summary
SEARCH 1 - (Occupational Health) + (Women & Gender) 1990-2000 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Physical work load between 1970 and 1993--did it change? Torgen-M; Kilbom-A Scand-J-Work-Environ-Health. 2000 Apr; 26(2): 161-8</p>	<ul style="list-style-type: none"> - gender analysis includes women's contexts (author a colleague of Messing). - use of self-reports vs expert-evaluation: thus women's experience taken into account - use of questionnaire - enable context info 	<p>changes in self-reported and expert-evaluated; self-administered questionnaire; gender difference in work load</p>
<p>Self-reported health in relation to medical health and gender-specific problems in women. Bergman-B; Wright-I J-Occup-Environ-Med. 2000 Mar; 42(3): 311-7</p>	<ul style="list-style-type: none"> - gender-specific problems for women workers in male-dominated industry - aims to use self-reports, yet limited - gender-specific questions consider women's situations - "genuine" vs "illusory" health reveal mistrust of workers' own knowledge of how they feel 	<p>gender-specific problems; women employed in a male-dominated industry; dimension workplace culture; reported experiences of gender-specific problems; self-report scales seem not to be enough; differentiating methods; gender-specific questions; distinguishing genuine from illusory</p>
<p>Work-related cancer in the Nordic countries. Andersen-A; Barlow-L; Engeland-A; Kjaerheim-K; Lyng-E; Pukkala-E Scand-J-Work-Environ-Health. 1999; 25 Suppl 2: 1-116</p>	<ul style="list-style-type: none"> - stats from national census - occupational info for members of the household who were economically active. (Would ignore unpaid home workers, caregivers, etc) - although stats provide info for both women and men, the occupations listed highly male-dominated types of work. Few results for women given - emphasis on results for men 	<p>gender and occupation; gender and incidence rates; men, farmers, fishermen, plumbers, welders, mechanics, seamen , technical, chemical, physical, and biological workers; engineers and chemists women; gardeners, tobacco workers</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Prevalence of chronic fatigue and chemical sensitivities in Gulf Registry Veterans Kipen-HM; Hallman-W; Kang-H; Fiedler-N; Natelson-BH Arch-Environ-Health. 1999 Sep-Oct; 54(5): 313-8</p>	<ul style="list-style-type: none"> - although women get Chronic Fatigue Syndrome more than men this study did not focus on that fact - no stated effects of gender, yet found more prevalence of MCS among women and African Americans. - report percentages of occurrence of particular syndrome, but not broken down by sex/gender. 	<p>veterans of the Gulf War; questionnaire study; without face-to-face evaluation; no effects of gender, race, rank; women and African Americans</p>
<p>Occupational cancer among women: research status and methodological considerations. Blair-A; Zahm-SH; Silverman-DT Am-J-Ind-Med. 1999 Jul; 36(1): 6-17</p>	<ul style="list-style-type: none"> - article critiques past research for the case of women, especially when use male studies to evaluate female gynecologic tumours - raise issue of gender differences for exposure and susceptibility - recommend studies focussed on women, with different designs 	<p>not been well-evaluated among women; female gynecologic tumours in studies of men; gender-based exposure; susceptibility differences; specifically focussed on women; design considerations that differ</p>
<p>Cancer mortality among women in the Russian printing industry. Bulbulyan-MA; Ilychova-SA; Zahm-SH; Astashevsky-SV; Zaridze-DG Am-J-Ind-Med. 1999 Jul; 36(1): 166-71</p>	<ul style="list-style-type: none"> - highly statistical study design but focus is on women - analysed by job- no info on sex division of tasks involved - no qualitative info apparent: context where they live, other possible factors which could interact with workplace exposures - recommends gender comparisons within cohort to see lifestyle factors' impact. 	<p>Analyses by job, age hired, latency, and duration of employment; gender comparisons within the cohort role of occupational and lifestyle factors</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Cancer mortality in women with probable exposure to silica: a death certificate study in 24 states of the U.S. Fillmore-CM; Petralia-SA; Dosemeci-M Am-J-Ind-Med. 1999 Jul; 36(1): 122-8</p>	<ul style="list-style-type: none"> - Title implies the study is on women, yet the abstract reports men and women results - based on death certificate, but knowledge of women's occupation via death certificate is limited - conclusions re women's death rates without good data. - recommends future study on specific work duties to determine importance of gender-specific 5 mortalities. 	<p>women with probable exposure; death certificate study; proportional mortality ratios; specific work duties; importance of gender-specific; adjustment for confounders</p>
<p>Issues and findings in the evaluation of occupational risk among women high nickel alloys workers. Arena-VC; Costantino-JP; Sussman-NB; Redmond-CK Am-J-Ind-Med. 1999 Jul; 36(1): 114-21</p>	<ul style="list-style-type: none"> - using mortality stats limited source of occupational risks for women - death certificate limitation - study claims no risks for cancer without adequate gender analysis 	<p>occupational risk among women; mortality experience; large epidemiologic study; relative risk estimates; adjusted for age, race, gender; type of jobs and work activities differed between genders; difficulties in tracing women</p>
<p>Musculoskeletal disorders in visual display unit work: gender and work demands. Punnett-L; Bergqvist-U Occup-Med. 1999 Jan-Mar; 14(1): 113-24, iv</p>	<ul style="list-style-type: none"> - social context considered - work in home, specific jobs, medical care use between women and men - women, men viewed differently 	<p>gender and work demands; physiologic differences between men and women; work in the home; medical care-seeking behaviour</p>
<p>Cancer mortality of art glass workers in Tuscany, Italy. Pirastu-R; Bartoli-D; Battista-G; De-Santis-M; Iaia-T; Orsi-D; Tarchi-M; Valiani-M Scand-J-Work-Environ-Health. 1998 Oct; 24(5): 386-91</p>	<ul style="list-style-type: none"> - study is done for men and women, yet results show only for men - study is quantitative methodology - only specify 2 job titles, no details on tasks thus miss key info for women 	<p>3180 men and 210 women; cause-specific expected mortality; specified for gender; results: for 3180 men; overall cohort; makers and formers</p>
<p>Occupational history collection by third-year medical students during internal medicine and surgery inpatient clerkships. McCurdy-SA; Morrin-LA; Memmott-MM J-Occup-Environ-Med. 1998 Aug; 40(8): 680-4</p>	<ul style="list-style-type: none"> - study indicates medical students gender blind (product of scientific and medical establishment) don't question women on their occupations - quantitative, raises important issue 	<p>women patients were significantly less likely...to have notations of occupation and industry</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Occupational risk factors of lung cancer in Sao Paulo, Brazil. Wunsch-Filho-V; Moncau-JE; Mirabelli-D; Boffetta-P Scand-J-Work-Environ-Health. 1998 Apr; 24(2): 118-24</p>	<ul style="list-style-type: none"> - question validity of study - Numerous risks were found for men in a number of industries with exposures to serious compounds, yet no significantly elevated risk was found for women. I would question their methods. - limited to job titles - no qualitative info about social factors - no info about jobs of women vs jobs of men 	<p>job-exposure matrix age, gender; personally interviewed; lifetime job history; socioeconomic status; industrial titles; occupational categories; results for the men; for the women, no significantly elevated risk was observed</p>
<p>Gender harassment, job satisfaction, and distress among employed white and minority women Piotrkowski-CS J-Occup-Health-Psychol. 1998 Jan; 3(1): 33-43</p>	<ul style="list-style-type: none"> - method: self-reported somatic complaints, plus statistical scale - involved white and visible minority women - study question reveals gender awareness 	<p>assessed by self-reported somatic complaints; gender harassment; white and minority women</p>
<p>Women in the U.S. construction industry: an analysis of fatal occupational injury experience, 1980 to 1992. Ore-T Am-J-Ind-Med. 1998 Mar; 33(3): 256-62</p>	<ul style="list-style-type: none"> - compare women to men in same occupation - but fails to mention specific tasks within occupation - could be different for women - fail to consider equipment fit for improved safety for women - death certificate could limit info re women 	<p>death certificate-based surveillance system; same occupation; explore factors contributing to differences in leading causes of death between female and male construction workers</p>
<p>Occupational risk factors for cancer of the central nervous system: a case-control study on death certificates from 24 U.S. states. Cocco-P; Dosemeci-M; Heineman-EF Am-J-Ind-Med. 1998 Mar; 33(3): 247-55</p>	<ul style="list-style-type: none"> - limited info re women's work from death certificate records - gender and race considered - no context factors - housing location could increase exposures, socio-economic status - method limits: no qualitative 	<p>case-control study on death certificates; industry and occupation; gender and race</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Effects of work overload and burnout on cholesterol and triglycerides levels: the moderating effects of emotional reactivity among male and female employees. Shirom-A; Westman-M; Shamai-O; Carel-RS J-Occup-Health-Psychol. 1997 Oct; 2(4): 275-88</p>	<ul style="list-style-type: none"> - fails to consider qualitative issues: coping mechanisms, sources of burnout, social context - what workplace was under study? - women and men considered, but limited by methods 	<p>effects of objective and subjective overload; quasi-prospective design; tested separately for male and female employees; Time 1 (T1) data; other predictors; female employees; male employees</p>
<p>Hostility, social support, and perceptions of work. McCann-BS; Russo-J; Benjamin-GA J-Occup-Health-Psychol. 1997 Apr; 2(2): 175-85</p>	<ul style="list-style-type: none"> - method vague for women- link cardiovascular disease (CVD) but not a research question. - CVD is different for women and men but study controlled for gender - quantitative, but issues need qualitative methods - control for job characteristics but could affect hostility scores, job dissatisfaction etc. - controlled for gender - gender blind results but situation could be different for women and men, based on power issues 	<p>perceptions of work; social support, 159 men 45 women; controlling for age, gender, and other job characteristics; lower perceived supportive collegiality</p>

SEARCH 2 - (Occupational Health) 1990-2000 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Construction of an exposure chamber for animals and its use for inhalation exposure to welding fumes and gases. Saito-H; Ojima-J; Takahashi-H; Iwasaki-T; Hisanaga-N; Arito-H Ind-Health. 2000 Jul; 38(3): 323-6</p>	<ul style="list-style-type: none"> - use of male rats not humans - gender blind - in lab, not workplace - method may limit realistic results - rats adaptation may not be so with humans, results may be harmful in context of workplace safety 	<p>exposure chamber for animals; responses of conscious rats to welding fumes and gases</p>
<p>Asbestos exposure in a shipyard area, northeastern Italy. Bianchi-C; Brollo-A; Ramani-L Ind-Health. 2000 Jul; 38(3): 301-8</p>	<ul style="list-style-type: none"> - asbestos data not broken down by gender - lifetime occupational data was collected - no indication if based on job description, specific task, nor for both women and men - social context lacking 	<p>necropsies, lung tissue, lifetime occupational data among men; among women</p>
<p>Study on work load of matrons under shift work in a special nursing home for the elderly. Wakui-T Ind-Health. 2000 Jul; 38(3): 280-8</p>	<ul style="list-style-type: none"> - quantitative study - physical responses - lacks qualitative investigation: ie interview workers re: context of their lives affects strain they receive at work. - focus on women, but no socio-economic, race/ethnicity analysis 	<p>work load; shift work; heart rate; working time; estimated energy expenditure</p>
<p>Occupational dermatoses from one-component epoxy coatings containing a modified polyamine hardener. Yokota-K; Johyama-Y; Yamaguchi-K Ind-Health. 2000 Jul; 38(3): 269-72</p>	<ul style="list-style-type: none"> - gender-blind - work context not clear: job task could vary effects of skin exposures. Possible gender division of tasks ignored - sometimes this is female dominated industry - did not identify workers 	<p>electronics plant; type of work and working periods</p>
<p>Circadian variations in hepatotoxicity of carbon tetrachloride in mice. Skrzypinska-Gawrysiak-M; Piotrowski-JK; Sporny-S Int-J-Occup-Med-Environ-Health. 2000; 13(2): 165-73</p>	<ul style="list-style-type: none"> - male mice used, gender-blind - no mention of how relates to workplace exposure - no mention of workplace context effects - clinical study 	<p>Male mice; serum, hepatic level of malondialdehyde (MDA) reduced glutathione (GSH) indicators of toxicity</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Sub-chronic inhalation toxicity of 1,2,4-trimethylbenzene (pseudocumene) in rats. Korsak-Z; Stetkiewicz-J; Majcherek-W; Stetkiewicz-I; Jajte-J; Rydzynski-K Int-J-Occup-Med-Environ-Healt h. 2000; 13(2): 155-64</p>	<ul style="list-style-type: none"> - study using rats, male and female - results focus on male, gender-blind - methods don't link to workplace reality - clinical experiment - fails to consider human exposure to chemicals 	<p>male rats; male and female rats; sub-chronic inhalation experiment; animals necropsied</p>
<p>Temperature calibration of Pico-Rad detectors for radon measurement. Bem-H; Bem-EM; Chruscielewski-W; Skalski-H Int-J-Occup-Med-Environ-Healt h. 2000; 13(2): 147-54</p>	<ul style="list-style-type: none"> - a purely mathematical study on radon exposure - no mention of link to workplace - no mention of link to workers 	<p>mathematical equation; temperature of exposure</p>
<p>Mobilization of mercury by DMPS in occupationally exposed workers and in model experiments on rats: evaluation of body burden. Nerudova-J; Cabelkova-Z; Frantik-E; Lukas-E; Urban-P; Blaha-K; Pelclova-D; Lebedova-J; Cikrt-M Int-J-Occup-Med-Environ-Healt h. 2000; 13(2): 131-46</p>	<ul style="list-style-type: none"> - gender-blind - humans and rats used but no gender breakdown - no qualitative context info re: the workplace, worker exposure, job tasks etc - methods limited to quantitative, statistical calculations - male-dominated workplaces 	<p>efficacy of DMPS; mobilizing mercury from the body in occupationally exposed people and experimental animals; workers of chloralkali industry; dentists</p>
<p>Mortality of workers at two asbestos-cement plants in Poland. Szeszenia-Dabrowska-N; Wilczynska-U; Szymczak-W Int-J-Occup-Med-Environ-Healt h. 2000; 13(2): 121-30</p>	<ul style="list-style-type: none"> - used male and female in cohort, but focussed on results for males. Didn't specify the number of females - mentions work history of males, but not females - no qualitative analysis - i.e. differences in tasks - mainly quantitative analysis - small female sample limits results 	<p>cohort studies; 3,220 workers, including 2,616 male workers; male cohort; male workers; female workers</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Occurrence of pulmonary diseases in steel mill workers. Kolarzyk-E; Stepniewski-M; Zapolska-I Int-J-Occup-Med-Environ-Health. 2000; 13(2): 103-12</p>	<ul style="list-style-type: none"> - no gender disaggregation done - all results are gender-blind - no qualitative analysis re: context (workplace, job/task etc.) - no mention of questionnaires/interviews - based on compensation claims - may limit results if less women get compensation claims as in Canada 	<p>steel mill workers; compensation claims</p>
<p>Trends in exposure to inhalable particulate and dermal contamination in the rubber manufacturing industry: effectiveness of control measures implemented over a nine-year period. Vermeulen-R; de-Hartog-J; Swuste-P; Kromhout-H Ann-Occup-Hyg. 2000 Aug; 44(5): 343-54</p>	<ul style="list-style-type: none"> - ignores gender differences - only seniority and production function level - only spoke to management regarding exposure control levels, organizational changes - no questions to workers - limits methodology - no indication of who workers are - no context analysis - quantitative analysis only 	<p>Sampling and analytical methodologies; surveys; dermal pad sampler worn; discussions with management representatives; workers</p>
<p>Exposure to rubber fume and rubber process dust in the general rubber goods, tyre manufacturing and retread industries. Dost-AA; Redman-D; Cox-G Ann-Occup-Hyg. 2000 Aug; 44(5): 329-42</p>	<ul style="list-style-type: none"> - doesn't specify if management or workers were given questionnaire - some qualitative method: visit workplaces - predominantly quantitative - no mention of workers, nor of specific job task exposures, gender breakdown etc - no worker interviews - weakens method 	<p>patterns, levels of exposure; questionnaire; walk-through inspection of workplace; extent of use of control measures; nature of work practices</p>
<p>Silica, silicosis, and lung cancer: a risk assessment. Finkelstein-MM Am-J-Ind-Med. 2000 Jul; 38(1): 8-18</p>	<ul style="list-style-type: none"> - quantitative review of literature - no gender breakdown/analysis - no context information re workers 	<p>Quantitative review; exposure-response relationships; computerized literature search</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Cancer incidence among male pulp and paper workers in Norway. Langseth-H; Andersen-A Scand-J-Work-Environ-Health. 2000 Apr; 26(2): 99-105</p>	<ul style="list-style-type: none"> - male workers only - gender-blind - quantitative analysis - didn't look at specific job tasks 	<p>male pulp and paper workers; subcohorts; data on the cohort linked with data in Norwegian Cancer Register job categories</p>

SEARCH 3 - (Social + Context) 1990-2000 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
Occupational and environmental medicine in Colombia. de-la-Hoz-RE; Guerrero-E; Espinosa-MT; de-Fex-RL. <i>Int-Arch-Occup-Environ-Health</i> . 2000 Apr; 73(3): 145-9	<ul style="list-style-type: none"> - qualitative context analysis involving economics, social development, political climate - gender-blind - no question/comment re situation for women or men workers 	socioeconomic factors; reforms to the health care, social benefits, and education systems
The work-family research agenda in changing contexts. Lewis-S; Cooper-CL. <i>J-Occup-Health-Psychol</i> . 1999 Oct; 4(4): 382-93	<ul style="list-style-type: none"> - although no mention of women/men or gender differences, it does indicate sensitivity to diverse family forms. Even the question of work-family research agenda is an important question to ask, thus shows an awareness to these issues - qualitative analysis, looks at trends - i.e. societal analysis, looks at social context of workplace and outside world. 	current trends; families in their diverse forms; work-family research agenda
The organizational context of non-lethal workplace violence: its interpersonal, temporal, and spatial correlates. Warren-J; Brown-D; Hurt-S; Cook-S; Branson-W; Jin-R. <i>J-Occup-Environ-Med</i> . 1999 Jul; 41(7): 567-81	<ul style="list-style-type: none"> - sole use of statistical regression methods to analyse incidents of violence - may miss key qualitative factors - ignores context or location into consideration - qualitative analysis should be used to see who does violence, in what conditions, in what way etc. - gender-blind abstract - no indication of importance of victim/perpetrator 	non-lethal workplace violence; regardless of their specific location or context; nonparametric statistics and logistic regression
The economic and social context of special populations. Ashford-NA. <i>Occup-Med</i> . 1999 Jul-Sep; 14(3): 485-93	<ul style="list-style-type: none"> - qualitative socio-economic analysis, looks at impact of context on working conditions. - refers to special populations - although not specified - no mention of gendered effects in the workplace 	Changes in both technology and international trade; working conditions; displacement; de-skilling special populations

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>The Job Content Questionnaire (JCQ): an instrument for internationally comparative assessments of psychosocial job characteristics. Karasek-R; Brisson-C; Kawakami-N; Houtman-I; Bongers-P; Amick-B J-Occup-Health-Psychol. 1998 Oct; 3(4): 322-55</p>	<ul style="list-style-type: none"> - involves women and men, although it is a quantitative analysis testing this measurement tool, hence I would question its applicability to gender - without qualitative assessment based on workers' experiences and input, it is difficult to really see if this tool adequately measures what people actually feel on the job 	<p>discusses; describes; substantial similarity in means, standard deviations, and correlations among the scales</p>
<p>Ethotoxicology: an evolutionary approach to the study of environmental endocrine-disrupting chemicals. Parmigiani-S; Palanza-P; vom-Saal-FS Toxicol-Ind-Health. 1998 Jan-Apr; 14(1-2): 333-9</p>	<ul style="list-style-type: none"> - interesting that they study context of chemical exposure as it affects behaviour - focus on pathology vs symptom - this could limit results - ignores gender impacts as part of the context 	<p>Behaviour as a biomarker of chemical exposure; pathological changes</p>
<p>Research responses to outbreaks of concern about local environments Cole-DC; Tarasuk-V; Frank-JW; Eyles-J Arch-Environ-Health. 1996 Sep-Oct; 51(5): 352-8</p>	<ul style="list-style-type: none"> - shows limits to traditional, mainstream- epidemiological research, bio-medical focus - unfortunately only limits its criticism in the context of "outbreaks" - qualitative analysis showing importance of social context, revised research methods, social scientist involvement, combined qualitative and quantitative - no mention of gender analysis 	<p>Traditional approaches, bio-medical limited; nonspecific symptoms; hazardous exposures; role of social context; the action-oriented nature of such research; rethinking of research methods; combined qualitative and quantitative</p>
<p>Policy implications of intervention research: research on the social context for intervention. Levenstein-C Am-J-Ind-Med. 1996 Apr; 29(4): 358-61</p>	<ul style="list-style-type: none"> - shows importance of social science research methods - promotes interdisciplinary research team - qualitative study into safety management practice, although no mention of worker involvement - no mention of gender issues 	<p>Intervention research; scientific/ technical definitions; social science research; interdisciplinary teams; expanded to include social scientists.</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Individual susceptibility and prevention of occupational diseases: scientific and ethical issues. Van-Damme-K; Casteleyn-L; Heseltine-E; Huici-A; Sorsa-M; van-Larebeke-N; Vineis-P J-Occup-Environ-Med. 1995 Jan; 37(1): 91-9</p>	<ul style="list-style-type: none"> - qualitative analysis - context analysis: ethical, social, scientific issues involved - in context of feminist bio-ethics, though, there is no mention of gender-based issues in genetic testing, not to mention race/ethnicity factors. Some key issues ignored: reproductive, pre-disposition to diseases especially if female-or male-focussed illness 	<p>Genetic testing of employees; ethical social, and scientific problems</p>
<p>Health status by social class and/or minority status: implications for environmental equity research. Montgomery-LE; Carter-Pokras-O Toxicol-Ind-Health. 1993 Sep-Oct; 9(5): 729-73</p>	<ul style="list-style-type: none"> - method analyses socio-economic issues to fill gap of mainstream epidemiologic research - look at different measures of social class in the context of health status - no gender disaggregation, - limited to health status of women of reproductive age - qualitative analysis 	<p>epidemiologic research; age, sex and race surrogate for social and economic disadvantage; health of women of reproductive age; multidimensionality of social class</p>
<p>Pregnant women at work: sociodemographic perspectives. Moss-N; Carver-K Am-J-Ind-Med. 1993 Apr; 23(4): 541-57</p>	<ul style="list-style-type: none"> - quantitative analysis - method compares employed, non-employed pregnant women; full- and part-time, different social status based on job - purpose of study unclear - ignores gender issues for women workers/unpaid work 	<p>stratified random sample; full-time; part-time workers; production workers, operators/fabricators, service occupations</p>
<p>Social aspects of high-risk notification among chromium-exposed workers. Needleman-C Am-J-Ind-Med. 1993 Jan; 23(1): 113-23</p>	<ul style="list-style-type: none"> - no gender analysis - stresses importance of social context, social relations - personal interviews/ focus groups may yield more results than phone interviews with women - hence response rate may have improved 	<p>telephone interviews; socially-based beliefs; realities of workers' lives</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Management of health risks in the arsenic production industry: modern production in Chile in the context of past experience in Britain. Harper-M; Miranda-GP Ann-Occup-Hyg. 1990 Oct; 34(5): 471-82</p>	<ul style="list-style-type: none"> - qualitative analysis based on historical knowledge from UK - relevant to Chile? - aware of interrelationship of technological, social, political and economic factors - looks at job categories- but not specific tasks - does not look at who is doing tasks (male/female), nor how well protective equipment functions for each 	<p>complex inter-relationship of technological, social, political and economic factors; each job category</p>

SEARCH 6 - (Occupational Health + Pregnancy) 1970-1980 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Pregnancy outcome for women working in laboratories in some of the pharmaceutical industries in Sweden. Hansson-E; Jansa-S; Wande-H; Kallen-B; Ostlund-E Scand-J-Work-Environ-Health. 1980 Jun; 6(2): 131-4</p>	<ul style="list-style-type: none"> - limited study of women - only pregnancy, avoids other health aspects - in this case, could be useful to show dangers to men otherwise women may be prevented from working if threats to pregnancy - some qualitative methodology: via interviews - no mention of specific tasks within chemical lab work to gain better understanding of exposures 	<p>interviews, postal questionnaires, register studies</p>
<p>Spontaneous abortions among women employed in the metal industry in Finland. Hemminki-K; Niemi-ML; Koskinen-K; Vainio-H Int-Arch-Occup-Environ-Health . 1980; 47(1): 53-60</p>	<ul style="list-style-type: none"> - focus on women's reproduction - limited - no analysis of particular tasks involved - quantitative analysis, no discussion with workers, no info on social context of lives - these industries could be dangerous to men as well, and to other aspects of women's health but study ignores this 	<p>hospital discharge registry; proportion of spontaneous abortions; rate and ratio</p>
<p>Occupational chemicals tested for teratogenicity. Hemminki-K Int-Arch-Occup-Environ-Health . 1980; 47(3): 191-207</p>	<ul style="list-style-type: none"> - quantitative literature review relating animal experiments to safety of pregnant women - no gender analysis re: men's reproductive health: if dangerous for pregnant women, dangerous for all workers - no qualitative, contextual info 	<p>Literature surveyed; teratological testing of chemicals; effective doses; potential exposures; animal experiments</p>
<p>DDT residues in samples of human milk, and in mothers' and cord blood serum, in a continental town in Croatia (Yugoslavia). Krauthacker-B; Alebic-Kolbah-T; Buntic-A; Tkalcevic-B; Reiner-E Int-Arch-Occup-Environ-Health . 1980; 46(3): 267-73</p>	<ul style="list-style-type: none"> - no social context: sources of DDT not considered - where did women live, or work etc? - completely quantitative study - should have been combined with qualitative factors 	<p>Concentrations determined; samples of human milk; mean values; serum samples</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Congenital defects and occupational factors. A comparison of different methodological approaches. Holmberg-PC; Hernberg-S Scand-J-Work-Environ-Health. 1979 Dec; 5(4): 328-32</p>	<ul style="list-style-type: none"> - not sufficient gender analysis - male exposure ignored - value of qualitative methodology - interviews-demonstrated - involves some class analysis 	<p>exposure; study mothers; analyzed in a conventional way; concerning occupational factors; more-detailed but labourious interview method; work of the mothers outside the home; industrial classification</p>
<p>Central nervous defects in two children of mothers exposed to chemicals in the reinforced plastics industry. Chance or a causal relation? Holmberg-PC Scand-J-Work-Environ-Health. 1977 Dec; 3(4): 212-4</p>	<ul style="list-style-type: none"> - limited gender analysis - focus on exposed mothers not fathers - one study did consider home exposure - context - focus on women's fertility, not to their overall health - some qualitative method via personal interviews 	<p>mothers exposed to chemicals; specially designed questionnaire; case-referent study; exposed at home</p>

SEARCH 7 - (Occupational Health) 1970-1980 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>A review of the health effects of cadmium. Lee-JS; White-KL Am-J-Ind-Med. 1980; 1(3-4): 307-17</p>	<ul style="list-style-type: none"> - partially qualitative review, no gender consideration. - no contextual comment on where exposure to cadmium happens (i.e. workplace risk factors) - method focus on clinical, animal tests 	<p>health effects; worker studies; hypertension in animals; hair values</p>
<p>Health hazard alert--2-Nitropropane. Am-Ind-Hyg-Assoc-J. 1980 Dec; 41(12): A18-24</p>	<ul style="list-style-type: none"> - purely quantitative results in this alert - no mention of workplace risk factors - recommendations based on animal studies - no gender breakdown given 	<p>laboratory rats; worker exposure; animal carcinogen; potential to cause cancer in humans</p>
<p>Occupational exposure to hexachlorocyclohexane. I. Body burden of HCH-isomers. Baumann-K; Angerer-J; Heinrich-R; Lehnert-G Int-Arch-Occup-Environ-Health . 1980; 47(2): 119-27</p>	<ul style="list-style-type: none"> - purely quantitative analysis - no gender breakdown - looked at blood levels of chemical, but didn't find out how workers felt - if other qualitative health effects - did not look at other possible exposures at home which could intensify the workplace effects 	<p>blood levels; external group; time of employment in lindane production; pronounced accumulation; biological monitoring</p>
<p>Extent of industrial exposure to epichlorohydrin, vinyl fluoride, vinyl bromide and ethylene dibromide. Oser-JL Am-Ind-Hyg-Assoc-J. 1980 Jul; 41(7): 463-8</p>	<ul style="list-style-type: none"> - no gender analysis - I question claim that there is no evidence that workers have health effects from these chemicals - methodology not clear in abstract 	<p>industrial hygiene studies; no evidence; workers experiencing adverse health effects</p>
<p>Psychiatric ratings in occupational health research: a study of mental symptoms in lacquerers. Struwe-G; Mindus-P; Jonsson-B Am-J-Ind-Med. 1980; 1(1): 23-30</p>	<ul style="list-style-type: none"> - no gender analysis - promotes somewhat qualitative methods - psychiatric interviews - no context: specific jobs, tasks, who does them, who is most exposed to organic solvents - no mention of other contextual factors, determinants, which could affect mental comfort 	<p>quantitative assessment of mental symptoms; semi-structured psychiatric interviews; rating scales; rating techniques</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
Occupational exposure to organic solvents and Hodgkin's disease in men. A case-referent study. Olsson-H; Brandt-L Scand-J-Work-Environ-Health. 1980 Dec; 6(4): 302-5	<ul style="list-style-type: none"> - gender-blind, study men only on non sex-specific illness - conclusion is simplistic - causal effect only, if had done more qualitative analysis could have learned more about job tasks, other exposures 	standardized personal interview; disease in men.
Methanol monitoring. Comparison of urinary methanol concentration with formic acid excretion rate as a measure of occupational exposure. Ferry-DG; Temple-WA; McQueen-EG Int-Arch-Occup-Environ-Health . 1980; 47(2): 155-63	<ul style="list-style-type: none"> - gender-blind study - quantitative - no workplace descriptions included 	methanol concentrations
Skin absorption and per os administration of methanol in men. Dutkiewicz-B; Konczalik-J; Karwacki-W Int-Arch-Occup-Environ-Health . 1980; 47(1): 81-8	<ul style="list-style-type: none"> - study done only on men, non sex-specific factors thus should include both sexes - quantitative and gender-blind 	modified direct method; absorption through the skin
Chromosome and biochemical studies in women occupationally exposed to lead. Forni-A; Sciame'-A; Bertazzi-PA; Alessio-L Arch-Environ-Health. 1980 May-Jun; 35(3): 139-46	<ul style="list-style-type: none"> - study on women to make up for previous gap in research - purely quantitative/clinical, necessary for this but info on workplace risks would be useful - sample unknown - no race/ethnicity or job type 	chromosome and biochemical studies; cytogenetic studies; lymphocytes; women occupationally exposed to lead, as previously found in males
Reactions to hand cooling in workers occupationally exposed to cold. Enander-A; Skoldstrom-B; Holmer-I Scand-J-Work-Environ-Health. 1980 Mar; 6(1): 58-65	<ul style="list-style-type: none"> - gender of some workers not clear - cruel experiment on humans - qualitative interviews with workers would produce more realistic results - experiment method vs workplace study 	Ten men occupationally exposed to cold; ten office workers; immersion of the hands in cold water; rated cold sensation and pain

SEARCH 8 - (Social + Status) 1990-2000 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Associations of body mass index and percentage body fat by bioelectrical impedance analysis with cardiovascular risk factors in Japanese male office workers.</p> <p>Nakanishi-N; Nakamura-K; Suzuki-K; Matsuo-Y; Tatara-K Ind-Health. 2000 Jul; 38(3): 273-9</p>	<ul style="list-style-type: none"> - used male office workers only - this is especially bad when women dominate office work - quantitative analysis - when looking at cardio risk factors, other factors are important and probably interact with those studied here - shouldn't be overlooked: i.e. lifestyle issues beyond smoking and alcohol (self-perceived stress factors, family responsibilities, level of fitness activity, socio-economic status, work status) also missing impacts of the workplace - level of control, over work etc 	<p>male office workers; cardiovascular risk profile; stepwise regression analyses</p>
<p>Race, gender, and social status as modifiers of the effects of PM10 on mortality.</p> <p>Zanobetti-A; Schwartz-J J-Occup-Environ-Med. 2000 May; 42(5): 469-74</p>	<ul style="list-style-type: none"> - quantitative methods may limit results: may find more through interviews or qualitative techniques - how can social factors be analysed via quantitative, statistical methods, they should be enhanced with qualitative - stratified by sex, race, education - however race is a proxy for social class - not always best method 	<p>total mortality; race, sex, and education; potential modifiers; stratified by sex, race, and education; inverse variance; weighted averages; social factors;</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Mortality from multiple sclerosis and exposure to residential and occupational solar radiation: a case-control study based on death certificates. Freedman-DM; Dosemeci-M; Alavanja-MC Occup-Environ-Med. 2000 Jun; 57(6): 418-21</p>	<ul style="list-style-type: none"> - adjusted for sex, race, socioeconomic status - this limits the study too much. Should do comparison to see how these factors impact mortality - they isolated the sun factor, but ignored job or home exposure - what kinds of activities might aggravate conditions? - wrongly generalize conclusion for all participants, where differences in sex/gender might appear - depends on social context - method using stats, death certificates: limited source of work information for women 	<p>case-control studies; death certificates; residential and occupational exposure; multiple logistic regression analyses; adjustment for age, sex, race, and socioeconomic status.</p>
<p>Lean production teams and health in garment manufacture. Jackson-PR; Mullarkey-S J-Occup-Health-Psychol. 2000 Apr; 5(2): 231-45</p>	<ul style="list-style-type: none"> - no indication of who workers were - social context ignored: important factor re: work demands, power relationships, social climate - no indication of interview methods - just look at work design - gender-blind 	<p>impact of work organization; work demands; social climate</p>
<p>Prevalence of low back pain among staff in a rural hospital in Nigeria. Omokhodion-FO; Umar-US; Ogunnowo-BE Occup-Med-Lond. 2000 Feb; 50(2): 107-10</p>	<ul style="list-style-type: none"> - completely gender-blind - looks at social factors, fails to include socio-economic status - fails to look at outside (home life) factors - methods not clear 	<p>cross-sectional study; prevalence of low back pain; social and demographic characteristics</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Elevated risk for male breast cancer after occupational exposure to gasoline and vehicular combustion products. Hansen-J Am-J-Ind-Med. 2000 Apr; 37(4): 349-52</p>	<ul style="list-style-type: none"> - men only - why, when rates of female breast cancer are much higher - only recommends further evaluation in women - control for socio-economic status - important to isolate gasoline factor, but also important to look at other real-life contexts to see how they interplay. - totally quantitative - regression analysis - some qualitative would benefit study - i.e. understand better the tasks/jobs involved to ascertain locations of exposure 	<p>men occupationally exposed; nationwide register based case control study; employment histories reconstructed; odds ratios; adjusted for socioeconomic status; conditional logistic regression analysis; further evaluation particularly in women</p>
<p>Clinical issues: return to work and public safety. de-Gaudemaris-R Occup-Med. 2000 Jan-Mar; 15(1): 223-30, v</p>	<ul style="list-style-type: none"> - men only study on non sex-specific issues - women needn't be excluded, esp. when CVD different for women - method studies social, ethical, economic issues, job characteristics - but depend on longitudinal data only, which is based on men. - no interviews of workers - limits results 	<p>young men; longitudinal data; job characteristics</p>
<p>Variations in self-reported health by occupational grade in the British Post Office: the Q-health project. Welch-R; Boorman-S; Golding-JF; Towell-T; Roberts-R Occup-Med-Lond. 1999 Nov; 49(8): 491-7</p>	<ul style="list-style-type: none"> - women and men considered - not clear to what extent - worker-centred method - focus on self-reported health factors - job status is proxy for social status - may limit results 	<p>postal questionnaire survey; occupational grade lower status jobs</p>
<p>Importance of the psychosocial environment in epidemiologic studies. Marmot-M Scand-J-Work-Environ-Health. 1999; 25 Suppl 4: 49-53</p>	<ul style="list-style-type: none"> - context considered: looks at psychosocial factors inside and outside workplace - may focus on individual rather than external factors/determinants - gender-blind - critiques traditional research methods with aim to correct 	<p>disease risks; inverse social gradient; socioeconomic classification; psychosocial factors in the workplace and outside</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Predictors of occupational low back disability: implications for secondary prevention. Feuerstein-M; Berkowitz-SM; Huang-GD J-Occup-Environ-Med. 1999 Dec; 41(12): 1024-31</p>	<ul style="list-style-type: none"> - gender-blind - quantitative study involving some social factors - should use interview or other qualitative methods too - focus on individual/psychosocial might miss key social context factors (work at home) 	<p>case-control study; demographic, physical demand, physical fitness; individual psychosocial variables; age, status level in the organization</p>
<p>Predictors for work incapacity continuing after disc surgery. Donceel-P; Du-Bois-M Scand-J-Work-Environ-Health. 1999 Jun; 25(3): 264-71</p>	<ul style="list-style-type: none"> -gender-blind - only mentions "his" doesn't describe the sample - worker-centred method where promote use of self-predictions of health - social status is considered, though to what extent not clear - based on interview - standardized interview - not designed for women's specific circumstances 	<p>standardized interview; personal, social, medical, professional, and psychological status; standardized clinical examination; his possibilities; patient's own prediction of his possibility</p>
<p>Risk of premenopausal breast cancer in association with occupational exposure to polycyclic aromatic hydrocarbons and benzene. Petralia-SA; Vena-JE; Freudenheim-JL; Dosemeci-M; Michalek-A; Goldberg-MS; Brasure-J; Graham-S Scand-J-Work-Environ-Health. 1999 Jun; 25(3): 215-21</p>	<ul style="list-style-type: none"> - important links undervalued by use of small number of exposed women. - traditional quantitative methods used. Job-exposure matrices not always suited for women - standardized. - inclusion of qualitative information would help this study - specific job tasks, outside factors which could interact with chemical exposures, socio- economic status of the women etc 	<p>occupational histories interviews; job-exposure matrices; dose-response relationship; small numbers of exposed persons</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Relation between job strain and myocardial infarction: a case-control study. Netterstrom-B; Nielsen-FE; Kristensen-TS; Bach-E; Moller-L Occup-Environ-Med. 1999 May; 56(5): 339-42</p>	<ul style="list-style-type: none"> - gender-blind -study on men only - questionnaire/ interview method - analysed statistically - did two checks, before and after adjusting for socio-economic variables - uses Karasek model - how would the Karasek job strain model work with women? who was it designed for? <p>Critiqued in CINBIOSE literature.</p>	<p>job -related and socio-economic factors; male wage earners; interviewed; questionnaire on job related conditions; psychosocial factors; blue collar workers vs white collar workers</p>
<p>Maternal occupational exposure to chemical substances and the risk of infants small-for-gestational-age. Seidler-A; Raum-E; Arabin-B; Hellenbrand-W; Walter-U; Schwartz-FW Am-J-Ind-Med. 1999 Jul; 36(1): 213-22</p>	<ul style="list-style-type: none"> - traditional quantitative methods, no info on race/ethnicity of women - some context considered - statistically - further adjustment for income, and other work characteristics 	<p>maternal occupational exposure; small-for-gestational-age; prospective cohort study; occupational, medical, and psychosocial information</p>
<p>The relationship between waist-to-hip ratio and occupational status and life-style factors among middle-aged male and female Japanese workers. Ishizaki-M; Yamada-Y; Morikawa-Y; Noborisaka-Y; Ishida-M; Miura-K; Nakagawa-H Occup-Med-Lond. 1999 Apr; 49(3): 177-82</p>	<ul style="list-style-type: none"> - gender bias - androcentric paradigms in research questions - methods left gaps in results for women - would have found them if feminist methods used - life-style factors were not related for women b/c they chose factors more prevalent in men (alcohol consumption, more leisure time i.e. their assumptions of male lifestyle made them choose these factors. What about work in the home, childcare responsibilities, type of food able to eat/afford - higher fat content in cheaper food?) - thus male-centred paradigms affected the variables used, thus produced incomplete results. 	<p>body fat distribution; indicator of coronary heart disease risk status; occupational status and life-style factors; male female workers; unmeasured psychosocial factors</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Older workers. Wegman-DH Occup-Med. 1999 Jul-Sep; 14(3): 537-57</p>	<p>-qualitative method, takes social factors, information centred on workers - gender-blind - no mention of importance to look at differences between sexes</p>	<p>work and aging; workers; physical, mental, and social capacities motivation and experience</p>
<p>Chronic fatigue syndrome, chronic fatigue, and psychiatric disorders: predictors of functional status in a national nursing sample. Wagner-Raphael-LI; Jason-LA; Ferrari-JR J-Occup-Health-Psychol. 1999 Jan; 4(1): 63-71</p>	<p>- no gender analysis - were all the nurses women? - method purely statistical although investigates number of social factors - lacks qualitative analysis</p>	<p>Stepwise multivariate regression analyses</p>
<p>Exposure to traumatic incidents and prevalence of posttraumatic stress symptomatology in urban firefighters in two countries. Comeil-W; Beaton-R; Murphy-S; Johnson-C; Pike-K J-Occup-Health-Psychol. 1999 Apr; 4(2): 131-41</p>	<p>- gender-blind - somewhat worker-centred: use of self-reported stress info - no information on methods used</p>	<p>trauma exposures; prevalence of posttraumatic stress</p>
<p>Risk of premenopausal breast cancer and patterns of established breast cancer risk factors among teachers and nurses. Petrallia-SA; Vena-JE; Freudenheim-JL; Michalek-A; Goldberg-MS; Blair-A; Brasure-J; Graham-S Am-J-Ind-Med. 1999 Feb; 35(2): 137-41</p>	<p>- disclaimer re: low numbers limiting the statistical power of findings - I have not seen this on male-dominated industry studies - not sure what's included in occupational histories - environmental location, equipment used (photocopiers, medical etc.) should be included - socio-economic factors make a difference too - study controlled for other factors - but not specified in abstract - didn't specify race/ethnicity of sample</p>	<p>occupational histories in a case-control study</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Job strain and time to pregnancy Hjollund-NH; Kold-Jensen-T; Bonde-JP; Henriksen-TB; Kolstad-HA; Andersson-AM; Ernst-E; Giwerzman-A; Skakkebaek-NE; Olsen-J Scand-J-Work-Environ-Health. 1998 Oct; 24(5): 344-50</p>	<ul style="list-style-type: none"> - following women for only 6 months after termination of birth control is short; definition of fertility/infertility not clear - no focus on men's fertility/infertility - the Karasek questionnaire on job demand -limitations for women - critique by Messing - methods quantitative - qualitative info would benefit study - social factors, socio-economic status, what other factors interact - fertility is sensitive issue, affected by many things. - study involves couples, no single women/lesbian 	<p>fertility and job strain; potential confounding variables; menstrual cycles; job demand and job control; questionnaire developed by Karasek</p>
<p>Psychosocial factors at work and sickness absence in the Gazel cohort: a prospective study. Niedhammer-I; Bugel-I; Goldberg-M; Leclerc-A; Gueguen-A Occup-Environ-Med. 1998 Nov; 55(11): 735-41</p>	<ul style="list-style-type: none"> - what they label as confounding factors, I would say are important - interact with work factors to increase stress - did questionnaire include info about childcare needs, home responsibilities? - marital status - could indicate something - if single parent for ex may explain absence days 	<p>psychosocial factors; men and women; self administered questionnaires; potential confounding variables age, smoking, alcohol, and marital status</p>
<p>Long-term follow-up of psychological distress, social functioning, and coping style in treated and untreated patients with solvent-induced chronic toxic encephalopathy. Abjomsson-G; Palsson-B; Bergendorf-U; Karlson-B; Osterberg-K; Seger-L; Orback-P J-Occup-Environ-Med. 1998 Sep; 40(9): 801-7</p>	<ul style="list-style-type: none"> - gender-blind - use of established questionnaires/ tests which may be based on a androcentric design - qualitative methods would tell more here 	<p>Symptom Checklist-90, Interview Schedule of Social Interaction, and Sense of Coherence and Strategies to Handle Stress questionnaires</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Case-control study of occupational exposures and male breast cancer. Cocco-P; Figgs-L; Dosemeci-M; Hayes-R; Linnet-MS; Hsing-AW Occup-Environ-Med. 1998 Sep; 55(9): 599-604</p>	<ul style="list-style-type: none"> - large gender blind study on male breast cancer - more prevalent in females - not even a mention that one should be done - questionable methods: exposure to herbicide, pesticide etc. - such environmental-related studies are rare for bc in women, and this concludes no risk - what questions are they asking? - qualitative, interviews could reveal more - socioeconomic status included 	<p>male breast cancer; case-control study; workplace; pesticides organic solvents; socioeconomic status index; lifestyle factors investigated further</p>

SEARCH 9 - (Social + Status) 1970-1980 Set

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Clinical and neurobehavioural study of the acute and chronic neurotoxicity of styrene. Triebig-G; Lehl-S; Weltle-D; Schaller-KH; Valentin-H Br-J-Ind-Med. 1989 Nov; 46(11): 799-804</p>	<ul style="list-style-type: none"> - gender-blind - men only in non-sex-specific issue - quantitative study, although included socio-economic status. Did not include any qualitative comments re: social status though 	<p>workers exposed to styrene; socio-economic status; cross sectional field study; control group</p>
<p>Risk factors for asbestosis in workers of asbestos mills. Polzik-EV; Kogan-FM; Kochneva-MJu; Potanin-NI Med-Lav. 1989 Sep-Oct; 80(5): 363-9; discussion 369-9</p>	<ul style="list-style-type: none"> - female workers in mills - no mention of job types - looks at social status, personal habits and other factors for predisposition to asbestosis - ethics: rather than removing workers from exposure, they find ways through research to find those who may withstand it - quantitative methods based on mathematical calculations 	<p>social status; female workers of asbestos mills</p>
<p>Relationships between public health, urban hygiene and occupational hygiene. Purchon-DW Ann-Occup-Hyg. 1989; 33(4): 645-9</p>	<ul style="list-style-type: none"> - qualitative analysis based on health differences between social classes - no mention of gender differences within classes, or racial/ethnicity differences 	<p>health status between social classes; community and ethnic minority groups</p>
<p>Effect of duration of employment in piecework on severe disability among female garment workers. Brisson-C; Vinet-A; Vezina-M; Gingras-S Scand-J-Work-Environ-Health. 1989 Oct; 15(5): 329-34</p>	<ul style="list-style-type: none"> - multivariate analysis looking at job task, education, etc. - personal interviews used - I question if journal required disclaimer "small numbers involved" 	<p>Quebec female garment workers; occupational characteristics; personal interview; small numbers were involved</p>
<p>Disability among female garment workers. A comparison with a national sample. Brisson-C; Vinet-A; Vezina-M Scand-J-Work-Environ-Health. 1989 Oct; 15(5): 323-8</p>	<ul style="list-style-type: none"> - qualitative and quantitative methods: use of interviews - compared with other workers from 3 different occupations - better than just assuming work of clerks is safe 	<p>personal interview; national disability data; risk ratios</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Social and economic determinants of occupational health policies and services. Walker-B Jr Am-J-Ind-Med. 1989; 16(3): 321-8</p>	<ul style="list-style-type: none"> - methods observe social and economic determinants - gender-blind - demographic trends reference, not clear, age? immigration? 	<p>economic, social, demographic</p>
<p>Job demands, job decision latitude, job support, and social network factors as predictors of mortality in a Swedish pulp and paper company. Astrand-NE; Hanson-BS; Isacsson-SO Br-J-Ind-Med. 1989 May; 46(5): 334-40</p>	<ul style="list-style-type: none"> - context considered: non-work related social factors (only social network though, not other) - gender-blind: study on men only - multivariate analysis yet quantitative, even though social context factors are included - just used data, no interviews 	<p>male employees; followed up for 22 years; non-work related social network factors; multivariate analysis.</p>
<p>A death-certificate case-control study of non-Hodgkin's lymphoma and occupation in men in North Carolina. Schumacher-MC; Delzell-E Am-J-Ind-Med. 1988; 13(3): 317-30</p>	<ul style="list-style-type: none"> - context considered: social class ranks, race - gender-blind - men only study - quantitative - based on death certificates linked with occupations - didn't look at other factors (i.e. where lived) as possible risk factors 	<p>matched for age, year of death, and race; death certificates; significant linear relationship; ranked by social class</p>
<p>Commuting--a further stress factor for working people: evidence from the European Community. II. An empirical study. Costa-G; Pickup-L; Di-Martino-V Int-Arch-Occup-Environ-Health . 1988; 60(5): 377-85</p>	<ul style="list-style-type: none"> - no mention of women till end of abstract - social context: family responsibilities and other challenges for women observed - "empirical" study - uses qualitative methods to get at this info, yet does not mention interviews or actual methodology 	<p>empirical study; experienced; women commuters; family difficulties</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Medical, psychological, and social factors associated with back abnormalities and self reported back pain: a cross sectional study of male employees in a Swedish pulp and paper industry. Astrand-NE Br-J-Ind-Med. 1987 May; 44(5): 327-36</p>	<ul style="list-style-type: none"> - sociological study - but no indication of societal factors influencing workers' back pain - uses logistic regression - quantitative analysis - men only, gender-blind 	<p>medical, psychological, and sociological study; univariate analyses; multiple logistic regression analyses</p>
<p>Mortality of a municipal worker cohort: III. Police officers. Vena-JE; Violanti-JM; Marshall-J; Fiedler-RC Am-J-Ind-Med. 1986; 10(4): 383-97</p>	<ul style="list-style-type: none"> - study limited to white men, looked at diseases, not workplace conditions, only pathology - no symptoms - major gaps due to lack of qualitative analysis of socio-economic factors, racial factors, gender factors 	<p>retrospective cohort; white male police officers; total mortality</p>
<p>Work and reproduction: sociologic context. Susser-I Occup-Med. 1986 Jul-Sep; 1(3): 517-30</p>	<ul style="list-style-type: none"> - female role paradigm: "nearly all women in US.." assumes women's role is reproduction - qualitative, sociological analysis - based on narrow assumptions 	<p>reproduction as a social process; nearly all women in the U.S.; sociologic context</p>
<p>Mortality of medical practitioners in Japan: social class and the "healthy worker effect". Araki-S; Murata-K; Kumagai-K; Nagasu-M Am-J-Ind-Med. 1986; 10(1): 91-9</p>	<ul style="list-style-type: none"> - gender-blind -study on men only - limited quantitative method: looks at social class as health risk - uses statistical methods based on mortality ratios thus does not take other health determinants into consideration 	<p>mortality of male physicians; high socioeconomic status populations, the non-working population, and the general population</p>
<p>Respiratory cancer in Danish bakers: a 10 year cohort study. Tuchsen-F; Nordholm-L Br-J-Ind-Med. 1986 Aug; 43(8): 516-21</p>	<ul style="list-style-type: none"> - gender-blind - who are the bakers? - no social-context analysis, workplace descriptions - quantitative, based on death registration 	<p>national cohort based on the census; death registration; skilled Danish bakers; control groups of equal social status</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Blood pressure and other cardiovascular risk factors of long-term exposure to lead. Kirkby-H; Gyntelberg-F Scand-J-Work-Environ-Health. 1985 Feb; 11(1): 15-9</p>	<ul style="list-style-type: none"> - quantitative method, small sample size, yet no disclaimer as in some women-centred studies - gender-blind 	<p>coronary risk profile; lead smelter workers</p>
<p>Rates of sickness absenteeism among employees of a modern hospital: the role of demographic and occupational factors. Pines-A; Skulkeo-K; Pollak-E; Peritz-E; Steif-J Br-J-Ind-Med. 1985 May; 42(5): 326-35</p>	<ul style="list-style-type: none"> - looked at differences in sex, but failed to use qualitative analysis to understand why more women have sickness absences - need for childcare? - qualitative study with interviews would have shed more light on the situation - conclusions place fault on workers rather than workplace context - work descriptions not mentioned - qualitative analysis of the workplace is warranted to see the demands etc. 	<p>some demographic (sex, age, marital status) and occupational (occupational group, duration of hospital employment) variables; among female</p>
<p>Alcoholism and occupation. Olkinuora-M Scand-J-Work-Environ-Health. 1984 Dec; 10(6 Spec No): 511-5</p>	<ul style="list-style-type: none"> - Method-lit review. Gender-blind: most research results are regarding males - "not necessarily true for females" does not say much - good that looks at social status, type of job etc 	<p>social and psychological factors; social status, and lifestyle; males; females</p>
<p>Health selection among metal workers. Koskela-RS; Jarvinen-E; Korhonen-H; Mutanen-P Scand-J-Work-Environ-Health. 1983 Apr; 9(2 Spec No): 155-61</p>	<ul style="list-style-type: none"> - gender-blind: study on men only - heavy industry - male-dominated - traditional method with questionnaire - quantitative, with some comment on social factors 	<p>men; metal industry; questionnaire; physical demands of the work</p>

Abstract Source	Gender-based Critique	Key Indicator Terms
<p>Coronary heart disease risk factors in bus and truck drivers. A controlled cohort study. Hartvig-P; Midttun-O Int-Arch-Occup-Environ-Health . 1983; 52(4): 353-60</p>	<ul style="list-style-type: none"> - gender-blind: men only - heavy industry, truck driving, bus driving - male- dominated - Some context info: matched for socio-economic status and other personal habits, but no comment on other social factors (where live, family) - look at psycho-social occupational indicators (not specified in abstract) - clinical test - no worker comments 	<p>bus and truck drivers; control group; male industrial workers; psychosocial and occupational indicators; blood lipids and blood pressure; socio-economic status, dietary</p>