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UMI
POLITICAL POWER IN THE SCIENCE
OF
PHYSICAL FITNESS

by

Brian Gordon Pronger

A thesis in conformity with the requirements
for the degree of Doctor of Philosophy
Graduate Department of Community Health
University of Toronto

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POWER IN THE SCIENCE OF PHYSICAL FITNESS

by

Ph.D., Convocation 1997
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ABSTRACT

The science of physical fitness has become a dominant episteme in university physical education. The assumption has been that this kind of knowledge is an objective, apolitical representation of the natural reality of the body. This thesis attempts to disprove these assumptions. It develops a theory of science based on recent research in the philosophy, anthropology, sociology and history of science. It also develops a new theory of the body in social discourse which draws together elements of the work of Heidegger, Foucault and Deleuze and Guattari. It operationalizes these theories by deconstructing exercise science as a textual discourse on the body, analysing the Canadian Standardized Test of Fitness. The thesis concludes with principles for emancipatory physical education.
ACKNOWLEDGEMENTS

I acknowledge and give my sincere thanks to my supervisor Bruce Kidd, who over the last decade has given me invaluable scholarly and intellectual guidance, support and collegial friendship from my first undergraduate experiences in physical education to the completion of this doctoral dissertation.

I would also like to express my true appreciation to the members of my supervisory committee, Ian Hacking, Helen Lenskyj, and Graeme Nicholson, with whom I have had the pleasure of taking independent graduate study courses which have had a direct influence on this thesis in particular and the development of my intellectual life in general. I have also had the privilege of engaging in lengthy, probing and profoundly stimulating discussions with all of them — these numerous conversations were pivotal to my graduate education.

I give thanks to my parents. My wonderful mother who died before I had ever thought of graduate studies and pursuing an academic life, still exerted her influence beyond the grave. My father who gave me much fine advice, and who died just a few months before I finished this work, would have loved to have lived to see my doctorate through to completion. And my partner Jim Bartley remains, the deepest loving and intellectual support possible.
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Chapter One

INTRODUCTION

Over the last two decades the knowledge-base of physical education in Canada, the United States, Great Britain, Australia and New Zealand has changed dramatically. An academic and practical field that had been geared to elementary and secondary school teacher education with the broad educational goal of instilling "a sound mind in a sound body," has become more and more a profession geared to the development of human performance, both in terms of sport performance (i.e., the body trained to perform athletic feats) and health performance (i.e., the body trained to function more efficiently in order to be healthier and thus more economically productive and less a drain on government budgets for health/sickness care). Traditionally, university training in physical education was highly interdisciplinary, including instruction in the humanities, and the social and biophysical sciences, as well as very significant practical components, in sport, dance and exercise.

In the early 1970s the need for newly trained primary and secondary school physical educators declined. At the same time, the government of Canada took a much greater interest in the development of national athletic programmes (for the sake of improving national stature in the international athletic competition scene) and functional physical fitness for adults and children. Substantial government funding was made available for research in exercise science that was aimed at performance, both in athletics and physical fitness. In conjunction with these developments, university instructors of
physical education (who were often primarily coaches) were under pressure by universities to improve their academic credentials. Thus many university physical educators pursued academic credentials and careers in exercise science. In this context there was a noticeable change in the academic thrust of university physical education departments and the kind of knowledge they were producing. There are now universities whose physical education programmes include no instruction in activities (e.g. the University of British Columbia). Many universities (the vast majority in Canada) have changed the names of their departments from physical education -- a name that suggests a more general and practical academic direction -- to variations on "kinesiology" (Faculty of Human Kinetics), a name that suggests a more scientific orientation. In most (formerly) physical education departments knowledge in the humanities and social sciences has been marginalized.

While there is clearly a political economy to these changes in the knowledge-base of physical education (which I will discuss in the next chapter), there is also a fundamental issue about the nature of knowledge and its relationship to human life. Briefly, the dominance of the biophysical exercise sciences has been premised on tacit claims which those sciences make about the nature of their knowledge: the biophysical sciences study the natural body, objectively without political interference. The knowledge which it produces is simply knowledge of how the body works. And the recommendations for athletic training, and physical fitness regimens are similarly presented as objective, naturalistic accounts of how to maximize the body's potential. Because of its scientific objectivity, practical effectiveness and political neutrality the biophysical account of the
body is presented as the most appropriate form of knowledge on how to deal with the body.

This thesis aims to disprove these assumptions about the biophysical sciences of physical education. My critique is analogous to critical sociology of sport, which has shown that sport is more than just a game: One can engage in a sport, gain certain physical and strategic skills that help one become successful in playing the game; but most research in the sociology of sport indicates that learning a sport is never a purely technical matter. (Duquin 1984; Greendorfer 1983; Hall 1985; Hall 1993; Hall 1996; Kidd 1987; Kidd 1995; Lenskyj 1986; Lenskyj 1990; Lenskyj 1992a; Lenskyj 1992b; Lenskyj 1994b; Lenskyj 1995) For when one is learning the technical skills of a sport one can at the same time in the same setting – depending on how the sport culture is structured—learn, internalize and operationalize cultural discourses, such as class, race, gender and sexuality. In that non uncommon situation, sport becomes much more than a simple game of physical skill; it is an institutionalized indoctrination in how to live a classist, racist, sexist and homophobic life. I will demonstrate, similarly, that there is much more to the science of physical fitness than understanding biological processes.

My focus will be the science of physical fitness, rather than of high performance athletics. The sciences of high performance sport have had a profound effect on the lives of high performance athletes and those who aspire to being the same, as John Hoberman (1992) has amply documented. High performance sport, however, involves a small portion of the general population. The sciences of physical fitness, because they are part of a much larger programme of public health, are aimed at affecting many more people,
indeed as many people as they possibly can. The potential impact of this scientific knowledge on life, then becomes an important question. The heart of my question will be: does the science of physical fitness set a course for human freedom or does it fulfill Foucault's view of exercise, i.e., "Exercise, having become an element in the political technology of the body...does not culminate in a beyond, but tends toward a subjection that has never reached its limits." (Foucault, 1979, 162)

The following is a study of the science of fitness-based adult physical education. It begins with a review of the academic literature that has been socio-culturally critical of fitness-based physical education. I suggest that while there have been critiques of physical fitness for the ways in which it serves state interests, or promulgates ideologies of class, consumption and gender, or participates in modern forms of social discipline, and while there is a considerable literature that has been critical of the scientization of physical education, none of the literature has looked with much care at actual scientific texts and the knowledge claims and prescriptions for life that they suggest. Most importantly, none of the literature has given more than scant attention to theories of science that could deepen their critiques. In response to that lack I develop a political theory of science and scientific textuality, drawing on recent work in the philosophy, history, sociology and anthropology of science. My review also suggests that the most important lack in the literature involves a paucity of a theory of the body. While there is some reference to issues of power and the body, especially in the literature that draws on the work of Foucault and Bourdieu, this literature still lacks a theory for precisely how the body is available to discursive forms of power. And most importantly, besides some passing
references to pleasure and sense of sadness that fitness-based physical education is not as
pleasureable as it might be, there is no theory of Eros. A major part of this thesis is my
tempt to build a theory of the body that accounts for the insinuation of discursive power
in Erotic life. That theory synthesizes aspects of Heidegger, Foucault and Deleuze and
Guattari in an attempt to account for the insidious and now, tragically, almost
imperceptible ways that an authoritarian regime of the body is operative in much of
everyday life. I then apply that theory to the science of physical fitness, specifically as it is
manifest in fitness testing.

I suggest that the science of physical fitness participates, albeit unwittingly, in a
wider modern, authoritarian discourse of the subjection of Erotic freedom. To
accomplish this, I engage in a textual case-study of the Canadian Standardized Test of
Fitness (CSTF). The CSTF is an eminent example of the science of physical fitness
operationalized in the general population. It was used as the testing instrument in the
Canada Fitness Survey (1981), to date the "largest and most extensive study of physical
activity and fitness ever undertaken" (Canadian, 1986, 3). It continues to be the primary
official intervention of the most important academic society of exercise scientists in
Canada, the Canadian Society for Exercise Physiology, a learned society that was funded
by the government of Canada until 1994, when it suffered budget cuts in a continuing
massive "downsizing" of public institutions.
I offer two readings of the CSTF, one "naturalistic" and the other "deconstructive."¹ The naturalistic reading suggests that the body is a natural entity, that can be appraised of its functional fitness and trained to function better. This is a reading that avoids any explicit sense of discursive power in the fitness test. The fitness test simply represents the truth about the fitness of the individual body and prescribes a course of action to improve that fitness. The deconstructive reading, on the other hand, attempts to render explicit implicit discourses of power. This reading suggests that the CSTF extends the authoritarian and disciplinary culture of the research laboratory (the objects of study of a research laboratory are completely controlled by the disciplinary techniques / experimental procedures of the laboratory and scientists) into the general population. It argues that the CSTF is constructed as a closed salvation narrative: the participant confesses, is presented with his/her fallenness and in a conversion experience resolves to live the New Life. The confession, which is the actual testing procedure, is a disciplinary act in which the body is forced to appear as a purely individualized, technological, and less than fully efficient object. The data of the confession are coded as a measurement of personal physical capital and the participant is pressured to understand that his/her body should be resourcefully developed for its capital potential. By developing their physical capital (in terms of increased cardio-vascular function, greater strength, etc) the participant is able to purchase salvation (in terms of waylaying death, avoiding disease or

¹ The distinction between these readings is based on contrasting theories of the body as natural and as socially constructed, which I discuss in theory of the body in Chapter Three.
old age, being a more productive worker, etc.) Accepting that meaning of the body is the heart of the conversion experience. The cost of salvation is living the New Life, one which is subject to a regimen of physical capital resource development in terms of organized, instrumental exercise, a life of regular if not constant monitoring, and controlled desire. Pleasure is acceptable only where it contributes to, or has no effect on physical capital development.

The underlying logic of the CSTF and exercise science is the development of the body as a capital resource. This philosophy of the resourceful body participates in a much wider discourse, perhaps the pre-eminent discourse of modernity, of dealing with people, bodies, fauna, flora, and indeed the Earth itself primarily as a resource to be developed and traded in one way or another. Following Heidegger's profound critique of this modern disposition towards being, I argue that treating the body as a capital resource is dangerous. The more we see our bodies, each other and the world around us as mere resources to be developed and traded, the less we see the gift, the wonder of being. In the case of the body, the more we see it in economic terms of capital development, the more efficiently we produce it as a functioning object, the more accustomed we become to treating it in this way, the more familiar its essential resourcefulness becomes: the less we see its wonder, the less we engage in the fullness of Eroticism, the less we seek first and foremost its essential freedom: the more we have turned away from the gift which our being is and the more we have given it over to a life of denial, subjection, the nihilism of being merely useful.
The CSTF and the science of physical fitness have not been responsible (in the sense of being the main cause) of an essentially nihilistic disposition to human being. Both the test and the science are small players in an overwhelming historical, economic, social and cultural tendency to capitalize everything and appreciate nothing. Practitioners of physical education are responsible (in the sense of responding to what is before them) for how they dispose the human beings with whom they come into contact. If physical educators are going to be responsible (in the sense of doing what may be best, rather than most expedient) they should in the very least, make it clear how their production of knowledge either augments or diminishes the being of the people with whom they are dealing. I conclude the last chapter with suggestions as to how physical education could be a practical educational quest that seeks to free Eros from nihilistic discourses, rather than being just another soldier following orders.

The assumption of this thesis is that physical education can have a profound effect on the experience people have of their bodies, of their potential for freedom, for their bodily sense of how they relate to the world and the world is related to them. Indeed, physical education can have a role in creating culture. Because of this, the ways in which physical educators intervene in life is very important. My critique of the science of physical fitness is a critique of its structuring or production of the body. It is a critique of the ways it either opens possibilities for depth and freedom, or closes them.
Chapter Two
LITERATURE REVIEW

2.1 Overview

To date, there has been no socio-cultural analysis\(^2\) of the CSTF or of any other physical fitness testing protocols.\(^3\) There is, however, a small socio-cultural literature critical of dominant policies and models of fitness-based physical education (FBPE). Most of this literature examines physical fitness and lifestyle as part of the larger phenomenon of sport and physical education. This is due largely to the fact that the most active critical scholarship on this subject has taken place in the sociology of sport (for example: in the North American Society for the Sociology of Sport, which publishes the Sociology of Sport Journal; the International Society for the Sociology of Sport, which publishes the International Review of the Sociology of Sport; the [U.S.] Centre for the Study of Sport and Society, which publishes the Journal of Sport and Social Issues; and the North

\(^2\) By the words "socio-cultural" I am referring to critical social and cultural analysis in a very broad sense: encompassing sociology, anthropology, history, cultural studies and so on.

\(^3\) Roberta Park (1989a, n. 13, 14), who has given a number of unpublished papers on physical fitness, at the meetings of the North American Society for Sport History, mentions her forthcoming book, Historical Trends in the Measurement of Physical Fitness, 1860–1988, but it is as yet unpublished.
American Society for Sport History, which publishes the *Journal of Sport History* and physical education (the [U.S.] National Association for Physical Education in Higher Education, which publishes *Quest*). Another reason that critical scholarship in this area emanates from studies in physical education and sport is that promoters of physical activity usually come from sport and physical education backgrounds, i.e. many are either graduates of university physical education programmes or are academics appointed to teach and conduct research in such programmes. The following is a review of that literature which takes a critical socio-cultural approach to fitness-based physical education (FBPE). This review excludes the extensive critical literature on the history, sociology and anthropology of sport, except where sport participation is conceived as an integral element in the development of public health.

The critical literature of FBPE can be reviewed thematically: First, there is an analysis of FBPE as it has developed in relation to the problems of the welfare state (Harvey, Beamish, and Defrance 1993; Ingham 1985). Second, as it has been used ideologically along the lines of class (Brodeur, 1988; Laberge, 1988; Bordo, 1993; Hoberman, 1994); the commodification of the body (Crawford 1980; Crawford 1984; Demers 1988; Featherstone 1991; Glassner 1989), and gender (Bordo, 1993a; Bordo, 1993b; Cole, 1993; Lenskyj, 1986; Lenskyj, 1991; Lenskyj, 1990; MacNeill, 1994; Markula, 1995; Pronger, 1990). Third, drawing on the work of Michel Foucault there are critiques of FBPE as a technique for the production of social discipline (Bordo 1993b; Colquhoun 1990; Kirk 1994; Kirk and Spiller 1994; Kirk and Tinning 1994; Kirk and Twigg 1994; Kirk and Twigg 1995). Fourth, there are critiques of the scientization of physical education. Some criticize the role of scientific knowledge in the making of

2.2 Problems of the State

Some have argued that the provision of fitness-based physical exercise opportunities is a political phenomenon, insofar as it serves the interests of the state (Harvey, Beamish, and Defrance 1993; Ingham 1985; Kidd 1996). In a purely theoretical paper, Harvey, Beamish and Defrance (1993) emphasize that this political field must be understood in historical contexts, and suggest that an adequate understanding of such contexts must take into account both “society-related variables” and “state-related variables.” The society-related variables they discuss are (i) class, (ii) political economy, (iii) social representation and (iv) the international economy.

(i) Class affects the nature of opportunities for exercise, and state policies around it, in so far as class interests are operationalized by such policies. For example, Harvey, Beamish and Defrance suggest that the Dominion-Provincial Youth Training Programme which was in turn an extension of the
Unemployment and Agriculture Act of 1937 was a response from the ruling class to keep unemployed lower class youths subdued in the midst of the Great Depression by encouraging them to engage in "rational" forms of recreation that would not be disruptive to the social fabric of the status quo (Harvey, Beamish, and Defrance 1993, 56).

(ii) Political economies affect exercise in so far as there are different modes of social regulation of opportunities for exercise according to "different regimes of accumulation [of capital]." (Harvey, Beamish, and Defrance 1993, 57) For example, in the post-war period, Canada, like many other advanced capitalist countries, ended up with a Fordist regime of accumulation, "... a form of regulation based on the extension of mass production industries which in turn were dependent upon the extension of markets [...] for their products" (Jenson 1989, 71). Fordist countries are also characterized by low spending Keynesian welfare states. This meant that the emergence and development of policies related to physical exercise lagged behind the Scandinavian countries, for example, where more active welfare states viewed exercise as a public right. (Harvey, Beamish, and Defrance 1993, 57)

The result of this in Canada has been relatively little government money directed at the provision of opportunities for physical activity. Rather, the Lalonde Report (1974)⁴

⁴ I discuss the context of the Lalonde Report on health in Chapter Four (pp 216ff)
“which laid the ground work for all future developments at the national level” (Harvey, Beamish, and Defrance 1993, 57) gave responsibility for finding and funding opportunities for physical activity to individuals.

(iii) Harvey, Beamish and Defrance say that “social representation” refers to the state’s conceptual representation of the character of society, to the hegemonic (Williams 1980) ebb and flow of dominant, residual and emergent images of people in society. So, for instance, an emerging conception of youth in the 1930s became dominant, representing them as out-of-shape, unemployed, unproductive and socially dangerous. In response to this conception, Canadian national policy for physical exercise was part of the labour portfolio.

(iv) The international economy can also affect sport policy. For example: in Canada, the Free Trade Agreement with the United States has eroded Canada’s relatively more interventionist tendency in the area of exercise (Kidd 1991).

The most important “state-related variables” identified by Harvey, Beamish and Defrance are the state’s formation and those who act on its behalf. These are fairly obvious factors such as the political regime (monarchy, dictatorship, parliamentary democracy, etc.), and the division of jurisdictions within the state apparatus (for example the existence of ministries of health, or fitness, or sport). Related to that of course is the political nature of the government, which is to say its propensity to lean to the right, left or to be “liberal.” The “state actors”, the politicians and high level bureaucrats who enact and operationalize legislation, who (as Bourdieu points out, do so on the basis of
their own class backgrounds) can have a powerful effect on the way the state influences exercise policy.

Aside from brief examples of each of these variables, Harvey, Beamish and Defrance's theoretical/methodological article (1993) on the role of the welfare state in exercise policy does not actually analyze any specific relationship between the welfare state and the provision of opportunities for physical exercise as an instance of the politics of FBPE.

Ingham (1985) offers an account of the ways in which concern about physical fitness can be traced to particular political and economic circumstances of the welfare state. He argues that the fiscal crisis of the North American welfare state, brought about by the recession of the early 1970s, has lead to an ideological shift from social to individual responsibility for health. Ingham says that the North American welfare state, although never as large as its European variants, grew substantially in the post-Second World War economic boom. That growth "involved an ideology of tripartism in which labor and capital were integrated into the State. This ideology proclaimed a situation of corporatism where the two producer groups—capital and labour—were enjoined in the pursuit of economic growth." (Ingham 1985, 45) Labour, he goes on to say, was

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convinced that it was in its best interests to cooperate with “the representatives of capital” by providing a stable work force; the capitalists, in return, would “provide a high level of employment, better wages and benefits, and thus guarantee labour an access to the consumer culture and the good life. For its part, the State could promise more welfare from its expanding tax base. Labour discipline, consumerism, and quality of life became ideologically linked.” (Ingham 1985, 45) This happy (and surprisingly tidy) tripartite marriage, depended on booming growth, and could not be sustained, under recessionary pressures and changing regimes of capital accumulation. Labour would have to make do with less, both in terms of consumption and expectations of support from the Welfare State, including state responsibility for health. Ingham does not locate his analysis in any country. Presumably, he believes it applies to all welfare states in the period he is discussing. Assuming that classes operate with collective consciousness, Ingham asserts that the capitalist class felt it necessary to control the possibility that labour and the

Bruce Kidd has noted (in his comments on this dissertation) that neither labour nor capitalists in North America were as accepting of this tripartism as their European counterparts. Moreover, the benefits to labour that accrued from the welfare state were not so much the product of Machiavellian planning on the part of the ruling class, but more concessions made by them in the context of major labour strikes during and after World War Two.

This is a process of reducing expectations for the middle and lower classes that is clearly ongoing.
unemployed would act collectively in their own interests. The capitalist solution was the promulgation of "ideology" (in the neo-Marxist sense of false consciousness). This is an ideology of individualism which can act as:

a corrective for the past 'excesses' of collectivism. The time was ripe to depict [collectivism], in the form of wage increases, as a primary contribution to the declining competitiveness of American capitalism in the world market and, in the form of entitlements and health-care programs, as a major factor in increasing the national debt by fueling the inflationary spiral in domestic interest rates through government borrowing. (Ingham 1985, 45).

Brodeur concurs on this point and applies it specifically to the Canadian situation, discussing initiatives by the Canadian National Advisory Council on Fitness and Amateur Sport in the early 1970s.

For economic reasons related to the costs of providing collective health services, it was necessary to revise and adjust health policies in the direction of individual responsibility for lifestyles. This whole strategy was aimed ultimately at making the working classes accept a reduction in the share of social production allotted to collective health services, in order to increase the profits of private enterprise and hence of the owners of the means of production (Brodeur 1988, 232).

Ingham relates these moves to the fiscal policy of the "New Right" which sought to subordinate labour by increasing unemployment so that the members of the working class would have to compete with each other for jobs. The strategy, he says, effectively eroded class solidarity and emphasized the individual. Success in this ideological system depends on living a properly managed life, free of ill health, vigorous and fit for productivity. Individuals who manage their lives successfully are in a position to advance in the competitive environment. Increasing physical fitness through proper body management which includes engaging in physical exercise became an important management strategy. Being physically unfit and/or having a body that does not show the
signs of a commitment to physical fitness (taut and muscular for both men and women) indicates a poorly managed life and a lack of self responsibility in the economic system (Bordo 1993b, 185-214; Featherstone 1991, 187ff). Ill health and low levels of physical fitness are thus seen to be personal flaws, one's own fault and the just deserts of laziness. This ideology of managed personal lifestyle as a strategy for economic viability and success is said to release the welfare state from responsibility for health. It also has the political economic advantage of undermining working class (and unemployed class) solidarity.

2.3 Ideology

Some scholars say that “ideology” refers to an all-embracing system of ideas that constitute a world-view, *Weltanschauung*, which can be said to account for the structure, both political and otherwise, of individual and collective consciousness. But most of the literature that analyses the ideologies of FBPE employs the more common understanding of ideology as a pejorative term that denotes systems of ideas that are “are meant to obscure the truth and to manipulate people through deception” (Bendix 1993, 272). Marx and Engels conceptualized “ideology” as a system of deception and denounced their opponents as “ideologists” who obscured the material truth about reality, a transcendent reality which could be revealed by the science of dialectical materialism which was able to yield “historical truth.” Various Marxist schools continued to be interested in ideology as

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8 This is the concept of ideology that Hoberman employs in *Sport and Political Ideology* (1984).
an instrument of class struggle. Bourgeois ideology, for instance serves the interests of the capitalist class and some elements of the petty bourgeoisie; whereas it is at odds with the interests of the lower working classes. Critical Theorists of the Frankfurt School studied the ways in which bourgeois ideology, when taken up by the lower classes, is a tool of oppression that coopts the oppressed by getting them to identify with the world-view which legitimizes the logic of the dominant social relations. It is this Marxist sense of ideology that ideological critics of FBPE employ.

Harold Stein's (1982) psychohistory of physical fitness in America describes the ways in which the individualist ideology of physical fitness alienates one from everyone else. It promotes the ideology that one is alone in the world, in so far as only the individual can truly look out for him or herself. In a society that insists that the isolated individual take responsibility for him or herself,

Self-help is frightened self-sufficiency. Increasingly, disease comes to be seen as failed responsibility to maintain the self-isolating sham of self-sufficiency. Contracting a disease has come to be seen by many as a sign of personal moral failure to keep up his vital wellness. It is thus one’s own fault if he falls ill; he should expect to be able to depend upon no one other than himself. Narcissism’s protective insularity sows its own vulnerability. (Stein 1982, 177)\(^9\)

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\(^9\) With the term "self-help" Stein is not referring to those traditions of self-help in which laity wrest control for their health from professional elites, such as doctors, by setting up their own health care (e.g. antipsychiatric self-help groups, and women’s self-help groups, alcoholics anonymous, etc.). He is referring instead to the notion that disease is an individual, self-oriented concern.
The individualist ideology of physical fitness is symptomatic of the ideology of social Darwinism—which Stein calls “neo-Darwinism.” In this ideology, Darwin’s theory of the evolution of entire species over millennia is reduced to the war of every person against each other in an individualist struggle of the survival of the fittest—a completely wrong-minded understanding of Darwin. The “scientific respectability” of Darwin’s theory of evolution is coyly appropriated in a populist, right wing political ideology of individual self-sufficiency. The predominance of this ideology has gone a long way in preventing (Ingham would say eroding) class solidarity or at least group action. Stein says one is told to be responsible for one’s own “well-being, not to make demands upon society, but to contribute unquestioningly to present social goals. One is admonished to be responsible in the sense of self-sufficiency, but not in the area of social action—especially those that go against the grain.” (180)

Barry Glassner (1989) looks at participation in physical fitness as a postmodern response to the culture of modernity. Following upon Lyotard’s assertion (Lyotard 1984), that the postmodern condition is a lack of faith in the great “meta-narratives of modernity,” such as social progress and the control of nature through machine age science and technology Glassner says that physical fitness is a response to the sense of loss that failed modernity has created: since the world is not fulfilling the modern dream of progress and control, individuals reproduce a kind refracted narrative of the same in their own lives. Fitness offers a salvific narrative from the perils of modern life: drug abuse, depression, eating disorders, modern diseases. Paraphrasing Andreas Huyssen(Huyssen 1986,180), Glassner says “…fitness enthusiasts hold an ‘ostentatious self-confidence’ that
there can be a ‘realm of purity’ for the self, if the self will maintain a proper regimen. By means of vital, rationalized, and self-directed action, the practitioner of fitness strives to construct an integral biography during a time when roles and collective morality are inconsistent and rapidly changing” (Glassner 1989, 183).

2.3.1 CLASS IDEOLOGY

From a class perspective, Brodeur argues that the ideology of physical fitness gets the working class to identify its own self interests with those of the capitalist class. Brodeur analyzes that ideological function in employee fitness programmes. In the 1970s and 80s there was considerable interest in the workplace as a site for the promotion of healthy lifestyles, including physical fitness. Brodeur argues that this was not an interest in physical activity as form of entertainment or recreation, which was the traditional objective of engaging in physical activity, but an interest in physical activity as a form of professional preparation for work: “The traditional view of free time and popular participation in physical activities and sport no longer means anything in this professionalized universe” (Brodeur 1988, 228). Brodeur says that while there was considerable effort on behalf of professionals in physical education to convince employers that employee fitness programmes will increase worker productivity, the real impetus came from governments that wanted the workplace to do its bidding in the control of public health. To support this claim he cites a number of government publications on workplace fitness programmes. (For instance, Brodeur points out that the Province of Ontario had a branch called Fitness Ontario which published: *Fitness and the Working World, Promoting Employee Fitness and Recreation in the Workplace*, and the
Employee fitness was one strategic course in a host of Canadian government strategies emanating out of the Lalonde Report (1974) (See discussion above: p. 12.) Brodeur says the government had an ideological interest in individual fitness: to distract workers from systematic issues about modes of production (232). This, he says serves the interests of the “ruling class”:

Reinforcement was given to the ruling classes’ idea that the population of Canada constituted a relatively homogenous whole, in which differences were only individual ones between legally equal people, and health or fitness depended on the degree of “laziness” of each person in choosing healthier lifestyles, among which physical activity should constitute a larger part. This political doctrine would seem logical only if one agrees to jump from “collective health” to “individual fitness”, which is seen to have its origins in physical conditioning, which in turn is based on participation in sports and physical activities on a regular basis. Thus the issue of the “system” was avoided and replaced by a focus on the individual, who was confronted with the necessary, inevitable evolution of the means of production, to which he or she had to adapt. (Brodeur 1988, 233)

Another ideological goal of workplace fitness programmes was to shift blame for low worker productivity: rather than attributing low productivity to structural determinants such as boredom, bad working conditions and alienation from the products of labour, the problem is ideologically diverted to problems of the individual worker’s low commitment to personal health. In this ideology, workers who are unhappy with their work and who are unproductive are so because they are personally lazy and live unhealthy, unproductive lifestyles. If they engage in physical fitness programmes on the job they will become happier, healthier and more productive and nothing in the mode of production and organization of labour needs to change.

Similar to ideological critiques that show how FBPE performs the ideological role of ‘diverting the working classes’ attention away from the material conditions of their
discontent, is Stein’s analysis of fitness in Ronald Reagan’s America (1982). He says that while it may be true that physical activity and care in the consumption of drugs and foods may be good preventive strategies for the onset of disease, “the ideology of wellness” functions as an “opiate” for a population that is under siege by the forces of the Right, faced with not only an irresistible wave of economic hardship, but also environmental destruction, and the feeling of helplessness and hopelessness that pervades life in the shadow of nuclear profusion and war and the possibility of absolute chaos, misery, doom.

“Wellness” has become yet another social opiate, a pseudo-solution which, in diverting our attention from those problems that beset us, becomes part of the problem itself. That obsessive preoccupation with health that goes by the term “wellness” is one among many contemporary expressions of a narcissistic inward turning that follows a sense of frightened impotence to affect change upon the world. One feels helpless to avert nuclear war, or to control inflation, or to ensure that he will not lose his job—but one’s body, that magical Aladdin’s lamp, remains in one’s control; it has only to be rubbed the right way. One works overtime on maintaining and improving his body (“health status”) because he feels so unable to cope with the world... Indeed, coping via one’s body (e.g. dieting, exercising, renouncing alcohol, etc.) is, pathetically, ineffectual, one’s means of coping with the world. (Stein 1982, 176)

The North American fitness craze/movement/industry is conceived here as an (inter)national cultural and ideological response to the politics of the day. Medical explanations for the benefits of exercise, says Stein, are subsequent to the cultural ideological imperatives for exercise. Indeed, the exercise sciences developed in the context of an already burgeoning physical fitness culture. The science of physical fitness operates as an ideological justification for a cultural, political, phenomenon. He is not suggesting that the medical science of fitness is wrong, but it is an inadequate explanation of the phenomenon of exercise. Stein illustrates this point in the following paragraph on running:
Take “running,” easily the most popular of exercise regimens. I would want to know what a person who regularly if not compulsively runs is running for, perhaps running from, or running to. In short, I would want to know the meaning or personal significance of movement itself, and not simply commend running for its consequences. Surely running or jogging as a symbolic form or symptom choice can hardly be accidental: for in a society which prizes personal freedom and mobility, as one feels increasingly trapped if not paralyzed in life’s options, through running one is able to keep on the move, sustained only by one’s own powers. Running, in short, may well be a nativistic rite in which one attempts to intensify or revitalize one’s personal culture that he feels to be in decline. Running is “culture” before it is “medicine.” It is that shared fantasy about the body that leads to the implementation of medical means to achieve fantasy goals. (Stein 1982, 172)

Stein also associates interest in physical fitness in the 1970s and 80s with the decline in American international military power in the wake of its failure in Viet Nam. That diminished masculine military potency has increased a metaphoric castration anxiety: the feminization of the American nation by its defeat in South East Asia is paralleled in the fears of individual men that they too are impotent, incapable of doing the masculine deed. He says: “Nationalist chauvinism, familial neo-patriarchalism, and body phallusism are three forms taken by the fitness movement’s ressurected narcissism of the body. Through exercise and body building the weak and flaccid body magically becomes one of indomitable phallic strength... the body itself, and by extension the national body, is genitalized as though it were composed of erectile tissue. The ‘masculine protest’ from individual to national finds expression in phallic boasting.”(Stein 1982, 173)

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10 An analysis of the relationship between social, cultural and political imperatives and scientific production is a major part of the theory of science outlined in the next chapter.

11 It is worth noting Stein's gender bias in these comments. He speaks of the interest in physical fitness as though both men and women had the same reasons for being
building and physical fitness are thus ideological responses to a national gender identity crisis.

Yet another ideological function of employee fitness is to get workers to conceive of their bodies as machines that need a certain kind of maintenance and training in order to become more productive machines for the organization. The ideology of the worker's body as a machine casts it as yet another resource that is available to the employer to be developed for the production of capital. The properly ideologically oriented worker will develop his/her machine-body as a resource for the company by engaging in an employee fitness programme and consenting to physical fitness tests to monitor its resourceful development. Physical fitness testing can also be used to screen new employees to see if they will be good company resources. Workplace physical fitness programmes are part of a Taylorist strategy for the scientific management of company resources (Brodeur 1988, 237), in this case the bodies of employees. The ideology of fitness gets the workers to buy into that management.

Suzanne Laberge and David Sankoff (1988) take issue with the class ideology of physical fitness, arguing that it is a middle and upper middle class phenomenon that is based on the material conditions of the class, and that statistical evidence shows that the upper classes much more than the lower classes are willing to participate in physical

interested in it. It us doubtful that women's participation in physical fitness was expressed as "phallic boasting."
activity as part of preventive medicine. (Boltanski 1971, as cited in Laberge and Sankoff, 1988) Laberge and Sankoff explain:

This is due, in part, to the fact that obeying the rules of preventive medicine does not depend on individual responsibility but is determined by the material conditions of life. Boltanski points out that the objective conditions under which members of the working class live, especially economic insecurity, force them to internalize an ethos and an attitude regarding time that prohibits them, a fortiori, from adopting a preventive attitude towards illness (Boltanski, 1971, 222). (Laberge and Sankoff 1988, 277)

Using Pierre Bourdieu’s concepts of class habitus and cultural capital, Laberge and Sankoff argue that the physically fit body habitus is specific to the middle class and contributes to their accumulation of cultural capital. Material conditions allow one to develop certain habits of lifestyle: for instance the material conditions of upper middle-class life allow one to go to the golf club, tennis club, sailing club, skiing club, embark on guided wilderness mountain expeditions, employ a personal trainer, buy athletic equipment, and so on. This creates a way of life that is a middle class habitus that embodies many of the goals of FBPE. The more one embodies this habitus, both by participating in these activities and having the body and clothing that signify such participation, the more one accumulates upper middle class cultural capital. Imagine, for example, a group of university physical education students loading their skiing equipment into the back of one of their parent’s Volvo station wagon for a weekend at one of their ski chalets: not only do they have the opportunity to engage in a pleasurable physical activity, they also embody, display and trade in the cultural capital that is signified in the

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12 Harvey and Sparks (1991, 171-6) also argue this point from Bourdieu.
ownership of such equipment and property and the ability to use it successfully. The student who has had these cultural “advantages” has the ability to travel in class circles that a lower class, impoverished student who has had no skiing lessons, owns no equipment, has never been to a private chalet, and probably couldn’t afford the gas, the cost of the lift ticket, or the contribution to the collection of micro-brewery beers and steaks that inevitably form part of such a pleasant upper middle class skiing weekend, does not. A poor lower middle-class student who cannot travel in these circles, lacks the habits (which includes both the technical and social skills that are part of exclusive ski trips) and therefore the cultural capital to be physically active in this way. FBPE, then, can be critiqued for the way it contributes to the production of class. Shilling says: “children from (the dominant) classes tend to engage in socially elite sporting activities which stress manners and deportment and hence facilitate the future acquisition of social and cultural capital.”(Shilling 1991, 656) Modes of participation in physical activity are part and parcel of the production of economic and cultural capital, for the middle classes, and part of the exclusion of the lower classes from such accumulation. Laberge and Sankoff say that activities are specific to class habitus: the physical fitness habitus is the cultural milieu of the middle classes and not the lower classes.13

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2.3.2 IDEOLOGY OF CONSUMPTION

FBPE has been examined in its relationship to the logics of consumer culture (Bordo 1993b; Crawford 1984; Featherstone 1991; Hoberman 1994). In consumer culture the body has become a locus of consumption. Featherstone (1991) grounds consumerist cultural practices in the material dynamics of advanced capitalism.\footnote{See also (Ewen 1976)} With the development of mass production came the economic imperative for mass consumption. Because people’s basic material needs are actually small compared to the vast array of products that become available in mass production, it became necessary to entice people into buying more. Consumer capitalism does that by playing on people’s desires and insecurities. Of particular relevance to the body are desires for health, longevity, sexual fulfilment, youth and beauty. The promise of consumer culture is that these desires will be fulfilled by consumption. If one buys the products of the physical fitness, beauty, health food and clothing industries, such desires will be requited. Attractive images of healthy, sexually active/appealing, beautiful, young people abound in the media.

Featherstone says:

...these images do not merely serve to stimulate false needs fostered onto the individual. Part of the strength of consumer culture comes from its ability to harness and channel genuine bodily needs and desires, albeit that it presents them within a form that makes their realization dubious. The desire for health, longevity, sexual fulfilment, youth and beauty represent a reified entrapment of transhistoric human longing within distorted forms. (Featherstone 1991, 193)

Consumer culture fosters dissatisfaction with the self and the need for constant self-improvement. Idealized media images, of perfectly slim, smartly dressed, coiffured young people invite invidious comparisons which intensify dissatisfaction with one’s own
life. But there is a sense that if one consumes the products associated with the advertising images, one will improve one’s identification with the images. The body has come to be seen as plastic and thus not completely pre-determined. One can thus work on it and purchase for it to make it conform. There are many body products on the market—not the least of which are physical fitness products and services that promise to help individuals produce their bodies along imaginary lines. In this culture, the physically fit body is one that *fits* the consumerist body image. Making the body fit is the object of production and consumption.

Featherstone says that there is also a logic of continual self-improvement: one can always be thinner, more muscular, more fit, more energetic, more productive, more attractive, more desirable. The fit body signifies one’s discipline and thus commitment to self-improvement. Thus the body’s surface appearance becomes a sign of the “owner’s” inner strength or weakness, moral virtue or laxity: “the prime purpose of the maintenance of the inner body becomes the enhancement of the outer body” (Featherstone 1991, 171). One who is not engaged in constant self-improvement is encouraged to feel guilty—in this way consumption takes advantage of older (Protestant, according to Weber) ascetic sensibilities regarding the importance of work, discipline and self-control in achieving social and economic mobility. In consumer culture, the panacea of the quest for constant self-improvement is constant consumption.

The prevalence of images of youth is an immensely successful enticement in the consumer culture equation of youth=beauty=health, an equation frequently promoted by physical educators. Youth, of course is fleeting and irretrievable, which is precisely why
it is such an excellent lure for consumption. Where continued youth is a cherished yet unreachable goal, the possibilities for consumption are endless. Moreover, with the fitness industry as providers of the physical fitness cure for the ravages of old age, the older the consumer gets, the more they need the industry. Promoting dissatisfaction with the aging process is central to encouraging the consumption of physical fitness products.

Susan Bordo emphasizes that the ascetic imperative to physical fitness, i.e., careful dieting, disciplined exercise, and living a moderate life, contradicts another equally powerful directive of consumer culture: indulge yourself, have fun, live for the present, consume... Consumer culture presents a contradiction that is lived out in individual lives:

an unstable, agonistic construction of personality is produced by the contradictory structure of economic life. On the one hand, as producers of goods and services we must sublimate delay, repress desires for immediate gratification; we must cultivate the work ethic. On the other hand, as consumers we must display a boundless capacity to capitulate to desire and indulge in impulse. We must hunger for constant and immediate satisfaction. The regulation of desire thus becomes an ongoing problem, as we find ourselves continually besieged by temptation, while socially condemned for over indulgence.” (Bordo 1990, 199)

Diet and exercise are central arenas for the expression of these cultural and economic contradictions. And the appearance of the body signifies success in navigating them. Whereas jiggling fat indicates sloth, moral weakness, and chaos, taut musculature signifies industry, moral virtue and disciplined control. “Conditioned to lose control at the mere sight of desirable products, we can master our desires only by creating rigid defenses against them. The slender body codes the tantalizing ideal of a well-managed self in which

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15 Ingham (1985, 47) also makes this point.
all is kept in order despite the contradictions of consumer culture.” (Bordo, 1990, 201). Faced with these contradictions, effective self-management becomes a continual and virtually impossible task (Bordo, 1990, 88), necessitating perpetual self-surveillance and consumption.

Crawford suggests that the consumer culture contradiction of ascetic control and sybaritic self-indulgence exists not so much as agonistic impulses but as a balanced economic imperative that can work itself out with proper time management:

For an economy that normally requires ever greater levels of consumption, a symbolic order based on self-control is ruinous. Rather than delay gratification, the imperative is to indulge... Social institutions are mobilized to produce a personality structure compatible with consumption. Whereas production requires a structuring of time to the industrial clock, consumption must reorganize non-working time into “leisure” and “lifestyle”—a transformation into time available for buying and using an endless array of products. (Crawford 1984, 90)

In the light of the above, lifestyle management can be understood as the management of patterns of consumption that allow one to maximize the consumer life, apportioning the appropriate amounts of time and energy to the consumer activities such as eating, drinking, and exercising, all within the framework of being productive enough to maintain or even increase the modes of consumption.

John Hoberman has also analyzed the exercising body as the bearer of codes in consumer capitalism. He says that in many streams of advertising there is a predominance of the technologically enhanced body of the highly developed athlete, which he calls the “sportive dynamic body.” This indicates, he says, a shifting sense of what we consider the body to be: it is ever more a machine that can be transformed as the “owner” sees fit. He
says that there is a postmodern aspect (in the Baudrillardian sense of the “procession of simulacra” in mass consumer culture) to this as well:

The crucial postmodern context in this regard is the mass commercialization of self-transforming techniques rooted in athletic ideals of fitness and performance and the saturation of the mass market by the ideal of the scientifically conditioned body. This ideal reproduces the experience of the elite athlete under controlled conditions within the private sphere of the consumer... The innumerable automated exercise machines on the market offer, by contrast, an essentially stress-free affiliation with the ethos of high performance and its attendant risks. (Hoberman 1994, 207)

In this paper, Hoberman begins to extend his earlier critique (Hoberman 1992) of high performance sport as a hyper technologized sphere, a gigantic biological experiment being carried out by the exercise sciences on the bodies of athletes, transforming them into experimental objects, to the everyday world of the mass market. The implication is that advertising gives evidence of the dehumanizing tendencies of the world of high performance sport being transplanted into the everyday world of “ordinary” people. The technologically enhanced body (very, very muscular and cut — i.e., having very little fat so that the contours of the muscular is visible, a “sculpted body”) signifies an aesthetic ideology of limitless productivity and efficiency, a “new aesthetic of power” (Hoberman 1992, 208). To be beautiful, bodies should be like beautiful machines—here is the beauty of productivity. For Hoberman (1992, 1994) the ideology of the body-as-machine is problematic because it is dehumanizing, reducing people to mere objects in a scientific experiment of mechanistic productivity.

Featherstone is also critical of the body-as-machine metaphor, saying that the body becomes like any other object one owns (1991, 182). Just as the car needs maintenance so does the body. To maintain the machine-body properly requires constant
surveillance (such as physical fitness testing) and expenditures of time and money on it. This involves the development of instrumental attitudes towards the body—the body is not valued in and of itself but as an object that serves a purpose. Hence, people do not engage in physical activity for the intrinsic pleasure of movement, but as an instrumental strategy in the management of the body as one among a number of objects one might own (Featherstone 1991, 185).

Featherstone says that another deleterious effect of the body’s treatment in consumer culture is that the consumer ethos of dissatisfaction inspiring consumption is that it makes it very difficult for people to be comfortable with their bodies and who they are as bodily beings: the body is experienced primarily in terms of lack. And the consumer preoccupation with youth, and rejection of decay with age results in an inability to deal with degeneration and death. “The secularization [and consumerization] of the body has resulted in the eclipse of the traditional religious purpose of the body in which it was regarded as a transitory vehicle, a means to higher spiritual ends. Today, pain, suffering and death are seen as unwelcome intrusions in the midst of a happy life and the consumer culture imagery has decreed that life can and should be everlastingly happy.” (Featherstone 1991, 186). And finally, consumer culture’s treatment of the body is ultimately disappointing: it cannot deliver on its promise of everlasting youth, beauty and health, and “in a time of diminished economic growth, permanent inflation, and shortages of raw materials the contradictions within the consumer culture values become more blatant, not only for those who are excluded—the old, unemployed, low paid—but also for those who
participate most actively and experience more directly the gap between the promise of the imagery and the exigencies of everyday life.” (Featherstone 1991, 193)

2.3.3 IDEOLOGY OF GENDER

Gender has been an important axis in the critical literature on FBPE. Broadly speaking, aspects of FBPE have been criticized as a cultural practice for the production of gender difference. These practices have contributed to the polarization and hierarchialization of the genders (Balsamo 1994; Bartky 1988; Bolin 1992a; Bolin 1992c; Bordo 1993b; Cole 1991; Cole 1993; Cole 1994b; Holmlund 1994; Kidd 1987; Martin 1989; Messner 1992; Messner and Sabo 1994; Pronger 1990a; Whitson 1990; Whitson 1994; Wolf 1990), the marginalization of people who do not fit those polar distinctions or challenge the hierarchies (Cahn 1994a; Lenskyj 1986; Lenskyj 1990; Lenskyj 1992a; Lenskyj 1995; Pronger 1990a; Pronger 1990c), the production of gendered power by physical strength or weakness which works to “naturalize” power difference (MacKinnon, 1987; Standing Committee on Health and Welfare, 1991; Pronger, 1990; Whitson, 1994), and a virtual epidemic of exercise and eating disorders under the tyranny of changing images of the ideally fit body (Bordo 1993b; Lenskyj 1993).

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16 The critical literature on gender and FBPE is extensive and nuanced. Because gender will be a minor analytical line for this thesis, a complete review of that literature is beyond the scope of this thesis. The following is an overview of major critical themes.
Lenskyj (1986) points out that in Eurocentric cultures in the nineteenth and early twentieth centuries girls and women were excluded from recreational participation in physical activity for purposes of fitness and recreation. Working class and rural women, interestingly enough, were not excluded from engaging in heavy labour. Boys and men, on the other hand were encouraged to engage in strenuous physical activities for recreation, fitness and “character building,” which meant the building of a distinctively masculine, which is to say not feminine, character (Kidd 1987). The different treatment of males and females was justified by the patriarchal ideology of medical science (see discussion of feminist critique of science below.) While in some respects differences in opportunity for girls and boys, women and men have changed—it is no longer scandalous for women to engage in traditionally “masculine” physical activities, such as hockey, rugby, and body building—gender still plays an important role in the ways that people learn to be physically “fit,” indeed to shape the body according to the cultural shape of gender. The literature on gender and FBPE unanimously suggests that differences in styles of physical fitness support a wider sociocultural system of empowering males and disempowering females -- such unanimity is rare in the critical literature. Males are encouraged to move their bodies in ways that are assertive and take up space; females are encouraged to move their bodies diffidently and diminutively (Bordo 1993b; Connell 1987; Connell 1990; Whitson 1990; Whitson 1994). Such embodiment serves a socio-cultural system that empowers males to be in control and females to submit, or defer to that control (Connell 1987; MacKinnon 1982; Pronger 1990a). These gendered embodiments are not only ideological; they are productive in that they constitute actual practices in physical
education, practices which contribute to the vulnerability of women and less "masculine" men to violence (Standing Committee on Health and Welfare, 1991). Physical education that teaches these gendered forms of embodiment teaches males and females to physically fit the order of gender power, physically. Females are not expected to exert themselves as forcefully as males, and consequently their physical strength tends to be less than that of males. It has been argued that in a society where males and females had the same expectations and experience of physical activity and training the difference in the physical power of males and females as groups would be negligible, and as individuals there would be considerable overlap (Dyer 1982).

The literature which is critical of FBPE along the lines of gender unanimously maintain that gender differences are produced not only between the sexes, but also within them. Masculinity and femininity are not simple polar opposites (Bolin 1992a; Bolin 1992b; Bolin 1992c; Cole 1994a; Connell 1982; Connell 1987; Lenskyj 1990; Lenskyj 1994b; Lenskyj 1995; Markula 1995; Messner 1992; Messner and Sabo 1990; Messner and Sabo 1994; Pronger 1990a; Pronger 1990c; Whitson 1990). Women who take power and move their bodies in more assertive ways are considered not as feminine as their more passive female counterparts and considered less socially acceptable in social circles that prize the maintenance of strict differences between males and females. Their powerful embodiment can be threatening to patriarchal power and the veracity of the gender order. Such women are often marginalized as deviant, "butch" women, who pose the same threat to patriarchal power as do lesbians (Cahn 1994a; Lenskyj 1986; Lenskyj 1992a; Lenskyj 1994b; Nelson 1994). Women body builders, because of their obvious musculature can
pose a particular threat, and often go to great pains to modify their "masculine/lesbian" muscular appearance by codifying their bodies with more traditional "feminine/heterosexual" signifiers, such as extensive makeup, long teased hair, and hyper feminine clothes. FBPE that does not challenge these homophobic, heterosexist, sexist tendencies reinforces such negative attitudes to the body and gender.

Similarly, there are gender differences among males. Some writers (Connell 1987; Connell 1990; Messner 1992; Messner and Sabo 1990; Messner and Sabo 1994; Whitson 1990; Whitson 1994), taking up Gramsci's concept of hegemony have suggested that there are different kinds of masculinity, some more dominant than others, and thus more acceptable (e.g. heterosexual, aggressive) while others are subordinate (homosexual, passive). Traditional masculine ways of engaging in physical activities that give expression to heterosexual aggressive body comportments (e.g. contact sports) are dominant in physical education programmes, thus reproducing hegemonic masculinity. Subordinate masculinities are seen as less acceptable (figure skating) for the production of masculinity. Alternatively, I have argued (Pronger 1990a) that the different styles of physical activity for men is not so much a matter of competing masculinities (itself a masculinist understanding of gender) as much as it is modes of expression within gendered discourse of different men's differing affection for patriarchal power. The more a man wants to embrace patriarchy, the more he is inclined to heterosexuality, and domineering forms of physical activity.

While women have seemingly empowered themselves by becoming increasingly involved in physical activities, especially in the area of "aerobics", there is debate as to
whether this actually is empowering (Bartky 1988; Bordo 1993b; Cole 1993; Lloyd 1996; MacNeill 1994; Markula 1995; Martin 1989; Wolf 1990). Frequently women engage in physical activity in order to produce their bodies along gender-specific lines—lines which have historically changed from soft voluptuousness to hard, skininess. The parameters for what constitutes acceptable feminine bodies are also more narrow than those which constitute acceptable masculine bodies (Arveda 1991; Bordo 1993b; Cole 1993). This not only reinforces negative aspects of the gender order but has led to women’s often unhealthy preoccupation with their bodies, preoccupations that lead to compulsive, and sometimes deadly, exercise and eating disorders (Bordo 1993b; Lenskyj 1993). Markula (1995), following Bakhtin’s work on the polyvocal nature of discourse in literature (1981), says that while there are domineering sexist discourses at work in the culture of aerobics, many aerobicizing women do not passively accept those discourses, but actively challenge them and find other satisfactions in aerobics, such as: a safe environment for being physically active, increased energy to carry on their work, an opportunity to meet and make friends, and a chance to spend time on themselves, all of which challenge dominant, sexist ways of organizing women’s lives.

2.4 SOCIAL DISCIPLINE

FBPE has been analyzed as a “technology” of social discipline (Bordo 1993b; Colquhoun 1990; Harvey 1986; Harvey and Sparks 1991; Kirk 1994; Kirk and Spiller 1994). This analysis emanates from the work of Michel Foucault, who is pivotal to recent
histories of the body in modernity (Foucault 1975; Foucault 1979; Foucault 1980a; Foucault 1980b; Foucault 1983b; Foucault 1985).

Jean Harvey and Robert Sparks (1991) point out that it is popularly believed that modern industrialization has led to a sedentary, almost disembodied way of life for the vast majority of people which has led to a virtual negation of the body. In response to that it is thought that the body has been "...rediscovered and incorporated into the social agenda of the welfare state. Health and wellness professionals are seen to be working to help correct some of these excesses and injustices of industrial production (Harvey 1983; Sparks 1990)" (Harvey and Sparks 1991, 165). Students of Foucault (especially Harvey, Sparks, and Kirk), however, have argued that the body has not been negated or repressed in modernity, but has been the centerpiece of social organization, indeed has been produced as a particular kind of political body. In this framework, the services of health and wellness professionals, rather than rediscovering and restoring the body, have been instrumental in harnessing its energies in the production of social control. "Under the cover of liberating the population from the dysfunctions generated by industrial society these services often institute a new standardization and establish new powers over the body." (Harvey 1986, 56)

In a number of papers Linda Bain has discussed hidden curricula in physical education (1975; 1976; 1985; 1989; 1990). While Bain does not engage postmodern or poststructuralist perspectives (such as Foucault's—who preferred to distance himself from the latter two of these labels) on the ways the body is oppressed in modernity, her liberal, feminist and humanist perspective on "technocratic ideology. (1990, 28-31) is useful
mentioning at this point. This is a criticism of the role physical education can take in a technocratic society which views people ideologically as "human resources," which are educated to maximize their economic efficiency. Where efficiency in an economic system is the highest goal "the political, moral, ethical and aesthetic value of the goals and of the educational process remain unexamined. For this reason techocentric education tends to reproduce rather than challenge existing social arrangements."(Bain 1990, 29). The exercise and fitness areas of physical education are most directly affected by technocentricity. Through a scientifically informed techocentric view, health is seen by scientifically trained physical educators as physical fitness which can be measured by physical fitness tests. This orientation effectively hides the moral and ethical implications of such technologizing of the body, says Bain. "Because issues of health and fitness have been viewed as technological concerns and not value question, the arena has been dominated by experts in physiology, measurement and psychology"(Bain 1990, 31).17

Work inspired by Foucault takes a more explicitly political perspective on power, knowledge, technology and the body than does Bain. Foucault says that power goes to work through the body -- which he calls the biopower (1980a, 140) -- both individually

17 I will explore the issue of the technological resourcing of the body through physical fitness in depth (specifically by reference to Heidegger, Foucault and Deleuze and Guattari) in the later chapters of this thesis. Bain mentions this as an issue but devotes two scant pages to it and without referring to postmodern or Continental perspectives on science, technology and the body.
and as a population. Power is exercised in individual bodies through a discourse which produces the body-as-a-machine — he calls the "anatomo-politics of the human body" (1980a, 139). Power is exercised through populations epidemiologically, through regulatory controls — he calls this the "bio-politics of the population" (1980a, 139).

Strategic to these discourses has been the development of specialized knowledges that aid in the body’s subjection to discourse — this is the relationship between power and knowledge which is the power that knowledge has to produce reality. The exercise sciences which form the basis of modern FBPE are one branch of this socially discursive power/knowledge. Health and wellness professionals who use this knowledge are thus not rescuing the body from its negation in modernity, but are instrumental in its political subjection. FBPE aids in the production of the body as a machine. FBPE can thus be understood as a “tactic” (Foucault, 1978, 95) for the control of the modern body. It is a disciplinary tactic in so far as it is a means for training and coercing bodies to fit the larger machinery of economic production. Viewed as a machine, the body is rendered ever more efficient and ever more productive through FBPE management of diet and exercise.

Colquhoun points out that pleasure is controlled under the FBPE imperative for individuals to take “responsibility” for their personal health and exercise “restraint” (Colquhoun 1990). In this conception of the body and health, health is

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18 See my discussion of this in the next chapter re. a theory of scientific knowledge.

19 I will situate Foucault in the histories and sociologies of the body and deal with his work more systematically in the next chapter in the theory of the body.
understood as the product of a properly “managed” life in which pleasure is kept in check.  

Crucial to this modern political investment in the body is the historical development of the individualized and objectified self. Drawing on the work of Anthony Giddens (1990), Marshall McLuhan (1962) and E.P. Thompson (1967) David Kirk, in an essay that gives critical substance to the popular “myth” of physical education as an oppressive phenomenon, develops this point in relationship to FBPE most eloquently. The individualized and objectified body/self is the product of a process that Giddens has called “disembedding”: a "lifting out of social relations from the local contexts of interaction and their restructuring across indefinite spans of space-times."(1990, 21). Disembedding serves the interests of industrial capitalism: a modern worker is not considered to be embedded in the social, spatial and historical context of his/her place or home, but is completely mobile and can be a worker anywhere, anytime, and under a wide variety of conditions.  

The growth of literacy aided the historical process of disembedding. 

McLuhan (1962) has argued that, as typography gradually spread in uneven fashion across Western Europe in the centuries following the invention of the printing press, it began to exert a profound influence on the ways in which people thought of themselves and their relations to others. For one thing, the increasing dominance of print media led to an alteration of what McLuhan refers to as the ‘ratio among our senses’ (24), where the eye becomes the dominant information gathering organ. 

See discussions of healthism, control and release, above. 

While Kirk’s empirical focus is on physical education in Australian schools, his analysis is more broadly applicable to adult forms of physical education.
Moreover reading begins to become a private act in which orality is muted, in contrast to the Middle Ages when reading was necessarily reading aloud (82). The consequence for McLuhan of the ascendancy of vision over the other senses is another form of human consciousness in which people, no longer immersed in the intertextuality of the senses and independent rather than interdependent, are able to conceive of themselves as objects and individuals (Kirk and Spiller 1994, 86).

Disembedding is also the product of the ascendancy of linear, “clock” time in industrialism. E.P. Thompson says that in premodern agricultural work, time was experienced as cyclical, embedded in the coming and going of the seasons. Where one was in the cycle determined the nature of one’s work. In the industrial setting, the seasons had much less impact: “artificial’ environments such as factories made it possible to carry on the same kind of work regardless of the season. Time and place lost their intimacy. Thompson says that time became more a commodity, something which was not “passed”, but “spent.” Similarly, time is mobile, useful anywhere, for sale.22

Under the above modernizing forces, the body became a commodified object, disembedded from its own time and space and available for the requirements of capital production. Drawing on Foucault, Kirk argues that the disembedded body, freed of its own time and place is then subjected to the time and space of disciplinary technology. Knowledge and practice come to bear upon the body such that it is made a useful, productive and docile body in the larger machinery of capitalism. Knowledge of the body was developed that allowed it to perform its assigned tasks ever more efficiently and with ever more docility—Foucault traced the development of this body knowledge in the

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22 Helen Lenskyj has argued that men and women perceive time differently and that

"Mantime" is constructed as the norm. (Lenskyj 1988)
institutions of the military, prisons (Foucault 1979) hospitals (Foucault 1975) and asylums (Foucault 1965). FBPE, Kirk suggests, is a knowledge-based disciplinary practice, at once increasing the power of the body within the system of economic production and simultaneously eroding the body's power to chart its own course, by making it ever more obedient to the system. Foucault makes this point clear: "If economic exploitation separates the force and the product of labour, let us say that disciplinary coercion establishes in the body the constricting link between an increased aptitude and an increased domination." (Foucault 1979, 138) Foucault points out that often elaborate systems of spatial and temporal organization, along with incremental exercises, punctuated by periodic examinations characterize disciplinary technology. Kirk suggests that through disciplinary technology, the disembedded body becomes repositioned, indeed produced as a useful, productive, individualized and objectified body.

The insinuation of political power in the body is tightly coupled with the development of scientific knowledge of body that gives access to it. So I will now turn to that literature that examines the role of scientific knowledge in FBPE.

2.5 The Scientization of Physical Activity, Fitness and Health

A number of scholars have written about the role of science in physical education in general and physical fitness in particular. A complete history of the science of physical fitness has not been written. Berryman (1992) has collected a number of essays on various topics in the history of sport science in the period between 1870 and 1950 and Roberta Park who has published extensively on that period as well (Park 1989a; Park
1989b; Park 1992a; Park 1992b). She has written a review of research and writing on the history of health, fitness, exercise and sport (Park 1994) but there is nothing in that literature on the history of exercise science in the latter twentieth century. While exercise science has flourished in the institutional context of health promotion and lifestyle management no history of the development of that science has been written to date.

Park writes a history of "great doctors," a kind of medical history which is not particularly sensitive to "the profound moral and philosophical questions that medicine has raised and continues to raise" (Porter and Bynum 1993, 3). In two similar articles: "Health, Exercise and the Biomedical Impulse" (1989a) and "Physiologists, Physicians and Physical Educators: Nineteenth-Century Biology and Exercise, Hygienic and Educative" (1992a), Roberta Park describes the early period of scientization in the late nineteenth and early twentieth centuries. While these are not critical treatments of the history of the scientization of physical education—they are simply conventional histories of the influence of a number of leading scientists who advocated making physical training more scientific, and they do not question in any way the nature of scientific knowledge, uncritically accepting the idea that the more scientific knowledge is, the more accurate it is -- they are useful as background for the critique I will undertake later.

Park says that prior to the late nineteenth century, physical education was not based in scientific research. Advocates of physical education came from diverse backgrounds: "health faddists, phrenologists, homeopathic doctors, directors of private gymnasias, hydropathists, women's rights advocates, sanitary reformers, physicians, educators, entrepreneurs, to name only a few" (Park 1989a, 128). Very few were
scientifically trained. But this should not be surprising since at that time knowledge of the body in North America was not yet developed along scientific lines, at least in the sense of being based in experimental research. That kind of scientific knowledge was more advanced in Europe, especially Germany. But the influence of science in North America was increasing. John's Hopkins University (which was modeled after the German research university institute) opened in the 1870s, the Harvard Medical School was reorganized along more experimental scientific lines, and in 1891 Clark University (which focused on scientific psychological studies) was formed. These developments signaled a change in North American establishment attitudes to medicine, and to the health of the body. At the same time, Harvard...produced the America's first comprehensive and scientifically based B.S. program in physical education and one of the most ardent nineteenth-century spokesmen for elevating [sic] the field, the irascible George Wells Fitz (who received the medical degree from Harvard in 1891). Through his editorship of the American Physical Education Review and addresses at various annual meetings, Fitz repeatedly admonished physical educators for failing to establish their field on sound scientific foundations (Park 1989a, 129).

Competition for funds in the context of the rapidly expanding physiology department at Harvard, however, led to the demise of the B.S. programme in physical education in 1899 (Park 1992b). Nevertheless, the stage was set for the science of physical education, and in the following years many programmes in physical education and hygiene were instituted in normal schools and universities. In Canada, the University of Toronto instituted men's and women's diploma programmes in physical education in 1900 and 1901 respectively (this became a coeducational degree programme in 1940, the first degree programme in Canada (MacIntosh 1986, 95)) and McGill University offered a one year diploma course
for women in 1916 and a two-year programme in 1919. From the 1890s on there were many calls from scientifically trained doctors and other advocates of physical education for more scientific study of physical activity and its effects. These calls for the scientization of physical education were endorsed by leading scientific medical journals such as the *Boston Medical and Surgical Journal* (widely recognized by scientists throughout the second half of the nineteenth century as the most respected medical publication) and the *Journal of the American Medical Association* (Park 1989a, 131).

As scientific medicine continued to grow in influence through the late nineteenth and early twentieth centuries, so too there was a proliferation of alternative medical schools, many of which continued to teach medicine "largely or wholly through books, lectures, and observations" (Park 1989a, 133) rather than in the laboratory setting. In

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23 There is not as yet a comprehensive published histories of the early development of scientific physical education in Canada. MacIntosh (1986), Whitson and MacIntosh (1990) and MacIntosh and Whitson (1990) discuss the development of scientific physical education in the 1960s, 70s and 80s, without reference to earlier history, or indeed of histories, philosophies, sociologies or anthropologies of science and medicine in general. Lenskyj discusses how sexist understandings of gender in turn-of-the-century physiology affected women's participation in physical activity (Lenskyj 1986; Lenskyj 1989). Anna Lanthrop has written a history of the transformation of the Margaret Eaton School in Toronto from being a school of human expression to being one of the scientistic training of the body (Lanthrop 1996).
1890 the *Boston Medical and Surgical Journal* editorialized: "The existence of such fraudulent institutions among us has long been known, but only of late has their number, and the wide circulation of their worthless diplomas, been comprehended" (Park 1989a, 133). Concern in the medical sciences about the proliferation of alternative forms of medical education led to the hallmark 1910 "Flexner Report" which led to the reorganization and standardization of medical education and a comprehensive system of certification. After this reorganization, anyone who wanted to practice as a medical doctor had to undergo scientific training. Scientific medicine became standard medicine.24

Physical education underwent a similar process of official scientization. There was a movement in the AAAPE to require scientifically based certification of teachers of physical education. In 1901, the AAAPE called together a committee of nine scientifically trained physicians to study a "rational and efficient curriculum of studies for one intending to teach physical education in the schools, colleges, etc." (Park 1989a, 133) it proposed a standard three year course of study that included 590 hours of scientific study (physics, chemistry, anatomy, physiology, kinesiology, hygiene, anthropometry) and 185 hours in music, history and pedagogy. While few programmes actually attained this high level of scientific study (at least until recently), these proposals indicated the importance that scientifically trained physicians attached to scientific training in physical education. Park says that it was difficult to achieve these goals for two reasons.

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24 For an uncritical history of the appeal of quackery versus established science see: (Mrozek 1987).
Because this was a new thrust in physical education, there were few physical educators sufficiently trained in the science of physical education to teach others the same. Also, the hygienic thrust of physical education was not the only one; sport was rapidly taking a major role in physical education curricula throughout the United States. "Prompted in part by the rapid rise of interest in play as a developmental activity and by efforts to institute programs of ‘educational’ athletics as a countermeasure to the enormously popular semicommercial intercollegiate and interscholastic programs, physical educators turned their attention to organizing sports skills courses, intramural programs, skills courses, intramural programs and so on." (Park 1989a, 134). In 1907 the Athletic Research Association was formed to ensure that "sports would be agents of social and moral improvement as well as physical development." (Heatherington 1903, as cited in Park 1989, 134)

Sport, of course, turned out not to be immune to scientization. John Hoberman (1992; 1994) has written about the science of performance in sport. The history of the scientization of physical education in respect of physical activity, fitness and health is tied to the history of the scientization of sport. Some of the earliest scientific studies on the effects of physical training on the body were conducted in sports contexts, not in the context of fitness for the general population. For instance, in 1896, Henry Beyer published the results of his three year study of the influence of exercise on the growth of Annapolis cadets who engaged in football and/or gymnastics (Beyer 1896a; Beyer 1896b). Also in 1896 Alfred Stengel, professor of clinical medicine at the University of Pennsylvania, who had examined athletes competing for positions on various university
teams published “The immediate and remote effects of athletics upon the heart and circulation” in the *American Journal of the Medical Sciences*. And as early as 1897 there was medical interest in the effects which athleticism could have on the general population; see (Duckworth 1897). Concerns over the performance of the Harvard crew in 1899 led to studies by a Dr. Darling on the crew’s cardiac function, metabolism, weight and temperature changes in response to their training; there were also subsequent studies of the football team.

Park argues that in the earlier days of physical education there were two thrusts, hygienic and educative. Most scholarly work in physical education focused on curriculum development, teaching methodologies, exercise forms, and efforts to conduct sports along ‘educative’ lines.” (Park 1989a). In the early period (1890s) of the American Association for the Advancement of Physical Education (AAAPE) both health (hygiene) and personal development (education) were considered major goals of physical education. 25 Hygiene referred to the “health and fitness of the muscular, circulatory, digestive, and excretory systems” (Park 1989a, 127). Education referred to “development, a term that meant how the organism grew, how ‘character’ was formed, and... how the human species had evolved.” (127). Over the years scientific physical education has come to deemphasize the more holistic, educative thrust in favour of hygiene and performance.

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25 It was not until 1933 that a Canadian national organization of physical educators was formed, the Canadian Physical Education Association.
Park's account of the ascendancy of science in physical education at the turn of the century is a useful factual description of the work of promoters of science in physical education. It fails, however, to place these developments in the context of any larger historical socio-cultural trends, such as the rationalization, scientization, or the technologization of life in general in modernity. For Park, the scientization of physical education is an unproblematic and positive development. Exercise science is simply, implicitly accepted as a progressive development, a matter of getting to know the body better.

Interest in the science of physical education had a gendered perspective, a fact which Park (1989a; 1992a) does not explore. Sheila Fletcher has written about the development of physical education for women in England. She describes the interest women had in the Swedish gymnastics of Per Ling and how that evolved into an interest in Movement training, which she says was an outgrowth of modern dance in the 1930s.

Fletcher says that in England physical education for women and girls was founded by women in the 1880s (Madame Bergman-Österberg being a pre-eminent campaigner). Until the 1940s physical education for girls and women in Great Britain remained under the guidance of women in schools and institutions of higher learning for women.
Fletcher argues that for sixty years (1880s to 1940s) a distinct profession for women in physical education existed. But with the development of coeducational physical education programmes the role of women in British physical education diminished and the predominance of men increased. With that came curricular changes that focussed less on the expressive and holistic aspects of physical activity which were characteristic of the women-centered programmes and more on the physiology and biomechanics of functional performance. Fletcher does not offer any account of that science.

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A Canadian parallel could be found in Toronto where the School of Expression was founded in 1901 and became the Margaret Eaton School of Literature and Expression (Lanthrop 1996).

Such female leadership and promotion of physical activity for girls and women was often at odds with the male dominated medical profession, which for many years argued against women’s active participation in physical activity (Lenskyj 1986, 17-34). Fletcher argues that a profession of physical education for women was especially important at that time since professional opportunities for women were quite limited.

While in England the influence of women is now almost negligible, in the United States, physical education still shelters a women’s enclave, which according to Roberta Park its "denizens will go to some lengths to defend." (Fletcher, 156). Bayman also says that the focus on the science of performance emanates from traditionally male approaches to physical education (D.M.Bayman 1986, 84).
Some authors have looked at the ascendancy of the biomedical sciences as a battle for professional space by physical and health education practitioners who developed fields of expert knowledge along scientific, biomedical lines (Bercovitz 1996, for example).

Since the 1960s physical education has increasingly become a scientific enterprise; its traditional recreational and physically expressive attitude to the body has been replaced by a scientific/rational/instrumental approach. As MacIntosh and Whitson (1990) and Demers (1988) point out, the scientization of physical educators is part of an overall professionalization of the world of sport and physical education, a process in which "experts" are created by their initiation into specialized fields of knowledge, to which "amateurs" have limited access. Demers explains this process as follows:

...it is by declaring themselves possessors of an exclusive science and technology and by using science as the foundation for their credibility that professional groups have attempted to build their monopolies. Professionalism can be defined as the pursuit of certain prerogatives granted under the law, notably the exclusive right to perform certain acts. It is a social organization of labour in which the producers of a service have a monopoly, a monopoly that also makes the users of the service dependent on the producers... A large percentage of physical educators, often with university professors leading the way, have set out to acquire professional status (Demers 1988 p. 163).

So science has been imported into a traditionally non-scientific field as part of a process of professionalization. This has had the effect of turning physical activity practices into "a science of the efficiency and rationality of physical movement and functions. In this sense sports science [is], to paraphrase Habermas, an extension of rationality to attain one end, performance, which is characteristic of modern societies." (Demers, 1988, p. 162) A professional physical educator is someone who because of his/her special scientific knowledge is seen to be qualified to direct physical activity, to physically guide the
production of the body to perform in a rational and scientific way, which becomes the point of human life in modernity.

Whitson and MacIntosh (1990) examine the development of this professional knowledge in a Canadian context in the 1960s and 1970s. Canadian departments and faculties of physical education were severing their ties with the disciplines of education which were directed mostly at teacher training (where physical education was/is a subspeciality) and becoming independent entities in the mainstream of Canadian universities. Traditionally, the teachers of university physical education were also coaches, with little advanced academic training. So that independent faculties could succeed as full-fledged members of university communities these faculty members were urged to credentialize themselves at the doctoral level. Those who wanted to do this in the field of physical education were compelled to go to the United States where scientific, biomedical graduate studies were well established by the 1950s (Demers 1988, 164-65; Ingham 1985, 52-53).

MacIntosh and Whitson also point to the increased involvement of the Canadian government in sport, especially in improving sport performances in the international arena (MacIntosh and Whitson 1990). That led to the development of a professional and scientifically based sport system. The government financed research in exercise physiology, biochemistry and sport psychology—and university physical education departments increased the faculty complements, research and pedagogical emphases in line with government interest and financial support for the sport sciences.
Patricia Vertinsky and Helen Lenskyj have given historical feminist accounts of the ways in which exercise science has contributed to the oppression of women. Before turning to those critiques, it may be useful to look briefly at those feminist critiques of science in general which form the critical background for feminist rejections of various elements of scientifically driven physical education. The arguments I will explore here revolve around the notion that science, rather than being a culturally neutral, value-free enterprise, as is traditionally maintained, actually emanates from an androcentric bias. 29 I will suggest that that androcentric bias has excluded women from scientifically based physical education.

To date, the exercise sciences have been a "malestream" enterprise. 30 The bulk of the research has focused on male bodies engaged in traditionally male occupations, such as highly competitive, hierarchical sports that emphasize the ethos of "faster, higher, stronger." Most research on women has been undertaken with the male body and

29 The issue of bias is explored more thoroughly and generally (i.e., beyond the problematic of gender) in the next chapter in the section that deals with a political philosophy of science. The following is a overview of specifically feminist critiques.

30 I take the term "malestream" from Mary O'Brien (O'Brien 1981). The words "exercise sciences" refer to the so-called harder sciences of physiology and biomechanics as well as sport psychology, all of which have undergone little or no feminist analysis. The sociology of sport, however, has come under considerable feminist scrutiny over the last ten years and has developed a considerable stream of feminist scholarship.
traditionally masculine physical activities as the reference point. This has resulted in three important difficulties regarding gender and sexual difference: (i) Research has naturalized the social differences of the gender system, seeming to find physiological bases for what are actually socially created differences, thus emphasizing a difference between men and women which is usually one of showing the athletic “inferiority” of women, an inferiority which is then effectively used to exclude women from traditionally male domains and which, more importantly, has served to keep women from being physically strong and made them, therefore, more vulnerable to male violence (Standing Committee on Health and Welfare, 1991; MacKinnon, 1987). (ii) Using the male body as a “gold” standard, conducting research on males and simply extrapolating to females, this research has often ignored important physical differences between males and females. (iii) It has used a masculine valuation of what is considered legitimate physical activity, i.e. objectified competition, and ignored what could be called contemporary feminine athletic values, such as flexibility, grace, coordination, kinesthesia, and the subjective pleasure of friendly sociability (Lenskyj 1994a).

31 I emphasize the word "contemporary" here to warn against any transhistorical essentialist notion that women have some sort of biologically inherent athletic disposition. Women in modern Western patriarchal society tend toward a greater appreciation of flexibility, grace, coordination, kinesthesia, and the subjective pleasure of friendly sociability; this does not preclude their capacity to value objective, hierarchical competition. Clearly, there are numbers of women who participate in highly competitive athletics.
Some research in the exercise sciences has tried to address male bias. Dyer has been especially influential in showing the inappropriateness of the assumption that males are somehow inherently superior to females athletically (Dyer 1982). He does not, however, call into question the malestream nature of competitive sport itself. Lenskyj points out that there is very little research in the exercise sciences that rejects male physiological standards or that privileges the experiences and priorities of women in sport: “It is almost a universal practice in this literature to compare female anatomy, physiology and performance to standards derived from male subjects” (Lenskyj 1991, 101). There is little evidence of a feminist breed of exercise science. 32

As yet there has been nothing published on a feminist theory of exercise science. This lack is noteworthy, given that there has been considerable theoretical research on the relationship between patriarchy and science in general, as well as consideration of the possibilities of developing feminist sciences (Bleier 1984; Ginzberg 1989; Haraway 1988; Harding 1986; Harding 1989; Hubbard 1989; Hubbard 1990; Keller 1989; Keller 1992; Longino 1989; Rosser 1989).

32 There are some exceptions to this, Prior being foremost among them (Prior 1981; Prior 1987). There are a few articles in Women and Exercise: Physiology and Sports Medicine (Shangold 1988). Most of these articles tend to be about "women's problems," such as amenorrhea among athletes, and perpetuate notions of women's physiology being primarily reproductive physiology.
The world of sport and physical activity has a profound effect on the experience of human embodiment, for both men and women. And as much research has shown, sport is crucially involved in the cultural construction and personal experience of gender, of what it is to be a man or a woman, masculine and feminine (Burstyn 1996; Connell 1982; Connell 1987; Greendorfer 1983; Pronger 1990a; Whitson 1990) The exercise sciences are becoming the predominant academic force in the broad field of physical education (MacIntosh and Whitson 1990, pp. 108ff), informing sport and physical activity practices from elementary to secondary to post secondary education, from recreational sport to international elite competition, from physical fitness and wellness programmes to therapies for the sick. The exercise sciences, therefore, have a profound effect on the way that people live their lives. Yet there has been no consideration of the impact that the feminist theoretical critiques of science might have on the exercise sciences and the interventions which they make in people's lives.

The current wave of feminist critiques of science began in the late 1960s and early 70s with the obvious observation that few women were among the elect who conduct scientific research; science is a male-dominated domain, and until quite recently it was almost exclusively so.\footnote{This is not to say that women at earlier periods were not critical of the scientific picture of women. Rosser (1989) gives a brief account of 19th century feminist critiques of science. I am referring to criticism that emerged out of second wave feminism.} This in turn led to the insight that women's inferior position in
science is part and parcel of their inferior position in society at large. Reflecting on their absence in science, their subjugation in society, feminist critics of science also examined the oppressive way in which orthodox science tended to represent women. Seeing science as a social practice—a view of science which was also being developed in the not unrelated studies of the history, philosophy, sociology and anthropology of science (Pickering 1992a)\(^\text{34}\) — it was possible for feminists to understand the scientific representation of women, not as an objective and transparent reflection of the “natural reality” of females, but as part of a socially embedded practice of producing knowledge that uncritically supports a social system of gendered power relations.

In the light of this critique, it is not surprising that much of the research produced in malestream science attempted to give a biological basis to the “in inferiority” of women. Earlier feminist critiques of science dealt with the flaws in this androcentric world. Cf(Birke 1986; Bleier 1979; Lowe 1978; Rosser 1982) Sue Rosser points out, for instance, that “feminist philosophers and historians of science (Fee 1981; Fee 1982; Haraway 1978; Hein 1981; Keller 1982) have described the specific ways in which the very objectivity said to be characteristic of scientific knowledge and the whole dichotomy between subject and object are, in fact, male ways of relating to the world, which specifically exclude women.”(Rosser 1989, p. 3) Rosser's premise is that women are more inclined to understand reality in terms of engagement than in objectifying distance. Keller (1977) examines the work of Nobel Laureate Barbara McClintock and says that she

\(^{34}\) I argue this point at length in the next chapter.
“shortens the distance between the observer and the object studied and considers the complex interaction between the organism and its environment” (Rosser 1989, 9). Such engagement with the object of study Keller calls a “feeling for the organism.” Because the traditionally male-dominated sciences do not value such “feeling” but prefer objectifying distance, women who “feel” this way are excluded from scientific work.35 Through such exclusion, a particularly androcentric way of feeling and seeing reality is perpetuated in the sciences. The patriarchal exclusionary nature of science may partly explain the diminished role of women in physical education departments that have become predominantly scientific -- systemic barriers to women’s participation, such as sexist discrimination and harassment, must also be kept in mind. The objectifying sciences of physical education leave no room for the more engaged ways in which women have preferred to understand the body in physical education.

Sandra Harding, in her pivotal study The Science Question in Feminism (1986), looks at whether science is inherently biased by an androcentric world view in patriarchal culture. She situates this discussion of bias in the context of arguments about “good” and

35 It could be argued that this analysis of masculine and feminine ways of thought is essentialist, suggesting that there are intrinsic differences between the cognitive strategies of men and women. But Keller makes it clear that she is speaking of sociocultural (indeed linguistic) systems that produce gendered meaning, not some biological essence that make men and women behave differently. Science, she says, is a gendered language (Keller 1992, 15-38).
“bad” science versus “science as usual.” In the former, scientific research with a gender-bias is understood as “bad science;” it has failed the scientific test of objectivity; better research methods, it is thought, will lead to “good science.” In contrast to this, the latter, referring to biased science as “science as usual,” i.e. an essential aspect of science as we know it, Harding says that the paradigms of science are inherently sexist. In support of this, she invokes Kuhn, who says that scientific observations are theory-laden, theories are paradigm-laden, and paradigms are culture-laden. Because sexism permeates our cultural existence, sexism is inherent in our scientific paradigm.

Thus, Harding says:

The social projects of cultures in which scientific inquiry occurs, as well as the ignorance and false beliefs of individual inquirers, appear to be responsible for the selection of scientific problems, for the kinds of hypotheses proposed, for the determination of what is to count as evidence, and for how that evidence is taken to support or disconfirm hypotheses. (Harding 1986, pp 103-4)

Thus, in a sexist society where the production of gender difference and the maintenance of patriarchal power relations are important, and where science has been the creation of men without feminist critique there is scientific research which thematizes difference, overdetermines its importance, and shows feminine inferiority in the context of masculine projects—such as traditional sport.

Harding describes elements of androcentric bias that are now taken for granted in the canon of feminist criticisms of science. Androcentric bias is apparent not only in the content of biological research (e.g. sociobiological “proofs” that women are inherently subordinate to men) but also in the abstract, and therefore seemingly more innocent aspects of that science, which is to say in its models of what constitutes the bases of
“natural order” and appropriate methodological approaches to it. For instance Keller (1992) says that if the “order of nature” is understood as somehow separate to the practices of human life, language and understanding, then there will be a methodological emphasis on the purportedly objectivity-increasing aspects of the physical sciences, focusing on quantitative measures, variable analysis, impersonal and abstract conceptual schemes. These, according to many feminists, are androcentric techniques. It is also thought that the methodological preference in science for delineating hierarchical structures rather than reciprocal interactive relations of complexes is a masculine proclivity which can easily be connected to the view which patriarchal systems of hierarchical power afford men.36 Importantly, because science claims objectivity, it also claims political neutrality. Whereas in actuality, because science (re)produces patriarchal views of nature (and women), and because in our society it enjoys cultural hegemony, science contributes to the vast array of political practices that emanate out of patriarchy.

Biological and social science has been instrumental in the oppression of women, racial, ethnic minorities, and others. The ways in which the sciences have contributed to

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36 R.W. Connell (1987) argues that patriarchy produces power differences not only between men and women but also between men. Different forms of masculinity are hierarchically organized through hegemony processes, a concept which Connell takes from Gramsci. See (Williams 1977; Williams 1980)
oppression of women has been the subject of extensive feminist scholarship. The important ways in which the sciences have contributed to many other forms of social or political oppression is also vastly documented. Cf, for example: (Bleier 1984; Chadwell 1990; Foucault 1965; Foucault 1975; Foucault 1980a; Holmes and Purdy 1992; Tuana 1989; Turner 1992; Weeks 1986)

Traditional science claims to be value free, simply reporting the way the world is, independent of “values” and ensuing politics; it is this freedom from values that guarantees the supposed objectivity and therefore “truthfulness” of science. The feminist critique of science, however, shows that science is not independent, but part of a valuing, political world. By virtue of its essentially cultural nature in a patriarchal, classist, racist and ethnocentric social system, science values white men and their patriarchal interests and devalues women and people of colour and their interests, thus perpetuating patriarchy in these gendered power relations. The feminist critique described thus far shows the way that valuing and politics are intrinsic to science as a socially embedded enterprise.

But science is also extrinsically valuable and political. Science exists within the socio-economic matrix of modern technology, a matrix which allows very few scientists the expensive luxury of idle, ultimately useless, speculation. The sciences, especially those dealing with human beings, but certainly also those dealing with rest of the

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37 For a bibliography of this scholarship see (Chadwell 1990). Lenskyj (Lenskyj 1986; Lenskyj 1991) and Vertinsky (Vertinsky 1991; Vertinsky 1992) have described the ways in which the exercise sciences have been oppressive to women.
environment, exist because they have a valuable capacity to intervene in nature and the practices of human life. Physiology and biomechanics, for example, are not mere matters of passive curiosity, interesting speculations that go no further than the monastic musings of a closed community of scientists. These studies are undertaken precisely because they are supposed to influence the way that human life is lived. They are funded, given research space, in short treated as worthwhile because of their value in changing, aiding, or indeed perpetuating ways of life. In modern technological society, science cannot be divorced from its uses. Indeed, the definition of "good" science should not be its separation from practical affairs but its positive contribution to them. Evelyn Fox Keller says that "far from being 'value-free,' good science is science that effectively facilitates the material realization of particular goals, that does in fact enable us to change the world in particular ways." (Keller 1992, p. 5) This understanding of science foregrounds its effective nature, overtly making its political ramifications a basis for coming to decisions about it.

Given the above feminist critique of the androcentric bias of traditional science, I will now turn to Patricia Vertinsky's criticisms of the sciences of physical education. She offers critical historical accounts of bias in the sciences of physical education within the problematics of age (Vertinsky 1991), gender (Vertinsky 1992), and race (Vertinsky 1995), arguing that ageist, patriarchal and racist paradigms have biased some of the sciences of physical education.

In "Old Age, Gender and Physical Activity: The Biomedicalization of Aging" (1991) Vertinsky argues that at the end of the last century aging was socially constructed
in science as a “diseased, dependent and inactive ‘stage of life’” which has led to the general perception that old age is primarily a biological problem, effectively turning attention away from the socio-cultural forces that make old age the experience it is. Conceptualizing old age in terms of disease, she says, has led to negative attitudes to old age, attitudes which tend to keep people from being physically active and enjoying the healthful benefits of activity. These negative attitudes have contributed to a gerontophobic culture. Modern fear of old age, Vertinsky argues, has its origins in the history of industrialization, which takes the body as a mechanical object that is used within the broader machinery of capitalist production. The body is seen to be a machine that eventually wears out, thus rendered useless. That leads to the need for systems of managing degenerating body/machines: “the emerging view of old age as a distinct and diseased life-stage thus required, not so much personal hygienic sagacity as age-appropriate, medically approved patterns of behaviour.” (Vertinsky 1991, 76)

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38 Her argument shares the basic critique of the medicalization of life that Crawford (1978; 1980) Illich (1976) and others have made: a primary focus on the biological aspects of human existence depoliticize issues of health and illness, treating them as "natural" and outside the realm of political discourse. This has the effect of supporting the politics of the status quo.
medical conceptions of the aging body then come to dominate the kind of life it is expected live, subjecting the lives of the elderly to the rule of science and medicine. 39

In “Exercise, Physical Capability, and the Eternally Wounded Woman in Late Nineteenth-Century North America” (Vertinsky 1992) Vertinsky says that 19th century scientific medicine contributed to the oppression of women by conceptualizing menstruation as a recurring illness for women, an illness that kept them perpetually weak, requiring them to live circumscribed lives: “Increasingly, medico-biological arguments concerning women were generalized to buttress the special position of establishment physicians as arbiters of female physical behavior, hence legitimizing their claim that women had special needs for constant medical guardianship.” (1992,184-5). Concern about women’s activity around their menstrual period also came from vitalist beliefs which held that women have a fixed amount of vital energy that was focused on what was seen to be their primary role in life, reproduction; if women were to waste this energy by engaging in physical activity, their reproductive ability would be diminished. Most feminist historians of women’s sport and physical activity would agree that these medical theories kept (middle class) women inactive, weak, dependent on men and tied to their reproductive function (Lenskyj 1986; Lenskyj 1991; Vertinsky 1992). Both Vertinsky and Lenskyj argue that these oppressive views of women held by the scientific medical

39 Vertinsky’s argument about science and its governenance of bodies follows the critical path set out by Foucault. I develop this political theory of science in the next chapter.
establishment were the product of ideologically driven science, which is to say theories of women that are derived from patriarchal cultural traditions which are buoyed by scientific research that is carried on within a patriarchal paradigm.


Since health, exercise, and sport are domains where the interaction between embodiment and culture is a particularly crucial feature of social practice, it is important to place in historical context the ways in which particular scientific representations, in tandem with racial ideologies, have produced the body as health/diseased, sportive/inactive, strong/weak, capable/incompetent (38).

Beginning with the widely accepted critical notion that race is a socio-cultural construct, i.e., the production of cultural difference through the assignation of cultural meaning to bodily features (Shilling 1993), Vertinsky says that uncritical science has been instrumental in an historical process of naturalizing cultural difference along racist lines. She takes as a case study racist German conceptions of Jews as physically inferior: the racist stereotype of the small, weak, flat-footed Jew cast him (this tended to be a discourse

40 Citing Erikson (1993), arguing that race does not have a biological basis, Vertinsky (39) says that modern genetics shows that there has been so much interbreeding between human populations that it is impossible to conceive of fixed boundaries between races. Moreover, hereditary traits do not follow clear lines and their is greater variation within a "racial" group than between "racial" groups (Jordan, 1968). In his well-known book *The Mismeasure of Man*, Stephen J. Gould documented the racist capacities of science.
about men) as a less than worthwhile citizen, incapable of athletics or combat in the name of the Fatherland.

The emerging ideal German was heroic and tall, regularly presented in postures of action, combat, or struggle with muscles tensed and visible, honed though gymnastic exercises and physical training. He stood at the top of an arbitrary and ascending scale of perfection and was the standard against which Jews and other races were to be measured and found impaired, and hence unworthy of participating fully in many of those political, social, cultural, and especially physical activities that constituted his dominant world (Brooks 1993; Poliakov 1965, 181). As anatomists and physiologists grew increasingly skillful at classifying individuals according to types with sharply differing constitutions and aptitudes, the Jew's body became subject to invidious comparisons with the ideal German male soldier/athlete stereotype. (Vertinsky 1995, 47)

Citing Proctor (1988) Vertinsky says that these racist views became an integral part of dominant medical thinking, "explaining determinants of health and disease and demonstrating that Jewishness must be closely associated with physical disability, mental disease, and hypersexuality (Vertinsky 1995, 49). To be Jewish was to be ill.

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41 For a detailed discussion of representations of the ideal German body under National Socialism see: Alkemeyer, Thomas. 1995. Images and Politics of the Body in the National Socialist Era. Sport Science Review 4 (1):60-90. Also, the tendency to classify people as degenerate, criminal, or morally inferior on the basis of the physical appearance enjoyed a considerable vogue: Kevles (1985) argues that a generation of German social analysts were convinced by the conviction of the Italian criminologist, Cesare Lombroso, that specific types of people could be identified by their physical characteristics.
Vertinsky argues that many Jews themselves were susceptible to these racist stereotypes, and in response advocated physical training to counteract them. They would even try to join the Turnerverein (German gymnastics clubs) which were often overtly anti-Semitic and whose founder, Friederich Ludwig Jahn, had denigrated Jews as one of the “lower races” (Kohn 1960). Vertinsky argues that Jews were trapped in the logic of the weak stereotype, even in their attempts to combat it. Racist scientific conceptions of people oppress them, even as they try to combat such conceptions. Racist science, then, both contributed to the exclusion of Jews from athletics and the military, and also compelled some Jews to pursue athletics and muscularity. In this way, Vertinsky says, science in physical culture can contribute to racist projects.

In a more contemporary setting, Vertinsky points out that racist questions continue to fascinate exercise scientists:

Speculations on the specific racial biology of black athletes in the U.S. persist, for example, as do questions of race and color in so many of the imprint events in American history (Fields 1982). Scientists and social commentators try to explain the supposed handicap of black athletes’ lack of buoyancy in the water, their inability to provide team leadership, their primitive ability to relax under pressure, as well as their natural anatomical “gifts” for swift running and jumping provided by more fast-twitch muscle fibers, longer heel bones, and higher, narrower hips (Vertinsky 1995, 53).

Even while race is a discredited biological category, its social significance still guides the research of some exercise scientists. (Unfortunately, because Vertinsky does not give any published examples of such research, her assertion remains more speculative than substantive.) Paraphrasing Harding (1993), Vertinsky says: “‘Race,’ it is generally agreed, is part of yesterday’s science, yet scientists in such fields as biology, medicine,
public health, and sport science still use anachronistic concepts of race and demand accounts of the biological basis for ‘racial’ distinctions.” (52)

In an earlier piece (1985), Vertinsky criticizes the science of health promotion in physical education. She says that culturally specific, value-laden attitudes about health are promoted under the guise of value-free, objective science of health:

Perceptions of health abound, and no generally agreed-upon meaning or physiological referent can be justly claimed by health promoters. It could be that our understanding of health is increasingly being disproportionately shaped by the findings of medical science and the application of new medical technology. However, it is well understood that age, culture, ethnic origin, educational background, family, place of abode, and type of work all play an important part in determining one’s level of wellness (Davis and Rall 1981). In a multicultural, multiethnic society, where uniform social standards are absent, any attempt to increase the compatibility between social health and individual health is fraught with philosophical and practical dangers. (Vertinsky 1985, 74)

Vertinsky’s cost/benefit analysis of scientifically based health promotion takes a skeptical view of the benefits of physical exercise, arguing that the supposed benefits are insubstantial and virtually impossible for individuals to measure. “How many people, after all, will mortgage their body to the fitness club for a future illusory product with insubstantial guarantees? How can you measure and demonstrate that which you claim was prevented, but which never happened?” (Vertinsky 1985, 79). She suggests that the risks of injury stemming from intense physical activity diminish the possible benefits.

Moreover, the emotional costs of worrying about one’s health and appearance, and the awkward overhaul of one’s life in order to participate fully in physical fitness programmes can also overwhelm the possible benefits to physical health. More than most critics of the science of physical education, Vertinsky embarks on critiques of the cultural biases of the
sciences, examining the social discourses at work in them, scrutinizing the effects which scientized physical education may have on people.

So, out of feminist critiques of paradigmatic biases in scientific research there have been critiques of ageist, sexist, racist and ethnocentric biases in the exercise sciences. Others have criticized the scientization of physical education for the way it aids the establishment of professional hegemonies (Beamish 1982; Harvey 1986; MacIntosh and Whitson 1990; McKay, Gore, and Kirk 1990; Whitson and MacIntosh 1990), its rationalization and mechanization of the body (Harvey 1986; McKay, Gore, and Kirk 1990), as well for its technocentric (Bain 1990), or technocratic (McKay, Gore, and Kirk 1990) ideology.

McKay, Gore and Kirk (1990) also write about the problems of technocentric physical education, which they call technocratic, thus invoking a sense not of technocentredness (as a critique of ideas of the body and physical activity), but more robustly, of techno-government (as a critique of governmental regimes operative in the body through physical activity). Their argument concerns research priorities and curriculum in

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42 This is consistent with Kirk's other work on the oppressiveness of physical education as an exercise in public discipline (Kirk 1994; Kirk and Spiller 1994; Kirk and Tinning 1994), see above. However, while McKay, Gore and Kirk do not actually explain what they mean by technocratic and do not discuss Foucauldian concepts of body/government/knowledge, there is an interesting background to this article. The three authors explain that they were once employed by the University of Queensland's
Department of Human Movement Studies, the majority of whose members voted in 1988 to: move from the Faculty of Education to the Faculty of Science, to emphasize applied sport science and exercise management, and to "marginalize" studies in the humanities (especially sociology). The authors were compelled to move to other institutions or departments. This article—as are all the socio-cultural critiques of science-based physical education under review here—is written in the context of science-based physical education as a recently established hegemony in the area of physical education, i.e., the last two decades. Perhaps the majority of departments of physical education in North America (and Australia) are now dominated by the natural sciences, offering more courses in the biological sciences than in the humanities and social sciences (McKay, 1990, 58). Most of these critiques are concerned that careful attention to ethical, political issues has been marginalized by a narrow focus on technical performance: that marginalization of ideas mirrors the lived experience of many socio-cultural academics in their institutions.
expert knowledge. Moreover, "by appealing to the purportedly neutral and benevolent aspects of professional knowledge, professionals have gradually translated questions about moral and political ends into issues of technical, administrative and managerial means" (McKay, Gore, and Kirk 1990). Joining Vertinsky (see above) other critics of science in general, McKay, Gore and Kirk say that the objectivity claimed by science is in fact ideological. They also say that technocratic physical education is problematic for its instrumental rationality; the goal of this education is "...to make things, including humans, more efficient, productive, accountable, rational and cost effective. What is left out of this technocratic equation are questions about human goals and interests. Irrespective of how technically competent teachers can be made, technocratic education does not and cannot confront the political and moral questions and conflicts in which education is inextricably involved." (McKay, Gore, and Kirk 1990, 57). The technical focus of technocratic physical education is too narrow to adequately account for the complexities of human health and embodiment; physical education, they say, needs to account for its social and political contexts and imperatives. While McKay, Gore and Kirk have identified the social, political and moral shortcomings of technocratic physical education, they have not explained its predominance: why has technocracy become dominant in physical education? Materialist analyses have attempted to account for the domination of the sciences in technocentric physical education. (Demers 1988; Harvey 1986; MacIntosh and Whitson 1990; Whitson and MacIntosh 1990). To them I shall now turn.

Whitson and MacIntosh (1990) and MacIntosh and Whitson (1990), Harvey (1986), Sparks (1990), and Demers (1988), offer materialist explanations for the
dominance of the science of FBPE. They say that a new profession of physical education has developed from the 1960s on. In order to establish itself as a profession and thus stake a claim for the money that people and Governments are willing to spend on health care, the physical education profession needed to claim a special, expert realm of knowledge and technical expertise. It did this with the legitimizing power of the biomedical sciences as the foundation of its knowledge, by marginalizing non-scientific forms of knowledge, by mirroring the widely accepted diagnostic and prescriptive practices of medicine, and attempting to develop a similar social dependence on its professional expertise around the production of health as doctors have claimed for the cure of disease.

Whitson and MacIntosh (1990) tie the scientization of physical education in Canada to changes in university physical education departments as well as to changes in the government's policy focus for sport. Canadian departments and faculties of physical education were severing their ties with the disciplines of education which were directed mostly at teacher training (where physical education was/is a subspeciality) and becoming independent entities in the mainstream of Canadian universities. Also during this time most Canadian universities were insisting that their faculty have doctoral degrees. Traditionally, the teachers of university physical education were also coaches of varsity sports teams, with little advanced academic training. So that independent faculties could succeed as full-fledged members of university communities these faculty members were urged to credentialize themselves at the doctoral level. Many decided to go to the United States
where scientific, biomedical graduate studies of “human movement” was well established by the 1950s.

In the 1970s the Canadian government was determined to improve sport performances in the international arena. An important part of the strategy was to increase the “professionalism” of the Canadian sport system by increasing the levels of scientific knowledge of human movement. Canada’s Fitness and Amateur Sport financed Canadians who wanted to pursue graduate sport studies in the United States. University physical educators trained in the American “sport science” were keen about these developments and were “early proponents of the growth of the Canadian ‘sport system,’ and they continue to be” (Whitson, 1990, 42). In tandem with the physiological scientization of sport came the administrative professionalization of the sport system, say Whitson and MacIntosh. “Sport management” was born. The idea was to run sport, and ipso facto, the bodies of athletes as successful enterprises modelled on the business world for the production of national prestige in athletics. The scientization of high performance sport is germane to the current review of the literature on the scientization of FBPE in that the growing influence of exercise science aimed at high performance in university physical education departments also affected the nature of teaching and research on

43 See Kidd (1988) and MacIntosh and Whitson (1990) for historical accounts of these government initiatives.

44 Hoberman (1992) has documented the international scientization of high performance sport at length.
physical fitness for the general population. While Whitson and MacIntosh (1990) and MacIntosh and Whitson (1990), Harvey (1986), Sparks (1990), and Demers (1988), have all assumed a connection between sport sciences and the population sciences of physical fitness, no-one has actually studied in any detail the relationship between exercise science for high performance sport and exercise science for the general population.

The scientization of physical fitness in Canada, then, took place in the context of changing scientific education of university educators, the scientization of high performance sport and professional sport management. In the 1970s a new profession of scientific physical education, both for sport and general population fitness developed. Harvey, Sparks, Demers, Whitson and MacIntosh and MacIntosh and Whitson all argue that essential to the creation of this new profession, was the creation of a field of expert knowledge which would be the profession’s stock in trade. In this sense the “profession” of physical education is no different to other professions (Bender 1984; Freidson 1984; Larson 1984), such as medicine (Illich 1976), social work (Biklen 1983), accounting (Richardson 1988) and others.

Another aspect of the development of professional specialties, is that it is a competitive phenomenon, that requires the aspiring profession to assert itself and claim a territory as its own thus forming a monopoly (Demers, 1988, 163). So for instance, physical educators who align themselves primarily with the health care professions attempt to carve out a unique space in health promotion (as opposed to palliative treatment—the domain of medical doctors, nurses, physiotherapists, psychotherapists and so on). Here they claim an area of expertise in the realm of lifestyle management, especially as it
implies physical exercise. Specialized scientific knowledge is created in university professional physical education faculties and imparted to students as their own professional commodity that they can then sell in the health and fitness marketplace.

Harvey points out that the development of these realms of professional knowledge in physical education can take place under the auspices of governments, thus ensuring their credibility with the population at large as well as aiding in the institution of government policies for physical activity in the population. Government endorsement of the Canadian Standardized Test of Fitness (CSTF) and the Canadian Society for Exercise Physiology (CSEP) is a national case in point—this has not yet been pointed out in the literature. Drawing attention to the relationship between science and government policy, Sparks (1985) says that the seeming objectivity of positivist science that supports government initiatives such as “Participation” offers credibility to the governments’ desire to make the population more physically active. Harvey and Proulx (1988) give the example that in the 1960s many groups of educated “quasi-professionals” were able to make special professional spaces for themselves in context of the “new Quebec” by serving on government commissions such as the Belisle Commission. Thus empowered by the government, these physical educators were able to define the people’s needs regarding physical fitness and offer the professional service to meet their (self-serving) professionally defined needs.

Harvey (1986) says that the emerging profession of physical education established its legitimacy by “placing their discourse under the sign of science.” (56) Demers (1988) says: “...in societies where everything scientific has considerable prestige, the dominant
model of science becomes attractive to those who seek power, because science can impart great legitimacy to their precepts. In physical education, science has become the ultimate arbiter of the value of modes of physical activity and knowledge about it—through political struggles between epistemic paradigms such as that experienced by McKay, Gore and Kirk (see footnote, above). This has effectively marginalized other knowledge that is not (biomedically) scientifically based and physical activities that are not scientifically endorsed as beneficial: “While alternative practices (gestalts, anti-gymnastics, etc.) are condemned for their lack of effect on the performance of the human machine, popular practices are described either as inappropriate or not being scientifically oriented.” (Harvey, 1986, 56). McKay, Gore and Kirk agree, saying: “...one strategy that has increasingly been used to enhance the academic credibility and security of physical education has been to emulate empirical-analytical [positivist] science and de-emphasize hermeneutic and critical sciences.” (1990, 53)

Aping the diagnostic and prescriptive practices of medicine, the physical education profession has developed scientific tools for measuring physical fitness as well as a host of scientifically justified physical activity practices that are supposed to improve the fitness parameters identified in the diagnostics. Describing a professional physical education format used in the Province of Quebec, known as “Kino-Quebec”, Harvey explains:

The strategy of induction for these prescriptions consists first of all in bringing out the measured value of the different activities. It was from this point of view that a calculation wheel was developed which shows the expenditures of energy incurred by these different activities. [This was a little calculator that could be given to anybody.] The population would henceforth be able to see for itself, with figures to back it up, which activities should be performed. (1986, 62)
Harvey points out that physical fitness diagnosis and exercise prescription are rationalizations of bodily practices:

The individual need requires a precise and quantified prescription. Using the biological assessment which measure the different parameters of physical value, a prescription is established according to a determined quantity of bodily activity. The different rates of energy expenditure identified on the calculation wheel serve as a basis for the individual prescription. For each level of physical fitness to be attained, there is a corresponding rate of physical activity to be carried out. These activities, recorded in training log books, are sanctioned with the aid of physical fitness certificates which are awarded by the coordinators... (62)

Science-based, professional physical education became a technical, management-oriented profession, in which physical educators are expected to have technical and managerial skills that they can sell in the physical fitness marketplace—although none of the literature mentions precisely what these skills might be, these would no doubt be those skills that come with accreditation in physical fitness testing, personal training, coaching, swimming instruction, fitness leadership (i.e. leading aerobics classes) etc. The result, Demers (1988), Harvey (1986), Whitson and MacIntosh (1990), MacIntosh and Whitson (1990), and Ingham (1985) argue has been that this technical education in kinesiology has led to a “de-emphasis on the liberal arts subjects that might encourage analysis and questioning of the social relations within which professional skills are applied. It is in just this way that the kinesiological sciences produce managers and researchers and coaches who know a lot about ‘organizational needs’ and as Ingham puts it ‘the biological and psychodynamic individual,’ but very little about the socioeconomic and political structures that are the social context of their work (Ingham, 1985, 51)” (Whitson and MacIntosh, 1990, 46).

The effects of the scientization of physical education are that both the professionals and their clients are not encouraged to consider the socio-political context of their health and
well-being (MacIntosh and Whitson, 1990; Whitson and MacIntosh, 1990, Ingham, 1985; Demers, 1988) and instead focus on a narrow, rational and technical understanding of their bodies. Harvey, drawing on the insights of Habermas and others of the Frankfurt School who maintain that the technical rationality of modernity, rather than bringing liberation to human life, bring new forms of domination, concludes his article, “The Rationalization of Bodily Practices”:

By emphasizing a rational look towards the best means for a specific end, the “rendement” (output) of the body, these sciences do not work at liberating the body from its determinations but tend to subjugate it to new norms, those of the science of physical activity. The rational scientific bodily practices are not aimed at experiencing, joyness [sic] self-development, or leisurely pursuits, but to a specific end, that is to say the optional functioning of the body seen as a human machine. (1986, 63)

Demers (1988) says that the technical orientation of scientific physical education places more emphasis on the development of movement technique than on the development of the individual—the person is treated as nothing more than a machine (166). He says that the result is that people are made subservient: “The term ‘conditioning’ itself suggests a certain orientation in the approach of physical educators.... Does not ‘to condition’ mean, among other things, to make someone behave in a certain way?” (Demers, 1988, 168)

McKay, Gore and Kirk also comment on the problems of science-based physical education treating the body as a machine:

The body is seldom portrayed as a pleasurable site for ecstatic, aesthetic, vertiginous, autotelic, sensuous, and holistic experiences. It is depicted as a mechanical object that must be managed, maintained, conditioned, tuned, and repaired for instrumental reasons such as improving linear performance or increasing one’s physical attractiveness... Collectively, these body probers (sport scientists) and body managers (technocentric physical educators) have produced knowledge about the body, sport, and physical education, recreation, performance, and health for their students that personifies what Manning and Fabrega (1973) call impersonal medicine. (McKay, Gore, and Kirk 1990, 60)
In contrast to the professional scientific, subjugating model of physical education, Demers proposes practices and forms of knowledge that give autonomy to individuals and groups:

...rather than being merely scholastic and ‘biological’ physical education would be an integrated social approach to the overall development of the individual and of the community. Instead of concentrating on means (such as improvement of skills in sport and physical conditioning) and biophysical results, which are quantifiable and therefore easily measurable, it would branch out to include broader objectives such as education, health, and ecology. Then, physical education could be defined as the whole educational process that teaches each individual to take charge of all matters connected with his or her body and health. (1988, 171)

Demers ends by saying that professionalism would no longer be the organizing principle of physical education. An emancipatory school of physical education would not train professionals “to perform rational, instrumental work on the body, but rather [train] a new breed of social organizers concerned with the cultural emancipation of the body” (1988, 172)

Kirk and others have suggested that an alternative to professional, science-based physical education is “critical physical education”. This would be a practice that asks political and ethical questions about technical physical activity practices; the ways in which they might contribute to patriarchal, militaristic, racist, or classist political agendas. “Experts” in physical education in this context would be less technicians and more critical intellectuals, capable of encouraging reflection on the ways that the body is part of the social cultural web of human existence and the ways that physical activity practices can contribute to an emancipated life. (McKay, Gore, and Kirk 1990, 65)

2.6 Conclusion
From the above review it can be seen that a number of authors have criticized FBPE for its possible oppressive role. Some have argued that it serves state interests rather than the collective interests of citizens. Others have suggested that it is instrumental in the dissemination of ideologies of class, gender and consumption. There have also been critiques of FBPE as a form of disciplinary control of the population. And there has been considerable interest in the scientization of physical education.

Two pivotal areas have not been fully explored in the literature: (i) a theoretically informed analysis of the nature of the science of FBPE and (ii) a thorough conceptualization of the body that is scientized, educated or trained by that scientific gaze. There is a sophisticated literature on the theory of science, from the philosophy, history, anthropology and sociology of science that is not addressed in the literature on FBPE. Those authors who have appealed to Foucault’s theoretical frameworks have made mention of his philosophy and history of scientific knowledge, but only in passing and they do not delve with any depth into his analysis of the intimate connection between power and knowledge (Harvey 1986; Harvey, Beamish, and Defrance 1993; Kirk 1994; Kirk n.d.; Kirk and Spiller 1994; Kirk and Twigg 1994; Sparks 1990). This is an interesting lack, since all the writers who have been critical of the scientization of physical education have been so because they see in it negative political consequences, yet they do not directly address a political philosophy of science that can explain the powerful politics of scientific knowledge: the way that scientific knowledge profoundly effects the world in which we live. The materialist critiques of the scientific professionalization of physical education, describing the development of professional monopolies, comes closest to an account of
the power of science. But they go no further in this analysis than citing the prestige of science as a guarantor of legitimacy. As I will argue in the next chapter, there is more to the prestige of science than mere status: science is prestigious because it is so effective at changing the world. The power of the exercise sciences needs to be analyzed for the ways in which they set out to change the reality of the body. Most of the critics of the science of FBPE, while they do not have explicit theories of scientific knowledge, implicitly suggest that the sciences are problematic because their ideas of the nature of the human body and the politics that contribute to its health or disease are inappropriate: the exercise sciences convey false ideologies, which is to say their ideas about the body (understood, for example, metaphorically as a machine) and of health (as a primarily individual concern) are at odds with the true nature of the body and strategies for health. There is a stronger, indeed in some senses more material, critique of the exercise sciences, which is that they are problematic not because of their ideas about the body and its politics, but because of the way they attempt to actually produce the body and its politics. I will pursue this political philosophy of science in the next chapter.

It is also notable that with the exception of Vertinsky no one has trained their critical eye upon the texts of exercise science themselves; and certainly there has been no examination of the texts of the science of physical fitness and fitness testing. While Vertinsky's analyses are prescient and offer excellent historical treatments of racist, sexist and ageist ideologies in science, they are without a substantial theory of science or scientific textuality. Most of the literature speaks of exercise science in general, in terms of pedagogy, academic prestige, and subservience to state agendas. Such generalizing is
rendered all the more problematic by the fact that the theories of science remain implicit and cursory. That leaves these critiques in a fairly weak position, apropos the truthfulness of exercise. There is no analysis of contemporary texts in the exercise sciences, and the critique of the philosophy or theory of science is superficial—none of the writers appeal to the now considerable literature in the philosophy, sociology, history, anthropology and literary criticism of science. A notable lack is among those authors who invoke Foucauldian analysis of the body and social organization (Bordo 1993b; Harvey 1986; Harvey and Sparks 1991; Kirk 1994; Kirk n.d.; Kirk and Spiller 1994; Kirk and Tinning 1994; Kirk and Twigg 1994), but do not appeal to Foucault’s important companion analysis of the sciences of the body (Foucault 1965; Foucault 1975; Foucault 1980b) This leaves the majority of the literature critiquing only the application of scientific knowledge of FBPE, not the knowledge itself. Proponents of the sciences of FBPE can then argue that their research is sound, the problem lies outside the proper realm of science and in the realm of politics, policy and so on. A stronger critique, which I will develop in the next chapters, suggests that the fundamental orientation of the exercise sciences is problematic.

Another underdeveloped area in the literature concerns the theory of the body. Those authors who have engaged recent French social theory, namely in the work of Foucault and Bourdieu, have touched on the ways in which the body is a site for socio-cultural discourse. While Foucault and Bourdieu are obviously indispensible to any analysis of the body in modernity, there has been a flourishing of critical, reflective work on the body in social theory which enhances and reaches beyond Foucault and Bourdieu
that is not reflected in the literature on FBPE. A full-fledged theory of the body, in the light of recent continental perspectives has yet to be developed. Suggesting that that lack reflects the impoverished culture of scientific FBPE, McKay (1990) points out that:

one would imagine that a field calling itself human movement studies/science, human kinetics, kinesiology, kinanthropology, or physical education (especially when its professional leaders so frequently point to its alleged links with Greek culture and its sound mind /sound body presupposition)would have sophisticated discourses about human bodies. Although anthropologists, historians, philosophers, sociologists, and feminists have produced an impressive amount of literature about what Fay (1987) has called somatic knowledge, it is mainly a few cultural historians, sociologists, feminists, and maverick physical educators who are aware of its implications for physical education” (59). 45

The literature that has engaged continental perspectives on the body has done so only in a negative fashion: the body as a site of oppression and subjugation to discourse. Interestingly, there is no definition of the body in the literature on FBPE. While there has been considerable discussion of the abuses of the body in society, as a machine, as gendered, raced, classed and so on, there has been no consideration of what in the body’s nature makes it possible to be mechanized, gendered, racialized and classicized. Which is to say that there has been no attention to the ways in which the body is open to discursive appropriation, of the power of the body to be “discoursed.” The positive power of the body to engage or resist discourse has been neglected. The Erotic body, or any concept of desire, is absent in the socio-cultural literature on FBPE.

A couple of authors mention the pleasures of physical activity and the fact that it has been left out of most FBPE and especially out of scientific FBPE (Featherstone 1991; McKay, Gore, and Kirk 1990), but they do so only in passing, in a matter of a couple of

45 See, Lenskyj, (1996), for example.
sentences. Pleasure or desire are not central to any discussions of physical education, except negatively, where physical education is constructed as strategic in the control of desire (the desire to indulge in delicious, fattening foods, for example). It is fair to say that a positive sense of the body's pleasure and desire is absent in the critical literature of FBPE. In short, a thorough theory of the body is absent in the literature. With the exception of some discussion of Foucault on the body (Bordo 1993b; Harvey 1986; Harvey and Sparks 1991; Kirk 1994; Kirk n.d.; Kirk and Spiller 1994; Kirk and Tinning 1994; Kirk and Twigg 1994) there are no explicit theories of the body in the literature. I will argue in the next chapter that any adequate theory of the body and subsequent analysis of it in contemporary society, especially in physical education, requires an appreciation of the body's Erotic power. I will suggest that only with an appreciation of the body's Erotic power is it possible to imagine a world of physical education that sets its sights on emancipation, rather than subjugation.
Chapter Three

THEORY

3.1 THEORY OF SCIENCE

3.1.1 SCIENCE AS PRODUCTIVE POWER

What is the relationship between scientific knowledge and power? Joseph Rouse suggests that they can be understood as essentially separate (the received view, in which good science is essentially innocent of political imperatives) or unified (his political philosophy of science, which conceptualizes science as essentially political). He says that the received view usually understands three kinds of interaction (Rouse 1987, p. 13): In the first, knowledge is applied in order to gain power: knowledge gives one the ability to control or manipulate phenomena; ignorance leaves one with less control. A second kind of interaction occurs where power thwarts the acquisition of (true) knowledge. In this case, false beliefs get in the way of a true understanding. This kind of interaction of power and science is critiqued by critical theorists for its unexposed ideology; scientific knowledge thus needs to be critiqued and cleansed of its ideological underpinnings. (Horkheimer and Adorno 1972, pp. xii, 3-9) In the third interaction, knowledge has the capacity to “liberate us from the repressive effects of power. It can uncover the distortions power imposes and unmask the disguises that permit power to operate with reduced interference.” (Rouse 1987, p. 13). An example of this is physiological research that avoids sexist bias and looks at the “objective truth” of the human body (Dyer 1982;
Shangold 1988) in an attempt to afford women freedom from their traditional physical oppression.

Rouse points out that power and knowledge remain discrete in these (above) views:

Which is to say knowledge acquires its epistemological status independent of the operations of power. In these contexts it is assumed that knowledge is most adequately pursued when power is removed from its production. That is, power can influence what we believe, but considerations of power are entirely irrelevant to which of our beliefs are true, which of these are known to be true, and what justifies their status as knowledge. It is generally believed that knowledge is best achieved within an inquiry freed from political pressure, but that ultimately an epistemological assessment of that achievement must not refer to the intervention of power either in support of or in opposition to knowledge. Similarly, power may or may not serve knowledge or draw upon it; it remains power all the same. In their constitution as power and as knowledge, power and knowledge are (in principle) free from one an other’s influence (Rouse 1987, p. 13).

Take, for example, the received view on scientific knowledge about women’s participation in physical activity. In this context knowing the truth of women’s bodies is said to be devoid of any gender politics, of the play of power between feminists and patriarchs; feminist concerns may have brought the issue to the fore, but the epistemological status of contemporary non-sexist knowledge of women’s bodies is independent of any political programme. Truth, it is thought, lies outside of these politics. Likewise, patriarchal or feminist power may employ scientific knowledge but neither is in any fundamental way dependent upon such knowledge; which is to say that neither derive their political logic from scientific knowledge. For instance, while feminist sport scholars will call upon existing physiological science to give credence to their claim that women are physically capable of participation in sport, their political programme is not the product of the
physiological studies. And as far as a philosophy of knowledge is concerned, the truth of a statement is independent of the political forces which might have guided its generation. As Rouse says: "The truth may set us free or it may not, but it remains truth all the same. The point in each case is the same: power can influence our motivation to achieve knowledge and can deflect us from such achievement, but it can play no constructive role in determining what knowledge is." (1987, p. 14)

The received view of science also sees power as repressive, a negative force which prohibits, censors, constrains and coerces (Rouse 1987, 16). Hubert Dreyfus and Paul Rabinow have described this understanding as:

a tradition which sees power only as constraint, negativity and coercion. As a systematic refusal to accept reality, as a repressive instrument, as a ban on truth, the forces of power prevent or at least distort the formation of knowledge. Power does this by suppressing desire, fostering false consciousness, promoting ignorance, and using a host of other dodges. Since it fears the truth, power must repress it. (Dreyfus and Rabinow 1983, p. 129)

Foucault has argued against this "repressive hypothesis" (Foucault 1980a, p. 10), saying that power is actually productive, creative of desire, consciousness, and knowledge. Indeed it is the capacity to produce reality along certain lines that makes modern power so potent. In this way power is positive, all though not always productive of ethico-politico realities that we might consider "positive."

Indeed, feminist philosophies of science are largely the product of feminist analysis and activism from other domains as they have been brought to bear upon science. In other words, feminist politics are not the product of scientific knowledge.
In contrast to the "received view," Rouse sketches an alternative account of power and knowledge, arguing that the received view "leads us to overlook important ways power is exercised today and to misunderstand both scientific practices and their political effects." (1987, p. 17). In this alternative account, science is understood as embedded in a matrix of power relations, which is to say that it is part of historical ways of relating to the world. The argument here is that science is engaged in social and cultural processes, grounded in society's sense of what counts as important knowledge and valued for its contribution to the organization of society and life in general; which means that scientific knowledge is politically grounded. Secondly, science is technologically based; engaged in shaping, indeed changing the world. Modern science is not just a passive, contemplative description of the world; it produces knowledge by acting upon the world. Experimental science does not simply observe the world in its "natural" state; it manipulates the world in order to know it. "Scientists produce phenomena: many of the things they study are not 'natural' events but are very much the result of artifice" (Rouse, 1987, p. 23). Stressing this point Rouse points out that experimental science takes place in a laboratory, not an observatory. For example, scientific knowledge about the cardiovascular training effect has been produced by

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46 Let me clarify what I mean here by politics. It is a general term, as Foucault uses it, referring not necessarily to the state, bureaucracies, civil administration and so on, but to the social discourses that influence the possibilities for day to day life. This is politics in a broad sense, the politics of language, gender, sexuality and so. This is the political realm in which human experience is governed by social and cultural discourse.
manipulating humans and animals. The cardiovascular systems of untrained subjects (usually either rats or people) are measured; they are then compelled to exercise at specific intensities over specific amounts of time and are then measured again. The difference in values are taken as indicators of a training effect. Knowledge of the training effect can be produced only where there has been a substantial interference in the lives of the rats and the people being studied. And this knowledge is dependent upon a host of technologies: both exercise technologies (e.g., treadmills, cycling or rowing ergometers etc.) and measuring technologies (e.g., the Beckman metabolic cart) are necessary for producing knowledge of the training effect, which means that scientific knowledge is not antecedent to technological interventions but is actually the product of such interventions. Scientific knowledge is the product of the power of technology to produce phenomena.

Science is intimately related to the politics of the culture which determines what constitutes knowledge and that politics bears upon the technological production of the realities that science makes. Thus power is not a force external to the truths of science but is at the very heart of a scientific way of relating to, of producing, reality. This productive philosophy of science contradicts the popular view that scientific knowledge is simply an apolitical representation; in this philosophy, science renders an account of the world which it has been responsible for making.

The following section will summarize the philosophical arguments behind Rouse's alternative account of science, specifically as he calls upon Kuhn, Heidegger and Foucault.

Understanding science as productive of reality rather than merely descriptive of it is understanding science as practice (Rouse 1989, 26–40). The preeminent philosopher of
science as practice has been Thomas Kuhn, notably in his book, *The Structure of Scientific Revolutions* (1970). Rouse points out that Kuhn has often been misunderstood in this respect. Many readers of Kuhn have seen him as a philosopher of science preoccupied with theoretical paradigms and the ways in which scientific knowledge is thoroughly grounded in the hegemonic processes of theoretical establishments: scientific research is carried out under established theoretical paradigms which undergo revolutionary changes. Kuhn himself has argued against this centrality of theoretical paradigms and said that science is produced more by practical paradigms — habitual, practical paradigmatic ways of dealing with the world. The theoretical emphasis suggests that scientists share, usually uncritically, a set of beliefs about the nature of what they are studying and how it should be studied; there is a theoretical consensus. "Normal science" is conducted within this consensus; "revolutionary science," on the other hand, engages in new theoretical paradigms and pursues research in accordance with the new theory. Gradually more and more scientists come to share the same theoretical beliefs, a consensus is reached and revolutionary science becomes normal science. In contrast to this theoretical orientation is the more radical thought that science works within practical paradigms: habitual, standardized ways of dealing with the world, conducting research, publishing and so on. What is agreed upon, then, is not a set of theoretical beliefs, but modes of practical engagement, accepted ways of solving problems and finding solutions. Scientific knowledge is the product of scientists' familiarity with techniques and accepted ways of manipulating phenomena. This is the practicality of scientific knowledge—
“normal science” takes place within accepted practices, which are the product of tacit and relatively unreflective agreement. Rouse says that:

Philosophical readers of Kuhn have usually equated scientific revolutions with major conceptual and theoretical changes in a field. We can see, however, that this association need not be the case for Kuhn. New instruments, techniques, or phenomena can cause equally fundamental changes in the way research is done within a given field. A good example is the development of recombinant DNA techniques in biology. These techniques dramatically changed the questions one could ask, and the kinds of answers one could expect within some areas of molecular genetics (1987, 38).

Similarly, in exercise physiology, the technology of the Beckman metabolic cart sets the parameters for asking questions and expectations about answers. The technology itself develops a path of research. The practicalities of measuring metabolic exchanges and the widespread acceptance of that practice in exercise physiology circles constitutes a practical paradigm for understanding the physiology of exercise. Questions and answers are tied to such technology.

Also, the Canadian Standardized Test of Fitness (CSTF) is a technology that determines in advance what can be known about physical fitness. The CSTF is part of a practical paradigm for studying physical fitness; indeed it is a paradigm that was developed within an epidemiological context that has been subsequently applied to a personal context. The CSTF is an epidemiological technology developed by the Canadian Public Health Association (1976-7) and fully implemented in the Canadian Fitness Survey (1981), which was initiated and funded by Fitness and Amateur Sport Canada. A technology designed to produce epidemiological knowledge—which is to say knowledge geared to the medico-scientific management of disease in populations—is applied to the production of knowledge about individuals. The test is used for individuals because it is there: it is
an established technique and scientists are practically accustomed to it. The CSTF is a paradigmatic practice among Canadian exercise scientists -- this is attested to by the fact that it is the accepted practice of the Canadian Society for Exercise Physiology, which is the hegemonic scholarly body for exercise science in Canada.

The practical paradigms of science are not only technical—in the sense of the technicalities of recombinant DNA or data collection in the CSTF -- they are also based in the practicalities of modes of human engagement in the world. Scientific paradigms come from engaged ways of being-in-the-world, which is to say with the ways we deal with the future. For instance: scientific research on AIDS is carried out within the human contexts of concern for, among others, the sick, capitalist drug companies’ concern for making money, and individual scientist’s desire for the fame that might come from discovering a cure. More generally, from the work of Heidegger, Rouse argues that part of the formal structure of the engagement of human being in the world is our futurality. In Being and Time Heidegger argues that an essential element in the human mode of being (Dasein) is our “historicality,” by which he means our temporality as it is constituted in the trinity of future, past and present. And a crucial part of our futurality is that we find meaning in life in terms of our possibilities for the future as they emerge in the present out of the past (Heidegger 1927, 434-9). Heidegger says that it is only through our engagement with the future that we have a grasp of reality and a sense of how to act (1927, 193). Understanding our future is not just one option among a variety of understandings—for example understanding the past, present or future. Practical engagement with future possibilities is the formal ground of any understanding.
whatsoever, including scientific understanding. Rouse explains this point of Heidegger’s as follows:

[Humans] understanding themselves in terms of possibilities is... a condition of the possibility of there being an understanding of being (i.e. any disclosure of beings) at all. The possibilities in terms of which Dasein understands itself are not something distinct from its understanding of the world, including “nature.” To understand oneself in terms of possibilities is to understand the world as a field of possible action. This is the configuration within which anything becomes intelligible, not just Dasein... Meaning is a “formal” condition on the intelligibility of beings rather than a substantive characteristic of some particular being. (Rouse, 1987 p. 183)

Rouse takes up this important point of Heidegger’s and applies it to the engagement of science, saying that it too is engaged in this fundamental human temporal structure:
caring about the future in terms of possibilities. Science is engaged in the making of possibilities, of caring in such a way that particular future possibilities are produced. The practical paradigms of science, therefore, involve the ways it engages future possibilities. Indeed it is that engagement with the future that makes science meaningful. The future control of disease, for instance, is essential to the engagement of preventive medicine:
scientific research in preventive medicine is geared to this practical concern about controlling disease in the future. This linkage between scientific knowledge and concern for future health is expressed, for example, in a letter to graduates of the University of Toronto (Dated March 15, 1995) from Rivi Frankle, (Director of Alumni Development at the University of Toronto) and Tom Rohan (Associate Professor at the Department of Preventive Medicine) in which they encourage the recipients to participate in large-scale pan-Canadian study “The Canadian Study of Diet, Lifestyle and Health”:

Every year thousands of Canadians develop diseases such as cancer, heart disease, and diabetes. These conditions appear to be related to the way we live, to our eating and drinking habits, and to our exercise patterns. Therefore, it is thought that by modifying our diet and lifestyle it might be possible both to prevent some of these
diseases and to allow us to live more of our lives in good health. Research at several Canadian universities (Alberta, British Columbia, Toronto, Western Ontario) are proposing to carry out jointly one of the largest studies to date to investigate the effects of eating patterns and other lifestyle factors on future health. (emphasis mine).

This letter reflects an important aspect of modern science, i.e. that it is not simply a disengaged reflection on Nature, but is conducted out of profound concern with the ways in which it can engage Nature in order to produce life along certain lines (in this case, purportedly, with diminished incidence of disease). The programme of research mentioned here is meaningful only insofar as it has a possible impact on the future; if it had no possible bearing on the future, it would not be conducted.

Certainly, the entire field of health promotion is futuristic. For instance, the WHO definition of the field says it is a process that gives individuals and communities increased control over their future health. ¹ On a more cynical, but nevertheless truthful note, Government interest in health promotion is derived from an economic concern for the future; this is a concern that spiraling medical costs will render the future of "health care" untenable and health promotion is seen as a way of dealing with future health care in less expensive ways. Scientific research in lifestyle management (which is considered one of the "four action areas" of health promotion (Kickbusch 1994, 12)) is entirely concerned with the relationship between present behaviour, future health and the possibilities for future behavioral change. The Computerized Lifestyle Assessment

¹ The WHO definition of Health Promotion is: "the process of enabling individuals and communities to increase control over and to improve their health" (World Health Organization 1984, 3)
assesses present lifestyle and the risks it poses for the future as well as preparedness for change; this is done with an eye to the future and the hope of identifying pathological ways of life before they become too damaging. Similarly, the CSTF assesses present levels of fitness, the risks to future health and prescribes future ways of living an active life. On an historical note: research for the CSTF was conducted as a result of the 1972 National Conference on Fitness and Health, which was held specifically to address the future health of Canadians, and which produced 24 recommendations on how to address that future—the CSTF was part of that plan for transforming the future by changing Canadian values and ways of life (Canada 1972, Recommendation #2, p. 126).

My point is that the CSTF lifestyle assessment is similar to other forms of scientific knowledge in its concern for the future and the transformation of human life such that the future may unfold along certain lines. Which means that it is not a detached, politically neutral way of producing knowledge about individual bodies and ways of life; it exists precisely as a method of engaging and changing lives, such that they are in line with both official, political and economic policies of Government (as in the area of health promotion), as well as less explicit, but nevertheless powerful, politics of the body (which I will explore later in the theory of the body). This points to a further important point about the practicality of scientific knowledge: it “must be understood in terms of its use.” (Rouse 1987, 126). Medico-scientific knowledge that is not useful is, well, useless.

This concern for the future and the creation of scientific knowledge that is useful for making future possibilities unfold in certain ways can be considered a matter of governing future possibilities. This is a realm of government described by Foucault.
'Government' did not refer only to political structures or to the management of states,... the legitimately constituted forms of political or economic subjection, but also modes of action, more or less considered and calculated, which were destined to act upon the possibilities of action of other people. *To govern, in this sense, is to structure the possible field of action of others.* (Foucault 1983, 221 as quoted in Rouse 1987, 185).  

Science governs in this sense, structuring people's possible field of action. Rouse says:  

"A field of action is constituted both by material surroundings and technical capabilities and by a shared understanding of what it makes sense to do and to be in those surroundings. Scientific practice is political in the sense that it helps structure our field of possible action in both ways" (Rouse 1987, 185). This is not political in the same way that legislation and courts of law are political. It is political in the sense that it sets parameters for what is meet and right, given what has been rendered possible by science. More and more legislation is created on the basis of what science has laid out in the realm of the possible. For example: legislation has been created to deal with genetic engineering, use of human tissues, regulation of telecommunications, and so on. Rouse points out that historically the scientific revolution brought about much more than intellectual changes:

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47 In this thesis I use "government" with a lower-case "g" to refer to government in this Foucauldian sense. Where I am referring to government in the sense of the Government of Canada, I will use "government" with its domain, eg. Canadian government, Ontario government, etc.

* Indeed the point of this thesis is to demonstrate how the science of FBPE sets about establishing governance over bodies, specifically through fitness testing.
This revolution changed what was at issue in being human. The Cartesian subject of modern philosophy emerged from reflection on how such a physical order could be comprehended and known; the relation between human beings and the divine took on new shapes; the problem emerged of whether and how physical and moral descriptions of persons were compatible; and both the gendering of nature and the sexual imagery of our knowledge of it were revised. These were not only intellectual changes. They were connected to transformations in political relations and institutions, the creation of new religious practices, and the emergence of new forms of economic behavior and social interaction (Rouse 1987, 186).

Science is political in the way it affects the way we relate to nature and each other. That is the productive power of science. And the “real life” productive power of science lies in the way science moves out of the laboratory and into day to day life. The CSTF is one instance of the insinuation of the power of science in everyday life.

Earlier I invoked Rouse’s argument that science does not simply observe nature and comment upon it. Science actually provokes nature to appear in certain ways: this is reflected in the difference between the observatory and the laboratory (see page 89 above). The capacity of science to provoke nature is fundamental to its power: “the development of scientific knowledge is rooted in the construction and manipulation of phenomena through which we develop new skills and uncover new truths and possibilities for truth” (Rouse 1987, 211). But the broadly political power of science lies in the way the power that goes to work in the laboratory is subsequently extended outside it:

[Scientific] developments become disseminated into the world outside the laboratory by standardizing scientific techniques and equipment and by adjusting nonscientific practices and situations to make them amenable to the employment of scientific materials and practices. The result is that the world is increasingly a made world, in the sense that it reflects the systematic extension of... technical capacities, the equipment they employ, and the phenomena they make manifest” (Rouse 1987, 211)
The way power is extended out of the exercise science laboratory and into the wider world of the general population through physical fitness testing will be at the core of the analysis in Chapter Four.

Having briefly discussed Rouse on the issue of power in science, the ways in which science is actually productive of reality, there remain two theoretical elements which need to be explored before actually examining the CSTF as an example of the science of FBPE: first because it is through texts that scientific knowledge is negotiated between scientists as well as among practitioners and the public, we need to look at the relationship between scientific texts and the reality which they describe. Second, we need to consider the theory of the body which those texts both assume and help to create in the lives of the people who undergo lifestyle management. So, in the following section, I will develop a theory of scientific texts using examples from texts in the exercise sciences. The last section of this chapter will develop the theory of the body that is operative in the texts of the CSTF.

3.1.2 POWER IN SCIENTIFIC TEXTS

The "usual" reading of scientific texts could be called naive. The texts are taken as transparent, objective representations of natural reality. In such a reading the value of the text lies in its truthfulness, the degree to which it accurately represents reality. But such a valuation does not take into account the wider socio-cultural value of texts and their
ethico-political implications. In order to understand these values and implications it is necessary to analyze scientific texts accordingly. Such an analysis, I will call “deconstruction,” a critical analytical procedure which attempts to explain the cultural significance of texts by showing their social and political construction. This is a more general sense of “deconstruction” than that which is associated with the work of Derrida.

The map for this deconstruction will be drawn from recent research in the philosophy, sociology and anthropology of science, specifically the work of Latour (Latour 1987; Latour and Woolgar 1986), Bazerman (Bazerman 1988), and Shapin & Schaffer (Shapin and Schaffer 1985). Focusing on Latour and Bazerman, I will argue that scientific texts constitute a socio-cultural system. By appealing to Gramsci’s theory of hegemony (Williams 1977; Williams 1980) and Bourdieu’s theories of cultural reproduction and symbolic power (Bourdieu 1979; Bourdieu and Passeron 1990), I will argue that this socio-cultural system is hegemonically reality-producing. Through a fairly standard programme of rhetoric and symbolic violence, scientific texts hegemonize particular philosophies of Nature, and in the case of lifestyle management, the body.

A standard textbook on exercise physiology includes the following words and graph for determining the optimal intensity of physical exercise:

Besides the heart rate method, there is another way in which the exercise intensity may be determined for endurance training programs. This method is based on the concept

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48 In the University of Toronto's School of Physical and Health Education "socio-cultural" refers to an academic disciplinary field. I am using the words here to refer to the unity of society (as social arrangements) and culture (as systems of meaning).
of anaerobic threshold... The anaerobic threshold is that workload intensity or oxygen consumption in which anaerobic metabolism is accelerated. In other words, it is that workload intensity in which lactic acid begins to rapidly accumulate in the blood and muscles. Several researchers have recently advocated that workload intensity at or slightly above the anaerobic threshold should be used by endurance athletes during their training sessions (Katch et al. 1978; Kinderman, Simon, and Keul 1979; MacDougall 1977; Mader et al. 1976). There are two methods whereby the workload intensity at the anaerobic threshold can be determined; both require the use of laboratory equipment:

1. **Minute ventilation and the Anaerobic Threshold Method.** You will recall from Chapter 8 that the anaerobic threshold can be detected by observing the minute ventilation during a progressive exercise test. Minute ventilation increases linearly with increase in workloads until the anaerobic threshold is reached. At this time, the rate of increase in ventilation is greatly accelerated.

An example of how to use this information in determining a training intensity for endurance runners is shown in Figure 12-2. The athlete runs at different speeds on a motor-driven treadmill in a laboratory. After several minutes of running at each speed, minute ventilation is measured. Afterward, a graph is constructed by plotting minute ventilation against speed of running (Fig. 12-2). Notice how ventilation increases in a straight-line fashion for the first three running speeds and then begins to increase rapidly. The running speed at which ventilation increases abruptly represents the exercise intensity at or slightly above the anaerobic threshold and can be used as the runner’s exercise intensity during his or her training sessions. In the example, the training intensity would be 15 kilometers per hour (km/h), or 9.3 mph, or a 6-minute, 27-second mile pace (Fox and Mathews 1981, p. 266).
This passage appears in the textbook as a simple explanation of how exercise physiologists calculate the physical intensity of exercise. It is but one among several hundred similar practical physiological explanations in a 677 page text book. The textbook is geared to physical education students and is typical of the sort of book that would be a reference text for students who want to be certified as physical fitness appraisers\(^a\). Students using such texts are typically expected to read, understand and reproduce in an examination this physiological knowledge. The information is relatively simple and straight-forward. Students will read this text as a transparent, objective, non-political representation of the natural reality of the exercising human body. Having done so, they will have learned the lesson that exercise physiology wishes to teach, which in this case is one method of determining the appropriate level of exercise intensity.

Ostensibly, the readers of these texts will take this information and use it to organize the exercise behaviour of their future clients. This information will, therefore, have an impact on the lives of people. Because of this, the text is socio-culturally significant. Which is to say, because it (in)forms human practice—indeed it exists in order to do so; it is not a purely speculative text—it is not simply a socially detached account of a physiological procedure, but an active part of the process of organizing human life.

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\(^a\) The *Canadian Standardized Test of Fitness Interpretation and Counselling Manual* (1987a, 142) lists a number of similar texts as reference sources. Similarly, most of the chapters in the *Resource Manual for Guidelines for Exercise Testing and Prescription* (American College of Sports Medicine 1993) cite similar texts.
People will be encouraged by the physical educators who have learned about the anaerobic threshold to bring their bodies to such a threshold, a task which can be quite demanding of them physically and psychically. Moreover, these clients will be encouraged to think of themselves, their bodies, in terms of their anaerobic threshold and the maximization of metabolic and aerobic capacities. The text, therefore, informs a significant intrusion into the practices and meanings of human lives. Obviously, there should be political and ethical concern wherever human life is subjected to such intrusion.

The social nature of scientific texts has been a major topic in the philosophy, history and sociology of science for the last twenty-five years or so (Pickering 1992a). On the one hand, scientific texts are thought to be realist representations of Nature. This realist position suggests that while the production of scientific texts has a social dimension (the sociology of the laboratory, the scientific publishing industry and so on) a correct correspondence between the inscriptions of the texts (words, numbers, scientific symbols, charts, graphs, etc.) and the objects which the inscriptions are meant to represent is still possible, and indeed, is often the case. In other words, the "truthfulness" of the text, the validity of the representation of the reality it describes, is independent of the social organization of science and its representational practices. On the other hand, antirealists argue that science is social to its core, which is to say that scientific knowledge is essentially a textual play of socially constructed signifiers, more or less (depending upon how radical the theory is) independent of Nature, if there is any such thing as Nature without signifiers.
The position I take in this thesis does not attempt to resolve the realist/antirealist debate. It allows that various scientific knowledges may accurately represent Nature: the verity of the concept of the anaerobic threshold, for example, will not be contested. Science has been immensely successful at controlling Nature; science "works." Regarding the exercise sciences, for instance, there is no denying that scientific knowledge about oxygen transport and blood lactate elimination has led to training techniques in swimming that have produced more effective use of the body for swimming faster. Likewise biomechanical knowledge of the human gait when running may have led to better running shoe design contributing to a decrease in injuries making it possible for people to run more comfortably. And standardized tests of physical fitness have made it possible for people to judge their level of fitness and strive to make improvements on the basis of such judgment. Scientific methods for determining levels of exercise intensity have made it possible for people to optimize their exercise programmes and accomplish basic physical fitness or competitive athletic goals. Clearly, the representations of exercise science have been effective in getting the human body to submit to the human will. There must, therefore, be some connection between such representations and the "natural" reality of the human body.

The argument here will be that while science is very effective at making Nature conform to human desires, it is but one way of understanding her.¹ All but the most

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¹ My rather old-fashioned use of the proper noun "Nature" and her personification as feminine is ironic. I am here alluding to a mythical Nature which might well exist, but who is coy in revealing her secrets. And while I characterize Nature as feminine, I leave
Dogmatic of scientists would agree that there are many ways of seeing, representing and understanding Nature. There have been various aesthetics of Nature through the history of fine art. Nature has been rendered in poetry. And there is the breathtaking view of Nature which appears while canoeing northern lakes or hiking in the Rocky Mountains.

Likewise, Nature's human body has been seen in Art, rendered in poetry and experienced in human movements such as running, climbing and sex. But the way science represents Nature is quite different to the representations and experiences of Art, poetry and movement. The question to be addressed here concerns the nature of scientific textual representation and the way in which scientific texts influence the "reading" of Nature.¹

I am concerned here about the texts of science. For it is with texts, and not scientific experiments, that the vast majority of people interact. Texts (in)form human practices; it is the text, not the host of scientific procedures that lie behind it, that lead exercise consultants to pursue the anaerobic threshold. People develop scientific understanding through texts; while many of us have various degrees of scientific understanding of the world and of our bodies, few of us ever actually engage in the experimental work that is said to produce scientific understanding. And Latour points out that even those who are it open as to whether she is properly personified as a woman. See Haraway on the American Southwest Native sense of nature as a coyote (Haraway 1988).

¹ While it would be very interesting to do a comparative analysis of the ways in which Nature is variously rendered in science, fine art, poetry and human movement, such a comparison is beyond the scope of this thesis.
fully engaged in experimental research base most of their understanding not on the experiments which they have themselves observed, but on previous work which has been written by others. Because experimental science is a cumulative enterprise, with each experiment based on the written results of previous experiments in related fields, including research on the operation, capacity and validity of the laboratory instruments used in experiments, no scientist actually observes the entire experimental process. All scientists depend on texts, thus creating their scientific texts out of other texts.¹

Science is preoccupied with the production of written texts. Indeed, without its texts, there is no science. Shapin and Schaffer point out that the epistemological basis of an experimental fact lies in its public nature: a scientific fact is what is accepted by a scientific community. Historically, the community gathers round, watches the experiment take place and comes to some agreement as to what happened in the experiment. Nowadays, of course, this is impossible. Scientific texts substitute for the actual presence of the community at the experimental site (Shapin and Schaffer 1985 pp 22 ff). Because community agreement lies at the very heart of scientific factuality, and the only way the community can really come together is textually, the text is central to the production, to the existence, of scientific truth.

¹ For a discussion of the rhetoric of scientific citation of texts, as it were the intertextuality of scientific texts, see Latour (1987) pp 30-44. I develop this theme in my deconstructive analysis of the texts of fitness testing in the fourth chapter.
So there are three good reasons to focus on scientific texts: (i) it is texts that (in)form human practice, (ii) each scientific text rests on the backs of myriad other texts and (iii) texts constitute the public forum that makes possible the community agreement necessary for the attainment of scientific truth. But why all this fuss? Don’t texts simply represent the experimental events that occurred outside of them?

While scientific texts do describe an amalgam of experimental events and other texts they also engage in the reproduction of a hegemonic culture of Nature, thus narrowing the scope of what is possible to be thought about Nature. A complete description of the character of this hegemonic culture of Nature is a project beyond the scope of this thesis—its specific character in regards to the body will be explored in the upcoming theoretical section on the body, and the specific application of that culture in the scientific technology of the CSTF, will be explored in Chapter Four. My point in what immediately follows is not the content, as it were, of the reproduction of hegemonic culture, but the more formal problem of the way in which scientific texts reproduce hegemonic culture.

“Hegemony,” as developed by Gramsci, describes the process by which social power relations are produced. This process, while it has its material bases, works in the creation of reality in the consciousness of people, their sense of what constitutes the real. Williams explains it as follows:

In any society, in any particular period, there is a central system of practices, meanings and values which we can properly call dominant and effective... It thus constitutes a sense of reality for most people in the society, a sense of absolute because experienced reality beyond which it is very difficult for most members of the society to move, in most areas of their lives [sic]. (Williams 1980 p. 38)
It is important to note that people cooperate in the production of the dominant practices, meanings and values that constitute the hegemonic reality. On the whole, they are not forced by some external power to accept a reality that is somehow foreign to them. Hegemonic power is predicated on some level of consensus about what is real and what is not. Scientific texts engage in the hegemonic production of reality, by developing a culture of consensus. In this way modern scientific texts are unlike pre-modern texts. The Christian predecessors of scientific texts derived their authority, their sense of natural reality from what they perceived to be above, ultimately from God, who revealed Himself through Holy writ and sacraments. Authority over what constituted reality was thought to be external, it was not predicated on the views of the subjects of reality. But with modern science authority changed from being external to internal. As Shapin and Schaffer point out (1985), it was this shift from external authority to the more “democratic” development of consensus that was the true source of disagreement between the old-fashioned philosopher Hobbes and the modern experimental scientist Boyle.

The correct take on Nature, in modern science, is the product of agreement. Latour (1987), Latour and Woolgar (1986), Shapin and Schaffer (1985) and Bazerman (1988) have focused on the social processes that produce these scientific agreements. In those instances where there is little agreement, science loses its authority. To maintain authority, science must maintain a culture of consensus.

Foucault points out that with the dawn of modernity political power ceased to be so much a matter of external force, but more a matter of the internalization of power, an intricate cooptation of the subjects of power in their own subjugation (Foucault 1973;
Foucault 1980a; Foucault 1983b). I suggest that in a not dissimilar fashion scientific texts coopt the scientists, and the professionals who come under their sway. The whole project is one of trying to achieve and maintain agreement, to keep a consensus about reality. Readers of scientific texts join in the process, are willing to give their consent, to cooperate with the scientific project because they believe they have the power to withhold consent, that they are free to dissent if they do not see reality in the way the text presents it. But as I will argue now, the actual room for dissent is very small. This system works, as Shapin and Schaffer point out, by controlling dissent, by keeping it within boundaries. Thus controlled, a hegemonic reality is maintained. Scientific texts come to dominate our sense of reality by securing consent without actually affording substantive opportunity for dissent.

Latour and Woolgar point out that the actual work of science is a matter of separating facts from artifacts. Because the attainment of agreement is essential to the truth value of a text, texts actively engage in the social process of securing agreement about what is a fact and what is an artifact. Developing scientific consensus is a social process. Which is not to say that it is a purely social process. Nature does place some constraints on what can possibly emerge as a viable textual representation of her. Ludwig Fleck described these as the "passive linkages" which natural phenomena place on the scientific task of representation (Bazerman 1988, p. 312). The social activity of working toward consensus in scientific textual representation is limited by the phenomenon being described. For instance, exercise physiologists, having settled on the phenomenon of the anaerobic threshold as an indicator of exercise intensity, are constrained in what they say about the
threshold by the character of oxygen. The social process of achieving consensus takes place within the context of such passive natural constraints.

While scientific facts about Nature may indeed have some truth-value, their textual production emerges in an agonistic process. Scientists play textual statements off each other: "...facts are constructed through operations designed to effect the dropping of modalities which qualify a given statement..." (Latour and Woolgar 1986, p. 237) Textual statements compete with each other. This is a crucial point: scientific facts are the products of competing arguments, of a combat that produces winners and losers. And Bazerman brings a fine point to this. Because very few people actually "see" the scientific experiment, it is not by viewing the play of Nature that the scientific community will declare a winner, that consensus will be achieved, but by considering the play of texts. Even where there are a number of replicated experiments conducted, it is in the interplay of the rhetorics of the texts of the replicated experiments through which consensus is attempted not through the actual witnessing of experiments.  

* This involves not only a complex textual rhetoric, but also a good deal of political maneuvering among scientists in the process of getting published (who is part of the research team, first authorship etc.) as well as the prestige of the scientists involved — this point will be discussed more fully in the following paragraphs. Moreover, because experiments are profoundly intertextual, no one actually ever "sees" the experiment fully.
To achieve consensus, to get the scientific community to agree, scientific texts must be persuasive. And it is in the techniques of persuasion that the hegemonic, culturally reproductive nature of scientific texts shows. Synthesizing the work of Bazerman, Latour and Woolgar and Shapin and Schaffer we will see that there are three important and interrelated elements in this social strategy of persuasion (i) the use of rhetoric to compel the reader to agree, (ii) a textual closure that limits the reader’s perception and reasoning and (iii) a concealment of the social nature of the text such that it appears as a non-social, transparent representation of Nature, in short, innocent of any cultural “interference.”

The first claim of a scientific text is that it is an honest representation of experimental events; the text is not lying. Bazerman says that one rhetorical strategy is to establish ethos: “that the author/observer is a credible witness, following all proper procedures thoughtfully and carefully.” (Bazerman 1988, p. 140) Academic credentials serve this purpose, proving that the author has negotiated the socially prescribed indoctrination into the values of the academy. For instance, the American College of Sports Medicine’s (ACSM) Resource Manual for Guidelines for Exercise Testing and Prescription credentializes itself by listing the names of the editors, along with their academic degrees and university affiliation, and a few pages in (p. ix) it lists the 47 reviewers along with their academic degrees.* Credentials, however, are not sufficient for

* Five of the six editors and twenty-three of the forty-seven reviewers are Fellows of the American College of Sports Medicine.
persuasion. Because in science “seeing is believing,” the reader does not simply trust the credentialized author’s privileged experience of the experiment, but must see the experiment itself through the text.

More important than credentials, usurping their role, indeed rendering the author significantly invisible, are rhetorical devices that form the text. These devices are intimately connected to the historical development of the scientific journal as the forum for the resolution of scientific debates. Before the rise of the journal, Bazerman says, the scientific report was more like news, simply saying what happened in an experiment. But as the journal emerged as the centre of debate, simply reporting was insufficient. Journal articles needed to persuade. In a circle of mutual reinforcement the growth of the journal led to more debate; the more Nature was debated, the more debatable she seemed: the more debatable Nature appeared, the more important was the debate; the more important the debate, the more important the journal; and so on. In such an intellectual atmosphere, the settling of controversy becomes very important. The credibility of scientific reality could be at stake. For if scientific truth is based on consensus about the nature of reality and if consensus becomes ultimately impossible because there are so many conflicting versions of reality, then science itself will be disreputable. For science to succeed, it needs a rhetorical strategy for the management of controversy.

One such managerial rhetoric is to reassure the reader that a given text is “authentic,” that it accurately represents what happened in the experimental setting. Shapin and Schaffer refer to this as “virtual witnessing.” And one of the ways this is done is by including extensive technical details on the experiment. Having much more
information than one needs to understand the results of the experiment provides some verisimilitude, as if one were actually present at the experiment where one is also bombarded with extra data. Another rhetorical effect of including extensive raw data is that the reader is given the sense that the text is showing everything that happened; nothing is being held back. As Latour points out, the reader does not have to believe the author’s conclusion; s/he can “see” the basis for the conclusion in the raw data. Having been shown “everything that happened in the experiment” the reader has the impression that s/he is in a position to give or withhold consent. The reader is free to see the experiment as it actually happened. This freedom to “see” reassures the reader that s/he has choice. Of course, the truth is that not everything that happened in the experiment is recorded in the text; only those things considered important to scientific reality are recorded. Indeed, information that could displace scientific reality is usually left out. The reader is, therefore, not free. To take an obvious example, very few experiments which use laboratory animals record in any detail, the unhappiness or the suffering of the animals, nor do they attend to the psychological strategies that the technicians employ in order to erase any sympathy/empathy for the animal’s unfortunate plight. That sort of information could displace the primacy of the scientific “take” on reality.

Latour says that “when controversies flare up the literature become technical” (Latour 1987, pp 21 ff). That maneuver, he says, includes a clever quantitative rhetoric of appealing to authority. The more citations a text contains the more likely it is to be taken seriously (p. 33). For example: the ACSM’s authoritative manual on exercise testing and prescription lists 1,259 references for 47 articles (the highest number of citations/article is
141; the lowest is 0) which is an average of 27 references per average 12 page article. Part of this rhetoric is the understanding that the reader is welcome not to take the presence of many citations as mere appeals to authority, but as magnanimous invitations to read the works cited and judge for him or herself the validity of the comments based upon them. This becomes an impossible numbers game, for if the reader were to trace all the references given—say 27 from one article under review—s/he would find in each reference a similar number of references to more articles in each of those references. The believability of each of those in turn depends on following through on their references which leads to following through on hundreds more, and so on. This is a daunting task that few, if any readers would undertake. This is a rhetoric of intimidation by geometrically expanding intertextual citation. All but the most industrious reader is compelled to accept the truthfulness of the intertextual citations.

This is a particularly powerful threat for the nonscientist-professional reader of textbooks, such as physical education students who become physical fitness appraisers. These people believe the texts because of a careful system of referencing that invites them to look at the references and verify the veracity of the science, i.e. to give or withhold consent. They too are given the false impression that they could dissent if they wanted to. But since even a specialist-scientist does not have the time to wade through the hundreds of thousands of references that it would take to give faithful consent to a text, certainly the generalist professional, reading in a multitude of scientific disciplines (physiology, biology, biochemistry, biomechanics, nutrition, exercise physiology, statistics, psychology, and sociology, all at an undergraduate level) has no opportunity to do the work it would take
in order to withhold consent. Moreover, it is quite clear to such students that they lack the knowledge and expertise to question their texts. Nevertheless they give consent because they believe that if they had the time and resources to learn all they would need to know in order to be critical, they could dissent. In this way they cooperate in the reproduction of scientific reality.

Now it could be argued that the professional reader of scientific textbooks is not part of the (scientific) community that participates in the process of consensus-building around scientific reality. They are not, after all, engaged in a critical intellectual relationship with the texts. They are merely consumers of the texts' facts and procedures. The culture of and burden for developing consensus lies with "real" scientists. There are two arguments against this exclusion of professional readers, one major and the other minor. The major argument deals with the practical aspects of hegemonic reality and the other with the process of convincing professionals of the truth of scientific texts. I will deal with the latter first.

While it is true that professional readers of scientific texts do not spend much of their time criticizing the science of the texts, they tend to believe them because they trust that research scientists have done so (and Latour has shown that they too are unable to deal with the "black-boxes" of the texts). But professional readers of scientific texts are also usually indoctrinated into the experimental basis of the scientific texts by the lab sessions that are part of their university or college courses and by reading the descriptions of the experiments that justify the facts in their texts. Most professional programmes consider it important for professionals to have some contact with the laboratory so that
they will understand (i.e. believe) the texts that come from laboratories; virtually all scientific professional programmes have an important laboratory element. Having experienced the “experimental life” (Shapin and Schaffer 1985), albeit at an elementary level, they believe the “virtual witnessing” of their texts. And the professionals' belief in scientific texts is important to the reproduction of the hegemony of scientific reality. For it is professionals, such as doctors, nurses, pharmacists, dentists, engineers and physical educators who put scientific reality into practice. And this brings me to the major argument about the importance of professionals in the hegemony of scientific reality.

Gramsci says that hegemony is not just an abstract, conceptual matter of meaning and values. Hegemony also entails practices and experiences that are engaged in a reciprocal relationship with meaning and values. Williams explains this:

What I have in mind is the central, effective and dominant system of meanings and values, which are not merely abstract but which are organized and lived. That is why hegemony is not to be understood at the level of mere opinion or mere manipulation. It is a whole body of practices and expectations; our assignments of energy, our ordinary understanding of the nature of man and of his world. It is a set of meanings and values which as they are experienced as practices appear reciprocally confirming (Williams 1980 p. 38).

If the reality produced in scientific texts was nothing more than abstract ponderings of a socially insignificant group of intellectuals, then it would not matter too much; certainly, it would not be hegemonic. But the reality created in scientific texts has shaped virtually every aspect of modern life. Scientific reality is now very important to the practices of physical education, and is the epistemic basis of physical fitness. Professionals put scientific reality into practice, they translate scientific texts into human practices. Physical
fitness appraisers design exercise programmes out of the meanings and values they find in their textbooks.

As Williams emphasizes, the practices and the meanings and values of hegemonic reality are mutually confirming. We can recognize this in the common assertion that "science works." The fact that science works, makes it very difficult to disagree with the way it has set up reality in the first place. For instance, scientific texts provided us with the concept of the anaerobic threshold. These texts have been translated into human practices such as swimming workouts that utilize the anaerobic threshold such that swimming times are made faster. This faster swimming confirms the meaning and value of the anaerobic threshold. The science is made "real" in this marriage of practice and textuality. But something important has been lost: namely, alternative visions of the reality of swimming and the body, visions that would prefer to construe swimming and the body not as productive, performative, linearly temporal, a resource for the professionalization of sport, but which would prefer to make swimming play, liberation, a non-linear experience of bodily pleasure that is valuable in and of itself, inaccessible to the reality of modern techno-scientific culture, or some such. Such alternative visions are lost in the tight fit of the meaning and value of scientific texts and professional practices.

Excluding alternative categories, meanings, values, priorities, interests, and so on, is part of the process of hegemony. Such exclusion is apparent in scientific texts in the way they attempt to control the thoughts of the readers. The text vies for authority by invoking closure on what is allowed to be thought. Umberto Eco says that closed texts deny the reader the freedom to offer alternative interpretations (Bazerman 1988, p. 123).
Bazerman offers the following concise explication of the way in which a scientific text invokes closure.

(1) That experimental methods and results must be spelled out explicitly and in detail, both to allow replication and comparison of results and to create a plausible virtual experience for readers; (2) That the discourse must be organized around a central claim or sequential series of claims, and the experimental accounts should be structurally and logically subordinated to those claims to serve as a form of experimental proof; (3) That the coordinated series of claims and articles, incorporated into a coherent system, becomes a mutually supporting network framing a way of working, viewing, and thinking, so that reliance on the network becomes an essential cognitive and argumentative resource. Serious arguments can only be cast within the closed system that realizes the mode of perception, activity, thinking, and interchange. Arguments that step out of the closed system are no longer considered properly scientific. (Bazerman 1988, p. 126)

Scientific texts give only the impression of free thought and openness to criticism. This is not the open exchange of ideas, visions, or experiences. It is a closed system that sets rhetorical limits to debate. Experience and thinking which does not, which cannot, conform to the above three requirements is rendered inadmissible by these rhetorical conventions. And Shapin and Schaffer (1985) have shown that one of the primary functions of scientific learned societies is to set the parameters of debate. Bazerman points out that most societies publish journals which are reviewed by peers who have consented to the parameters of what is considered acceptable — peers act as the gatekeepers (Bazerman 1988, p. 136). This gatekeeping, Bazerman says, involves the often complex politics that editorial boards engage in in order to insure the preservation of their own points of view. He also points out that only those who are willing to work within the set parameters of debate are allowed to publish, and only those who publish are able to conduct 'legitimate' research. By invoking such closure scientific texts inscribe the
boundaries of legitimate debate. Alternate visions of the nature of reality are excluded. Major dissent, in such closed texts therefore, is impossible. But because these closed texts allow debate within their boundaries they appear to allow freedom for dissent. Anyone who wants in on the scientific action, therefore, must consent to work within these boundaries. Indeed, much of graduate education as an indoctrination into the canon of various boundaried disciplines, assists in establishing boundaries, a sense of what are acceptable and unacceptable ways of thinking within particular fields of research. In Chapter Four, I will argue that the science of physical fitness testing is based on this kind of controlled debate: only those who were willing to consider the body within the objectifying paradigms of the body that are foundational to exercise science were part of the creation of the CSTF. Dissent is restricted to the paradigm. Part of the rhetoric that contributes to the reproduction of hegemony, therefore, involves the exclusion of alternatives by textual boundary maintenance. People partake in this reproduction by consenting to work within the boundaries as though they were provided sufficient room for dissent.

The scientific society that produces these closed texts aids and abets this closure by its social practices of exclusion. Part of this process of exclusion works by the practice of publishing texts. Scientific journals serve the interests of scientific communities who have agreed on the boundaries of acceptable visions of reality and the parameters of debate. The authority of the journal depends on how carefully it adheres to the established boundaries of the community it serves. Only those scientific texts which work within
those boundaries, therefore, are acceptable for publication. Consequently, work as gatekeepers for inclusion or exclusion from the scientific textual community (Merton and Zuckerman 1973). And it is only by virtue of a scientist’s history of publication that s/he is acknowledged by the scientific community as a valid critic of the work of the community. Consequently, only those who work within the boundaries are deemed acceptable critics. Five of the six editors of the ACSM’s Manual and half of the reviewers of the articles for it are Fellows of the ACSM. Needless to say, this goes a long way to avoiding major dissent within the community. And finally, the great financial cost of conducting much scientific research prohibits all but the most established (who become established by working within the closed world of scientific textuality) from engaging in research. And Latour (1987) argues that even within the boundaries of a given science, the high cost of research makes dissent difficult and sometimes impossible. As Kuhn points out, a fully established science is unlikely to consider radical alternative visions of reality (i.e. revolutionary paradigms) (Kuhn 1970).

Scientific communities thus regulate themselves by their social organization and the rhetoric of their texts. This self-regulation sets the limits of what can be thought,

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*a* It is important to note that this is far from a static state of affairs. In fact there are frequent political struggles as to what kind of thinking will be dominant and where boundaries are to be drawn. And changes in the guard do occur. New ways of thinking and boundaries become established. This fact points to the truly political nature of journals.
literally con-textualizing acceptable visions of reality. By this process of self-regulation hegemony is maintained.

There is one last rhetorical maneuver that needs attention, the most masterful rhetorical device of them all: this is the rhetoric of scientific rhetoric concealing itself. With this rhetoric, the socio-cultural nature of scientific texts disappears and reappears as a simple, transparent, realist, representation of Nature. Because it makes scientific texts seem innocent of anything but the truth, it is a very persuasive maneuver. I call this the rhetoric of innocence.

Bazerman says: “One peculiar aspect of the accomplishment of scientific discourse is that it appears to hide itself.” (Bazerman 1988, p. 14) When we read about the anaerobic threshold we are expected to believe that we are examining the natural facts about the anaerobic threshold, not a socio-cultural rhetorical text. But while Nature’s anaerobic threshold may indeed exist, we are reading texts, not Nature. This disappearance of the text as a socio-cultural system is a rhetorical move with important political results. To see the socio-cultural construction of the text would bring it into disrepute. For the fundamental principle of modern science is that we know Nature by looking at her. Having seen Nature, not humanity, we can rest assured in the knowledge that comes from the sight. Scientific debates about the reality of Nature are supposedly resolved by letting Nature show herself. Shapin and Schaffer explain this way of thinking: “What men make, men may unmake; but what nature makes no man may dispute.” (Shapin and Schaffer 1985 p. 23)
Here is a conundrum for science. Science claims the unequivocal power that comes from Nature showing herself, innocent of human interference. But as I argued above, since the real epistemological basis of scientific facts is the social hegemonizing practice of securing consensus, scientific texts must be all too humanly rhetorical. To claim the revelatory power of innocent Nature, science must hide the guilt of human agency, and it must do so with the guilty hand of the texts themselves. Just as Heraclitus said that “Nature loves to hide itself” (Fragment 125), so too the textuality of science. Science hides its guilt behind the innocent face of Nature. While this hiding is accomplished by nothing more than a leap of faith, (a naive belief in the transparency of texts), it serves an essential rhetorical function: to free scientific texts of their socio-cultural foundations. This rhetoric of innocence serves an important political purpose. It allows science to appear to quietly transcend the hurly burly of the essentially political nature of all human activity.

Scientists and professionals cooperate in the reproduction of hegemonic reality. Yet they do so without admitting as much, even to themselves. They claim to be simply in the business of telling the world what Nature has shown them. When politics are allowed to hide this way, their reproduction is that much more effective. The political (hegemonic)

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* While he does not make the overt political connections that I am here attempting regarding the way that science hides its social nature, Latour refers to this practice of hiding as "black boxing," a procedure which for the sake of simplicity, hides the social complexity of the construction of scientific facts.
creation of reality is naturalized in scientific texts and ensuing professional practices. While techno-science clearly has the power to manipulate the natural world, its most significant power, the power that gives it its power of manipulation, the power that gets people to cooperate in the actual production of techno-scientific manipulation (not only of the natural environment, but also of people and bodies) is what Bourdieu calls symbolic power.

Symbolic power, says Bourdieu is the power to define reality (Bourdieu 1979; Bourdieu and Passeron 1990). Because the production of reality lies at the very heart of hegemony, this power is indispensable to the reproduction of hegemonic culture. The power of techno-science is the power to create reality first symbolically and then reciprocally in practice (c.f. above regarding the reciprocity of meaning and practice; this is the mutuality of scientists and professionals, the union of techno and science). Scientific texts, create their symbolic power by delimiting what is acceptable as scientific reality.

In the case of science, symbolic power is actually the power to do “symbolic violence.” Bourdieu explains symbolic violence as follows:

Every power to exert symbolic violence, i.e. every power which manages to impose meanings and to impose them as legitimate by concealing the power relations which are the basis of its force, adds its own specifically symbolic force to these power relations (Bourdieu and Passeron 1990 p 4).

The legitimacy of scientific representation lies in its supposed transparent, non-political, representation of Nature. But as research in the philosophy, sociology and anthropology
of science has shown, scientific texts are not simply representations of Nature but also social and political texts (Pickering 1992a). And as I have argued in the above, the legitimacy of science is achieved precisely "by concealing the power relations which are its source." The power of scientific texts is the power to do violence, by creating a limited sense of reality, coopting people into believing in this reality, and hiding the fact that it is doing so. It is this hiddenness that makes scientific texts so dangerous.

By way of conclusion, consider this scenario: A person starts swimming. S/he comes under the authority of a professional coach. The coach understands the body of the athlete, "sees" the reality of the athlete's body as the reality of science. The body is trained at its anaerobic threshold, such that it produces "good results." The athlete also sees her/his body within the reality of science. As Hacking (1995) has explained in his essay on the "looping effect of human kinds," people come to see themselves in terms of the dominant definitions of them. The athlete, understood, defined, manipulated in the hegemonic realities of science comes to see him or herself as the very object that science says s/he is. And because the "results are good" the reciprocity of the professional practice with the scientific meaning confirms the hegemony of this reality. Both coach and athlete are engaged in the production of the body, completely unaware of that production as a reproduction of hegemonic reality. The most intimate reality of a person's body, its life of pain and pleasure, is replaced by the hegemonic reality of science.
3.2 THEORY OF THE BODY

Although the capitalist order appears to be tolerant, it in fact has always controlled life through its expressive, sexual, emotional and affective aspects, constraining it to the dictates of its totalitarian organization based on exploitation, private property, male dominance, profit, and profitability. It exercises this control under all of its various guises: the family, schools, the work place, the army, rules, discourse. It unfailingly pursues its abject mission of castrating, oppressing, torturing, and mangling the body. All the better to inscribe its laws upon our flesh, to rivet into our unconscious its mechanisms for propagating slavery. (Hocquenghem 1995, 260)

3.2.1 INTRODUCTION:

REVIEW OF SOCIO-CULTURAL THEORIES OF THE BODY

Central to an analysis of FBPE is the question of the body’s “nature.” What is the relationship between the body and society? Is the body a “natural” entity engaged in social relations but constructed purely physiologically, which is to say in ways that are independent of social relations? Or is the body, its physicality, actually the product of social relations? Applied to FBPE, these questions read: Are exercising and testing simply a matter of optimizing the body’s natural physiological operations? or are they a production of the body according to larger social projects? The answer to these questions, from a scholarly perspective, involves theories of the body in various academic discourses.

Wilhelm Dilthey (1883), reflecting trends in the academy of the time (i.e., the flourishing of the physical sciences and the emergence of the social sciences) said that the sciences are twofold: natural and social. The natural sciences study physical phenomena
in terms of natural laws, and the social sciences study social / psychological phenomena hermeneutically in terms of the intentions of agents. From this perspective the body is properly studied by the natural, biological sciences. While in psychology there have traditionally been biophysical strains (now the dominant approach in medical psychiatry) that have coexisted, often uneasily, with more hermeneutic approaches to the psyche, in sociology the role of the body in social life has been de-emphasized. Until recently, sociology and history have ignored the body, leaving it to the natural sciences (Hirst and Wooley 1982; Shilling 1993; Theberge 1991; Turner 1991).

Bryan Turner, reviewing recent developments in theories of the body (1991), says that while sociology has largely ignored the body, anthropology has always given it a prominent role. Earlier “philosophical anthropology” he says was interested in elucidating the universal essence of “man,” to understand those aspects of human nature that are common to all human beings, such universality setting the context for understanding cultural differences. In this conceptualization of human nature, the most fundamental

49 Physical education faculties are often divided along these disciplinary lines, with the biophysical sciences studying and teaching the body and the social and psychological sciences dealing with society and the psyche respectively.

50 Turner emphasizes that given that philosophical anthropology pursued questions under the sign of "man" rather than "human" probably indicates "... a gendered understanding of [the universal nature of] humanity, and the probability that classical social science was itself gendered or indeed, to invent a verb, bodied."(1991, 1)
and obviously common element of human ontology is embodiment: all human beings are embodied and that embodiment entails certain needs: sustenance, elimination of waste, reproduction, shelter from the elements, and so on. What makes cultures distinct is the different ways in which they deal with these fundamental human bodily needs, and what makes them modern is the degree of sophistication (read: advancement in the "civilizing" process of European capitalism\textsuperscript{51}) in administrating and transcending base bodily needs. This kind of anthropology emerged from European colonialism: an appreciation of common ancestry is garnered by studying the "primitive people" of the colonies—the natives of North America, Africa, Australia, etc. We can understand our own embodied origins by studying people who are less "developed" and therefore more embodied, supposedly. Chris Shilling (1993) and Susan Bordo (1993b) criticize this racist ontology for insinuating in the experience of racial/ethnic difference racist notions of cultural inferiority, an inferiority that is coupled with a negative conception of the body as base and other.\textsuperscript{52}

Another, related, anthropological trend concerns the relationship between culture and nature — this is a discourse that conceptualizes a universal human nature that exists in tensions between animal and human imperatives. Turner says that what is particularly interesting here is the existence of social prohibitions, especially concerning sexuality. In

\textsuperscript{51} This is a theme uncritically developed by Norbert Elias (1986). See discussion of Elias below.

\textsuperscript{52} I will discuss this negative dualism presently.
Nature versus Nurture debates, anthropologists arguing the case for Nurture suggest that incest taboos are "evidence of the fact that human social behaviour rests more on cultural regulation of actions which become institutionalized than it does on instinctual controls." (Turner 1991, 2) On the other hand, Victorian social Darwinism also finds expression in physical anthropology, suggesting that human social behaviour, including cultural production, is founded in the biological imperatives that have been part of the genetic evolution of the human species, a species which is not as far removed from the world of other animals as is often suggested by theologians, metaphysicians and existential philosophers.

Social Darwinism has its most recent "scientific" expression in sociobiology, i.e., the scientific biological account of social behaviour. Popular and socially influential sociobiological works include: (Ardrey 1971; Lorenz 1966; Morris 1967; Morris 1977). Kitcher says that sociobiology is widely regarded as a "program launched in 1975 with the publication of E.O. Wilson’s Sociobiology: The New Synthesis (1975)" (1987, 13). Other major sociobiological works include: (Dawkins 1976; Dawkins 1986).

There are detailed and complex critiques of the logics of sociobiologies and (I use the plural because there are many strands of sociobiology) the best, according to Stephen J. Gould, being Philip Kitcher’s Vaulting Ambition. Indeed, there is an entire subspecialty

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54 Gould endorses Kitcher (1987) on the cover of Vaulting Ambition: "the best dissection ever published on the logic and illogic (mostly the latter) of sociobiology."
in the "analytic" philosophy of science that is devoted to sociobiology. More relevant to this thesis are criticisms of sociobiology for its (re)production of power relations (cf my theory of science developed above), for example along feminist lines: (Bleier 1979; Bleier 1984; Harding 1986; Longino and Doell 1983). Turner and Shilling both point out that sociologists have been suspicious of attempts to explain human behaviour biologically because it fails to adequately account for the social/political context or paradigms upon which such science is based. For example, the Human Genome Project, which has a large sociobiological component, is being co-ordinated at the US military research institute at Los Alamos, which reflects the important political stake in genetic research which, at least potentially, could be practically applied to state interests; basic knowledge of genetic structure can be a precursor to genetic manipulation and control of populations. From standard sociobiological perspectives, the knowledge produced in the Human Genome Project in particular and sociobiology in general is conceptualized under the "received view of science" rather than under the political philosophy of science.56

Ideologically, sociobiology is a conservative force, looking for "natural" origins of current social arrangements, thus justifying the social status quo. Arguing that genetic

55 This is one of the arguments that lesbian and gay activists have used against genetic research into the etiology of sexualities.

56 The science of physical fitness is a sociobiological project in a political sense: it sets out to organize human behaviour by manipulating human biology via exercise and testing. This is the main point that will be argued at length in the next chapter.
evolution produces individuals and social structures that are best suited for the survival of
the species, sociobiology claims that "the dominant features of society are desirable,
irrespective [sic] of whether they are characterized by gross inequalities and the oppression
of minority groups. Furthermore, political attempts to alter these structures are deeply
misguided and dangerous. By working against human nature they are both harmful and
doomed to fail." (Shilling 1993, 50) So, for instance, feminist demands for change in the
social arrangements that treat men and women differently have been questioned by
sociobiologists who claim that these differences are part of the natural biological
development of the human species which have contributed to our evolutionary "success."
(Buffrey and Gray 1972; Tiger and Fox 1978; Trivers 1978; Wilson 1975)

Shilling situates the ideological role of sociobiology in the economic crises of the welfare
state in the 1970s:

Conservative ideologies were opposed to the growth of state intervention and welfare
services which had taken place since the Second World War, and became increasingly
popular as economic crisis in the early 1970s suggested that such interventionism was
ineffective. As the 1970s progressed, elements of sociobiology were used by the neo-
conservative and neo-liberal strands of the 'new right' in both the United States and
the UK. They helped these rising political groupings - later to find power through the
leadership of Ronald Reagan and Margaret Thatcher— to justify competition,
patriarchy, heterosexuality and the nuclear family as both natural and desirable. In
justifying the status quo, sociobiology proved especially flexible. Genes were 'found'
for aggression, territoriality, intelligence and male dominance. It was now the genetic
constitution of bodies which acted as the base on which the market and patriarchal
order arose as the natural and unchangeable superstructure. (Shilling 1993, 49)

Turner says that classical sociology, unlike anthropology and sociobiology which placed
the body at the centre of its concerns, has pursued different theoretical courses which have
marginalized (if not obliterated) attention to the body. Founders of sociology such as
Emil Durkheim, Karl Mannheim, Max Weber, and Georg Simmel were interested in the
rational economic structures of industrial capitalist societies: “economics was more concerned with the material production of goods rather than with the reproduction of bodies.” (Turner 1991, 7) Turner goes on to say that “in part, we can see the development of sociology as a somewhat hostile reaction to Darwinistic evolutionism, eugenics and biologism.” In this context, the body as a lived reality was allocated to other disciplines (biochemistry or physiology) or it became something essentially external to the human actor—either a constraint on action or merely instrumental to action.

Classical Marxist social analysis for the most part has also failed to develop a theory of the body. On Marx’s own appreciation of the body in society, Marxist writer Sebastiano Timpanaro said: “Physical and biological nature is certainly not denied by Marx, but it constitutes more a prehistoric antecedent to human history than a reality which still limits and conditions man.” (Timpanaro 1975, 40-1). Hoberman says that classical Marxists’ lack of interest in the body can be traced to a rational hyper-intellectual sociologism which Marx left his followers (1984, 119). Quoting Wilhelm Reich and Melvin Rader, Hoberman explains:

The character structure of active man, the so-called ‘subjective’ factor of history’ in Marx’s sense, remained uninvestigated because Marx was a sociologist and not a psychologist, and because at the time scientific psychology did not exist.” (Reich 1970, 32-3) As a consequence, Melvin Rader points out, a long series of critics “have said that Marx was not sufficiently aware of the irrational elements in human motivation: folk traditions, nationalistic sentiments, racial prejudices, group neuroses, unconscious and semi-conscious impulses (Rader 1979, 97).” (Hoberman 1984, 119)

To that list of human motivations might be added the desiring body, an issue that is addressed by neo-Marxists, such as Herbert Marcuse who conjoined the work of Freud
and Marx with the concept of repression. He said that while in simple societies some
sexual repression may be necessary for social function at the most basic level of economic
production, under capitalism, parallel to the large economic surpluses produced by labour
for the benefit of capitalists, there is also surplus sexual repression. Surplus sexual
repression functions in the ascetic social dynamics of disciplined capitalist production and
the expression of repressed sexual desire is redirected into consumption. Marcuse,
arguing for sexual revolution, thought that the capitalist ascetic social order could be
challenged by releasing libidinal power. Foucault has argued against this “repressive
hypothesis” (Foucault 1980a, p. 10) saying that libidinal power has actually been produced
along certain lines in modern capitalist society. Foucault says: “We must cease once and
for all to describe the effects of power in negative terms: it ‘excludes’, it ‘represses’, it
‘censors’, it ‘abstracts’, it ‘masks’, it ‘conceals’. In fact power produces; it produces
reality; it produces domains of objects and rituals of truth. The individual and the
knowledge that may be gained of him belong to this production” (1979, 194). I will
argue this point about productive desire at much greater length in the upcoming sections
on desire.57

Critical theorists of the Frankfurt School had little interest in theorizing the body
to any extent. For Adorno and Horkheimer, the body is mostly a contemptuous thing.
As a young man, Horkheimer wrote of a “yearning for perfection, which cannot be

57 Other writers of the 1960s and 70s who advocated liberation through Dionysian
attained as long as we possess a body and perceive it through senses" (Tar, 19). In *The Dialectic of the Enlightenment* Adorno and Horkheimer make a point of denigrating body and physical education in comparison to intellectual education, referring to the "self-justifying and nonsensical skill of riders, acrobats and clowns, in the defense and justification of physical as against intellectual art" (Adorno and Horkheimer 1972, 143). Indeed they identified the power of the body with the hyper-masculinist, distinctly physical brutality of historical Fascism: "Here go the hoodlums and rowdies, pug-uglies, torturers, and all those who do the 'dirty-work' of a fascist movement" (Adorno 1969, 428). "The naked torso of the athletic hero," which is now rampant in advertising, represents this same fascist masculinity in a pretty disguise (Adorno and Horkheimer 1972, 140). Being suspicious of the power of the body as being nothing less than the agent of fascism, Critical Theorists had a general distaste for the body and refrained from developing a thorough theory of it. This is a notable lack, for as Foucault, and Deleuze and Guattari suggest, it is precisely the body's availability to fascism that necessitates careful attention to it (See discussion below). And I will argue below that not only the bodies of "pug-uglies" are the conduits of fascism, but bodies in general.

A prominent modernist, progressivist theme has seen the body and its desires as subject to historical civilizing processes which reign in its natural excesses, contributing to "advanced" social formations which can be contrasted with earlier, more primitive ways of life in which desire runs rampant, often with violent repercussions. The civilizing of human passions is the central theme of Norbert Elias' historical, "figurational" account of trends in the development of modern European society. Elias and his followers maintain
that desire for violent bodily expression is a fundamental biological instinct which has been subjected to a "civilizing process." (1986). Through this process,

the standard of conduct and sentiment, particularly in some upper class circles, began to change fairly drastically from the sixteenth century onwards in a particular direction. The ruling of conduct and sentiment became stricter, more differentiated and all-embracing, but also more even, more temperate, banishing excesses of self-castigation as well as of self-indulgence (Elias and Dunning 1986).

This social development, he says, has taken place through the control of the self (pp 41 ff.). One of the important products of the civilizing process has been a less violent society.

If one compares contemporary leisure activities with those of former ages, one can see easily enough that only those have survived which could be adapted in accordance with a normally rather strong repugnance against humans inflicting physical injuries on each other. Contests between gladiators or between human beings and wild animals, for centuries an enjoyable pastime of urban populations in the Roman Empire, and medieval amusements such as cat burning, public hangings or cock-fights would probably produce little enjoyment for contemporary audiences and might be felt by some of them as intolerably horrible (p. 42).

It is difficult to agree with Elias on this. His argument that modern life is less violent and thus more civilized than its predecessors is highly problematic in basically two ways: factually and conceptually. I would argue that our society is actually quite violent.

Historically, North American society is the creation of a violent takeover wherein the land was taken from natives by force and intimidation, most of their population was wiped out and we continue with policies and practices for the cultural genocide of the First Nations. The modern technological capacity to do violence is the most awe-inspiring of any in history: the Nazi holocaust, Stalinist and Maoist purges, Hiroshima and Nagasaki. The violence of Imperial Rome pales in comparison. Especially in the United States, urban
violence is a major aspect of day to day life. Violence against women, in their homes, on the streets and in the work-place is an amply documented fact. The deprivations of poverty constitute a form of violence that is doing great harm to a large segment of the North American population. Racism and ethnocentrism, which are rampant both in North America and Europe, are clearly the source of tremendous violence. Homophobic violence is part of our day to day lives. We also have a violent relationship with nature, evidenced in the rape of the land, the destruction of forests, the industrially induced extinction of many plant and animal species and terrible pollution of the air, the soil, rivers, lakes and oceans. Elias ignores all of these things, focusing instead on matters of bourgeois taste, claiming that modern sensibilities dislike the sight of violence. But he is also wrong about taste.

Violence is a feature of many of our entertainments. The violence of mainstream films and television programmes is a much discussed fact. Now, Elias might argue that this kind of violence is civilized because it is not “real.” But the violence of mainstream entertainment, is a realist representation of violence: the more “real” it looks, the more convincing it is, the more entertaining it is. Add to this the fact that television news is a popular form of entertainment, and the fact that it often shows scenes of the dreadful, actual violence of war, starvation, street murders and so on, and we can see that violence is acceptable to our modern “civilized” tastes.

While there is some debate about the acceptability of boxing, the modern version of gladiatorial contests, it remains a feature of the sports pages. Violence is not an unwanted byproduct of men’s ice hockey; blood lust is an important part of the sports
spectacle. American football is a violent sport, injuring many players. The removal of the wounded from the playing field is part of the ritual of violence. While it is true that there is dissent regarding the violence of sport—the whole of society is not in agreement—it is also quite likely that there was not unanimity regarding the violence of earlier sporting practices either. There is also the fact that sports medicine is a growth industry; if violence were in decline so would be sports medicine. While there are many individual activities that do not involve violence between people, they still frequently involve considerable violence inflicted upon the self in the form of injuries from overtraining, excessive dieting and damage caused by drug abuse—all part of the modern world of physical fitness training. Elias also ignores the considerable evidence that the more violent aspects of sport function as training grounds for violent behaviour in other spheres of life (Russell 1983; Smith 1983).

Elias claims that while society has become less violent, it has also become less exciting. The role of sport in civilized society is to offer an acceptable outlet for mimetic excitement (pp 59 & 69). The social legitimacy of sport here lies in the way it contributes to the civilizing process, allowing an acceptable outlet for excitement while still maintaining self-control and a low level of violence. This is basically a cathartic theory of sport. But Russell (1983) has shown that most studies indicate that sport is not cathartic, that it at best has no effect on levels of violent aggression or can actually contribute to their increase.

There are also conceptual problems with Elias' civilizing process. At the centre of his theory is the concept of self-restraint. Ever greater degrees of self-restraint, he says,
have led to more civilized societies. He claims that the origins of self-restraint are biological rather than socio-political. He argues that humans have evolved, have developed a survival mechanism, on the basis of self-restraint, of being able to control emotional reactions. "A propensity for learning social controls forms an integral part of the natural constitution of human beings" (Elias and Dunning 1986, p. 60). Moreover, he says that this is an ahistorical, universal aspect of human nature: "The learning of self-control... is a human universal, a common condition of humanity" (p. 45). This propensity, he says, is biological in origin. Here he is on very thin scholarly ice, made all the more dangerous by the fact that his entire theory is resting on that ice. There is no legitimate scientific basis for his biological assertion. The biological basis for the "propensity for learning social controls" has never been "discovered." Even under the received view of science, the truth of a scientific proposition rests on its empirical verifiability; and so his biological assertion contains no truth. In short, Elias invokes the authority of science without any science to substantiate that authority. Now, the reason this is an important issue is that his appeal to science is an attempt to naturalize human behaviour, which is to say it is an attempt to remove a fundamental aspect of human behavior from the social and political realm. With this manoeuvre, the self-restraining self is beyond political discourse; it is dehistoricized by the naturalizing tendency of biological science.58

58 Elias admits that this biological science of the self has not yet been developed (p. 60). His contention that learning self-control is a human universal is ethnocentric, probably based in the same Victorian sensibilities that fueled Freud's ideas on the
The psychodynamics of self-control, Elias contends, involve another "natural" propensity: the need for excitement. But civilization, like a Freudian overactive ego, has repressed the experience of excitement—excitement seems to be parallel to the id. Both the need for excitement and the propensity for self-control, he maintains, are natural, universal human attributes. As I have mentioned already, Foucault has argued against such repression hypotheses, arguing that pleasure (which is homologous to Elias' concept of excitement) has instead been focussed, indeed intensified, in the interests of power (Foucault 1980a). In the light of Foucault's work on sexuality and social discipline, the socially constructed self and its psychodynamics of control and excitement is arguably a location for the exercise of power. In this context, sport is not a form of mimetic escape from boredom (Elias and Dunning 1986), but a controlled intensification of cultural themes serving the interests of power. The modern mainstream focus on sport as the embodiment of masculinity, for example, clearly serves the interests of patriarchal power. And certainly the consuming self, consuming products such as sport, is constructed precisely to serve the needs of consumer capitalism. Whereas the Eliasian account

universal construction of the psyche and repression. Eastern Buddhist traditions, for instance, do not conceptualize the psyche in terms of the imposition of control but as a matter of discovering harmony.

Maguire alludes to the Eliasian civilizing process as a repression hypothesis (Maguire 1991).
marginalizes power by pseudo-scientifically naturalizing the self and the quest for excitement, a Foucauldian analysis of the historical development of sport would be an analysis of social-political power.

Elias' theory is also in conceptual trouble because it takes science and the theory of evolution at face value. But as I argued earlier, science is not just a realist representation but a socially constructed discourse that creates "reality" according to a host of socio-cultural imperatives. Cf (Aronowitz 1988; Bazerman 1988; Foucault 1973; Foucault 1975; Haraway 1988; Harding 1986; Latour 1987; Latour and Woolgar 1986; Pickering 1992b; Shapin and Schaffer 1985). Elias' realist belief in biology (a biology which it must be remembered does not even exist) does not take into account the problematic nature of biology itself as a social construction. It must be kept in mind that part of the politics of the positivist sciences such as biology is a matter of hiding political ideologies behind the facade of value-neutrality. So while Elias tries to situate a modern relationship to the body in an historical process, he does so by appealing to an ahistorical, universal human nature, discoverable by positive science. An analysis of the deeply political construction of the body is sidelined. This avoidance of politics in deference to science effectively delegitimizes, from a critical/political standpoint, the Eliasian project.

Elias' work expresses an important tension in academic discourse around the body. This is the tension between theories of the body as natural and as socially constructed. Naturalistic theories of the body "share an analysis of the body which views it as the pre-social, biological basis on which the superstructures of the self and society are founded,"(Shilling 1993, 41) whereas, social constructionist theories of the body "suggest
that the body is somehow shaped, constrained and even invented by society." (Shilling 1993, 70) The tension between these two (nature and society) can be found throughout Western social theory (Turner 1991, 17). All twentieth century theories of the natural body are based in a faith in the “truth” of modern biological science, which is to say the ability of science to produce knowledge of the body which is independent of socio-political influences. Whether these theories conceive of culture and society as emanating purely from biological imperatives (as in the case of sociobiologies), in the interaction of biology and social history (as with Elias), or as something essentially distinct from the body as a biological organism (as in the case of classical and Marxist sociologies, which relegate concern for the body to the “natural” sciences), they depend upon the “received view” of science as a form of knowledge in which politics, power and other cultural imperatives are seen to be external to scientific knowledge of the body — where they are not external, they undermine the legitimacy of such knowledge. It is under this conception of the human body that the “life sciences” (including the exercise sciences) undertake their research and produce texts. No physiology text books that I have examined treat the body as a political entity.60 In the received view, for example, the natural body

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60 A partial exception to this is physiology texts that have been informed by feminist critiques of science (see Chapter One). But these texts are not yet part of the mainstream. For example, there is no mention of feminist critiques, women's issues, nor any reference to the feminist inspired physiological studies referred to in Helen Lenskyj's Women, Sport and Physical Activity: Research and Bibliography (1991) in the ACSM Manual — even the chapter on weight management and eating disorders has
simply has a cardiovascular system that can be trained to function more efficiently — this is a simple, transparent fact. But as I have argued above, the received view is misguided: there is no science independent of the cultural imperatives of power and politics. Science is engaged in the production of reality. Which means that the natural body known by science is actually socially constructed: a political body. I will try to prove this point regarding the science of FBPE in Chapter Four.

3.2.2 BODY POWER

In order to show how the science of FBPE is involved in a political field, which is to say in the social construction of the body, I will now develop political theory of the body that explores the relationship between the body and socio-political discourse. This will be a synthetic appropriation, or rewriting, of some key points about the body as I find them nascently in Heidegger (1927; 1938; 1954b; 1972), more developed in Foucault (1979, 1980, 1982), and Deleuze and Guattari (1983, 1987), and as they can be supplemented by Bourdieu (1988), and Hacking (1990, 1992).

no reference to feminist literature on eating disorders. Moreover, major texts on women and exercise physiology (Drinkwater 1986; Mittlemark, Wiswell, and Drinkwater 1991; Shangold 1988) make no mention of feminist critiques of the politics of science.
My synthesis of these various authors is pragmatic: to create an analytical tool. This calls for an eclectic dynamic that extracts useful concepts from the authors, rather than deferring to the authority of their oeuvres. Their work cannot be brought together in a unified gestalt. They have their differences. Nevertheless, threads can be drawn selectively from each and rewoven together in ways that are appropriate to this study. My loyalty is not to the objective history of concepts and their "creators," but to operationalizing some of their inspirations. I doubt that any of the authors would mind, too much. Deleuze and Guattari actually invite such an approach. Brian Massumi, in his *User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari*, points out:

Most of all, the reader is invited to lift a dynamism out of the book and incarnate it in a foreign medium, whether painting or politics [I am adding physical education]. Deleuze and Guattari delight in stealing from other disciplines, and they are more than happy to return the favor. Deleuze own image for a concept not as a brick but as a "tool box."[sic] He calls his kind of philosophy "pragmatics" because its goal is the invention of concepts that do not add up to a system of belief or an architecture of propositions that you either enter or you don't, but instead pack a potential in the way a crowbar in a willing hand evokes an energy of prying.(1992, 8)

I will take Heidegger's observation from the history of philosophy that modern man (sic) has developed an aggressive relationship to beings, one which marshals them as resources, rather than remaining open to the way they may emerge from themselves -- that resourcing of beings extends to human beings themselves. It could be argued that Heidegger uses the word "man" rather than humanity, because he is reproducing the historical sexist practice of using the word "man" to represent both men and women, showing insensitivity, unawareness, or even a willful desire to obliterate the different ways in which women and men may relate to the world in which they find and create
themselves. On the other hand, Heidegger's use of that common form, applied to the aggressiveness of modern technology, can be read (which is to say, leaving Heidegger's own intentions aside, focusing rather on the helpfulness of the reading) as a gendered sensitivity to the domineering, patriarchal nature of the modern technological project. It is worth noting that Heidegger chose his words carefully when signifying the beings commonly called humans—in Being and Time he uses the word Dasein, by which he means openness to being, rather than “Man” or “Human,” which he finds carry too much metaphysical baggage. When Heidegger speaks of “man the technologist” one can read not only long-standing metaphysical traditions, but also long-standing patriarchal gendered traditions. Heidegger's account of technology is androcentric; but then, the history of technology is also androcentric — produced by men (and not all of them at that) with women in ancillary roles. Indeed, Heidegger deals only with philosophical, scientific, poetic and fine art texts that have been produced by men. Which means we can read him literally: he is describing a masculine tradition in Western culture. And as feminist philosophers of science have argued, the domineering spirit of Western science and technology is patriarchal (Bleier 1984; Ginzberg 1989; Haraway 1988; Harding 1986; Harding 1989; Hubbard 1989; Hubbard 1990; Keller 1989; Keller 1992; Longino 1989; Rosser 1989). While Heidegger does not thematize gender, his critique of technology as an aggressive, domineering relationship to beings is also a well-trodden feminist critique of patriarchy. While women, like men, have been included in the technological project (mostly to their peril), it is men who have been largely responsible for it.  

61 Cf Heidegger on the meaning of "responsibility" (1954, 290-2).
From Foucault and Deleuze and Guattari I will argue that that technological disposition is the power of human being to turn beings into resources. Accumulating that power serves the interests of a governance of the body that serves the productive needs of capitalism (in terms of the economics of production and consumption, and socio-cultural disciplinary practices that are used to subject people to these economic imperatives). I will then argue that what is produced by this government over the power of our being, the territorialization of desire, of Eros, is fascist desire.\textsuperscript{62} The point of the theory is to explore how the body is available to, can be produced by, domineering forms of political discourse. And this theory is not intended to be perfectly suited to all discursive manifestations of the body. It is an instrument tuned specifically for the task at hand, which is to contemplate the body in the scientific discourse of FBPE. I draw primarily upon texts of Heidegger, Foucault and Deleuze and Guattari because their (partial and selective) synthesis will be well-suited to thinking about a science that prescribes a mode of being, a production of life, that regulates the flow of desire, by directing the moving body.

3.2.2.1 Technology

I begin with Heidegger — whose thinking is often dissociated from the other major theorists I am engaging here (Foucault, and Deleuze and Guattari) — because I think he articulates in evocative ways fundamental dissatisfactions with modern life that also motivate the more socially, economically and politically based analyses of Foucault, and Deleuze and Guattari: the insidious aggressiveness and foreclosure on our potential for

\textsuperscript{62} I will explain what I mean by fascist desire shortly.
freedom that characterizes modern life. More affirmatively, the wonder that Heidegger’s concentration on the phenomenology of Being inspires shares an uncanny resemblance to the freeing potential for “gaiety, ecstasy and dance” (1987b, 150) that Deleuze and Guattari describe as real possibilities, even within the aggressivity of the modern context.

Heidegger’s analysis of modernity focuses on its technology. Traditional social science and history have understood technology as the increasingly efficient use of energy, capital and machinery in the process of economic production. David Krell summarizes that traditional view, saying that historians and social scientists locate the beginnings of modern technology...

...in eighteenth-century England, where large coal deposits provide a source of energy for the production of steam, which in turn propels machinery in textile and other mills. But already at this relatively primitive stage of development the nexus of events becomes so complicated that nobody can neatly separate cause from effect. Everything is jumbled together into inscrutable “factors” -- revolutionary discoveries in the natural sciences, detection and extraction of energy resources, invention of mechanical devices and chemical processes, availability of investment capital, improved means of transportation and communication, land enclosures, mechanization of agriculture, concentration of unskilled labor, a happy combination of this-worldly and other-worldly incentives—and the age of modern technology is off and running before anyone can catch his [sic] breath and raise a question. (Krell 1977, 284)

In contrast to this account which sees technological life as the “natural” result of “discoveries” in the natural sciences and techniques of production, Heidegger suggests that technology is not the product of such discoveries, but a pervasive modern (Western) disposition towards beings that has engendered scientific and technical discovery/invention. Connecting this thought to Rouse’s comments on science as a mode of engagement in the world, it could be said that technology is a (practical) paradigm. (See discussion of paradigms, p. 93) But this is not a paradigm simply in
terms of technical procedures, familiarity with equipment and so forth. It is a practical paradigm in the more foundational sense of ways of disposing life and the world in general.

What is the nature of this technological paradigm? Danger. Heidegger says that the modern, technological way of being human poses a great danger: it fails to attend to the essence (in German, *Wesen*, by which Heidegger means the coming to presence) of human being (*Dasein*). This amounts to a failure to appreciate and, consequently, care for what is given in being human. The danger here is that modern technological human beings miss the opportunity to live fully in the wonder of their being. But this is not just a matter of missing an opportunity for some individual experience of mystery, rapture or insight. For this fundamental, historical, lack of appreciation of our essence brings with it an aggressive kind of un-caring, through which we order not only our individual selves but also our fellow human and other beings in such a way that any other revelation is precluded—it becomes a productive, dominating force. In “Science and Reflection” Heidegger (1953) invokes the metaphors of light and darkness, saying that our modern way has cast a shadow over the light of Being. By continuing to live in such a shadow, without reflecting on the light that is withheld by it, we fail to fulfill our most fundamental

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63 Immediately following the present discussion of Heidegger on technology, I will discuss this crucial issue of essence as “coming to presence” in a reworked form as movement, which is desire, which is the body.
responsibilities as beings who have the capacity to care for the way we and our fellow beings come to presence.

How does this danger come about? The answer lies in understanding what Heidegger means by technology. Departing from the traditional understanding, he says that "technology is nothing technological" (1954b, 317), not mechanical inventions, chemical manipulations, advanced transportation, communication and the like; these are but the products of technology. Technology is a way of revealing beings. But it does so by challenging them to be revealed as "standing-reserve,"(Heidegger 1954b, 298) which is to say something ordered to be used for something else, a resource. The essence of technology lies in this way of revealing beings. Which is to say that the modern technological paradigm brings beings to presence as resources. And modern technology is unlike the Ancient Greek form of techne, understood as poiesis, a gentle bringing forth of what is there. (Heidegger 1954b, 291-93). Modern technology is aggressive; it reveals things according to projects which are external to them. An example might help. The Ancient Greek understanding of sculpture was that the sculptor helped the statue that lay in the being of the marble emerge from the marble; it was a careful bringing forth of what was there, poieses, an original uncovering. Modern technology, on the other hand, takes pristine beings and turns them into something else, resources for projects. A forest, for example, is technologized when it is taken to be nothing but a source of materials for the pulp and paper industry; it is aggressively turned into something else. This modern way does reveal the forest in one aspect; indeed, the forest comes to presence under modern technology as a resource. The other ways that a forest reveals itself are ignored,
even undermined: the forest as a home for animals, a mysterious place, i.e. something in its own right. The word "resource" comes from the Latin root *surgere*, which means "to rise;" the prefix "re" means "again." Originally the forest is simply there, arising, as it were on its own terms, useless to industry. When it is re-sourced it arises again, not as simply there, but as useful to industry. And such resourcing, as clear-cut logging attests, is no small intervention into what was originally simply there, un-discovered as something useful to man.

Even humans become resources: the University of Toronto no longer has a personnel department, it is now the department of human resources; children are considered the nation's greatest resource! Students work hard at school in order to reveal themselves as excellent resources in a shrinking labour market. Treated as a resource, one's essence (the way one comes to presence) is one's use-value or exchange-value.  

Alderman embellishes Heidegger's analysis of technology as a disposition towards beings that marshals them as resources, adding that where there are resources there also are waste products (Alderman 1978, 46-7). He takes the example of mining which mines its resources in a discriminating and decisive way. Strip mining is the most blatant example of this: tearing up the earth and casting off all but the ore that it seeks. Indeed, advanced technology disposes of beings precisely by determining what is a resource and what is a waste product. The problems with this attitude toward the environment are now well

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64 Outrage with this a state of affairs, of course, has also been expressed by Karl Marx (1964) and resonates throughout the work of his many critical inheritors.
known. And in the North American "human resource sector" in the 1990s era of
corporate downsizing, more and more people are losing their (dubious) status as resources
and becoming waste products in the increasingly efficient production of wealth that
becomes the preserve of even fewer and fewer people (Greenspon 1996; Tough 1996).

Heidegger says that there is a metaphysical background for modern technology, a
metaphysics that is also the background for modern science. It is often thought that
modern technology has been made possible by the advances of modern science.
Heidegger says that a more fundamental historical shift lies at the heart of the modernity of
both modern science and technology. This is the historical shift in which man [sic]
becomes the measure of all things, in which man becomes the special subject. Everything
that is for man, or at least everything that matters, is what can be represented by man to
himself. In this, man become hupkeimenon, i.e. that which becomes the foundation of all
that is made present. For Plato the hupkeimenon was the eidos; for Aristotle, it was
actuality. With Descartes, whose cogito ergo sum announces for Heidegger the
philosophical centre of modernity, the *hupokeimenon* is the subjectivity of man.\(^65\) When man becomes *hupokeimenon*, he takes considerable power over what he beholds.\(^66\)

Central to this subjectivity is the power of projecting onto things that which is known about them in advance. For the modern scientific subject, this is a matter of seeing things in their objectness, by which Heidegger means their calculability. All that is can be pictured on a measurable grid of time and space. In “Modern Science, Metaphysics and Mathematics,”(1962) Heidegger points out that in this grid, space and time are not specific. He speaks of Newton’s doctrine of motion: “Every body left to itself moves uniformly in a straight line.” The crucial word here is *every* body. Any sense of things moving from themselves because of their own nature is removed here. (Heidegger

\(^65\) Historically, these philosophical debates, at least as they reach us in texts, have been conducted by men and completely exclusive of women. Women too can share in this domineering subjectivity. Indeed, Donna Haraway resents the notion that women are somehow essentially environmentally connected "earth mothers."

\(^66\) Heidegger believes that while "man as the measure of all things" reaches its fullest expression in Descartes and the modern project, it actually has its origins in the metaphysical tradition that began in fifth century (BC) Greece, when an appreciation of the essential mysterious *hidden* power of nature that is celebrated in Anaximander, Parmenides and Heraclitus, is replaced by the availability of every aspect of nature to the inspecting, knowing, anthropocentric, completely *revealing* power of man. (Sheehan, 1981, 540).
contrasts this with Aristotle's conception of bodies moving according to their nature e.g. heavenly bodies moving up and earthly bodies moving down.) For the modern scientific subject everything worth thinking about can be represented in this way; no account needs to be made of its own nature, of the way in which it might appear from itself. Modern science, Heidegger says, projects onto beings this fundamental (and narrow) notion of their being. Projection is what Heidegger means by mathematical, *ta mathemata*, what we know in advance of the experience of beings, such as their calculability in time and space and their resourcefulness within predetermined systems of use-value. So calculated, beings become objects for the modern scientific subject and resources for social, economic and political projects.

Objects, in the above sense, are only theoretical. Ostensibly, it is possible to conceive of beings in their objectness and still allow that they may appear in ways that are not calculable or resourceful. This would be a matter of seeing it as but one conception, one which may be helpful, but which could also be problematic. The great danger lies in not distinguishing between the conception of beings as objects and treating them as if that is all they are, which is to say only as represented to man as objects for scientific calculation and technological resourcing. In “The Age of the World Picture” Heidegger suggests that what happens in the modern age is that the picture of beings as calculable objects comes to limit the sense of what can emerge. In this sense the picturing representation is supreme; what is is what man represent to himself.

Humans themselves become enframed in calculating objectivity and resourcefulness. Science serves technology by offering the representation of beings as
objects. Technological man then takes that objective representation, and forgetting that he has made the objects reveals beings as only resources. Heidegger says that the great danger comes when what is revealed is revealed *exclusively* as standing-reserve. In this exclusivity there is no other potential: the only revelation of human being is as resourceful. This means that our essence (our coming to presence) belongs to social, cultural, political structures that determine its use-value—David Levin says this is a way of being which is essentially nihilistic (Levin 1985), destructive of human psychic well-being (Levin 1987). Foucault describes those structures in considerable political detail, and we shall turn to them presently. But a few last words on the Heideggerian background for the technological project.

The great, indeed promising, irony that is secreted in the dangers of the technological paradigm is that while it is true that it reveals beings as mere resources, as a mode of revealing it is still a coming to presence. And in that *energy of presencing* there is hope. In an interestingly deconstructive vein, Heidegger defines freedom in "The Question Concerning Technology" as follows: "Freedom is that which conceals in a way that opens to light, in whose lighting shimmers that veil that hides the essential occurrence of all truth and lets the veil appear as what veils" (1954b, 306). The point here is that if we become aware of technology as a domineering, marshaling force, and attend not to the what (i.e., the technical things produced in technology) but to the how of its revelation (i.e., marshaling our essence as resource) we can find freedom from technological destiny: "For man becomes truly free only insofar as he belongs to the realm of destining and so
becomes one who listens, though not one who simply obeys.” (Heidegger 1954b, 306, emphasis mine)

3.2.2.2 Puissance and Pouvoir

With the resourcing of human being as a background for a theory of the body, I turn now to a number of questions: What does coming to presence have to do with the body? What is lost when the body is resourced? How is the body made available to such resourcing? What forms might the resourced body take? What alternatives are available? And how might we pursue them?

I will now give Heidegger’s philosophy on the resourcing of beings a more explicitly political twist by placing his notion of “essence” as coming to presence and resourcing as an aggressive marshalling of presence in the context of power. I invoke two senses of power under two French signs: “puissance” and “pouvoir.” These are words that Deleuze and Guattari use to signify two different kinds of power -- although Massumi points out that the terminological difference is not always observed by them (Massumi 1992, xvii). Massumi defines them succinctly as follows:

*Puissance* refers to a range of potential. It has been defined by Deleuze as a “capacity for existence,” “a capacity to affect or be affected” [which refers not to emotion, but to the augmentation or diminution of the body’s capacity to act], a capacity to multiply connections that may be realized by a given “body” to varying degrees in different situations... It is used in French translation of Nietzsche’s “will to power.”... The authors use *pouvoir* in a sense very close to Foucault’s, as an
instituted and reproducible relation of force, a selective concretization of potential. (Massumi 1992, xvii)  

For the sake of analysis, I will begin by discussing puissance and pouvoir separately. In practice, however, they produce a dynamic energy which I will argue constitutes the body of modern capitalism—the OED defines energy as an “exercise of power, actual working, operation, activity.” This is, then, a theory of the body as dynamic, concentrating on the energy that is produced in the interplay of puissance and pouvoir. The dominant concept of the body as an individual biological object that occupies a discrete space/time continuum which is organized along functional, systemic lines (which is how the natural sciences view/represent the body) is reconceptualized in this theory as itself a kind of body power (pouvoir). To explore the capital exchange value of this dynamic body energy I will draw upon Bourdieu’s concepts of habitus and cultural capital.

A précis of the theory would be: Pouvoir sets about resourcing elements of puissance, which give existence to pouvoir, thus making cultural capital which circulates in the economics of production, consumption and debris. It is crucial to keep in mind that this resourcing and marketing is a dynamic, historical process, that for a host of reasons and under an infinite number of different circumstances, not only uses up but also lays

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67 Because these words will used frequently in the remainder of the thesis and in order to render them less 'exotic' I will from here on Anglicize them and not place them in italics.
waste and (fortunately) sometimes overlooks vast ‘regions’ of puissance. The following, I hope, will make this clear.

I begin with the body’s essence. Already this is dangerous territory. Postmodern sensitivities, inspired not only by academic cross-cultural studies but also the practical political insights of minority movements, are wary, if not downright opposed, to talk of essences. Such suspicion comes from well-founded concerns in feminist, queer, and anti-racist politics which see in the assertion of essence the reduction of whole classes of people to their culturally defined “essences” which demand that people live accordingly. For instance: because the essence of woman in patriarchal culture is based in reproductive function, women are expected to organize their lives according to this essential function. Or some feminist essentialisms suggest that women are essentially caring, nurturing, connected to the Earth and thus ill-suited to the pleasures of high tech culture—Haraway argues against these essentialisms in her well known “Manifesto for Cyborgs.” (Haraway 1985). Lesbian and gay essentialism suggests that homosexuality is a transhistorical, transcultural fact of human existence; while there has been debate about this subject (Stein 1992) such an assertion is widely considered to be at best unnuanced, culturally insensitive, and at worst a totalizing, indeed imperial, attempt to define all sexual experience along modern Western cultural lines. And essentialism along the lines of race has been widely criticized for its exploitive, derogatory, perpetuation of stereotypes that naturalizes hierarchical cultural categories by reference to physical characteristics (Hall et al. 1978; Shilling 1993; Vertinsky 1995) and empowers dominant cultural/racial groups
These concepts of "essence" criticize it, quite rightly, for imposing an imperial, defining and limiting gaze on the potential for human experience.

"Essence" as Heidegger uses it, and as I will take it up, need not necessarily denote an imperial gaze. Imperial essentialism, if you will, fills human being with cultural content based in socio-cultural systems for the organization of life, such as gender, sexuality, race and technology. "Essence," in that sense, is supposed to determine what (content) people fundamentally are, how they should be interpreted and the social context in which their lives should unfold. There is, however another essential dimension that is ontologically prior to the whatness of being and pertains to the phenomenal power (puissance) of being at all. This power is the essence of all beings (which, of course, includes human beings); it is the power of coming to presence—in Deleuze's definition of puissance, above, it would be the capacity to exist, the capacity to affect and be affected.

Although it is certainly by taking hold of the essence of beings that imperialism goes to work— as I am going to argue at length, pouvoir seizes upon puissance (essence), thus producing itself.

Massumi points out that "In numerous passages in many of his works, Deleuze rejects the term 'essence' because of its Platonic overtones, preferring such terms as 'event,' problem,' Aion,' or 'Idea'" (Massumi 1992, 148 n 20). Interestingly enough, Heidegger's concept of essence as coming to presence is an event, as I will show below.
But the puissance of coming to presence is not just a "capacity" to be (or exist), in the sense of a potential that may or may not be actualized, it is the urgent, eventful process of presencing. To be emphasized here is process (Sheehan 1981, 536): the process of be-ing which makes possible the presencing of cultural content. And in that process of coming to presence lies the potential both to construct and to deconstruct cultural content (whatness). The ethical and political problems that may be associated with essence as coming to presence lie not in being as coming to presence as such, but in ways of coming to presence, more specifically the harmful ways in which beings are compelled by socio-cultural forces to come to presence, which is to say the way their essence is produced in historical discourses.

Sheehan points out that Heidegger, whose philosophical concern was always "being," understood it as movement: "The unifying topic [of Heidegger's] program was,  

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70 Heidegger (1927) makes a distinction between existence, "which never gets straightened out except through existence itself" (33) and Being which is the proper philosophical subject for the ontological analysis of the "structure of existence." That distinction is specific to the analytic of Being and Time and issues Heidegger thematizes regarding authenticity in the face of death. While it is not a particularly germane distinction here, I will avoid confusion by "limiting" my discussion to being, which will be defined as the process of coming to presence.

71 This is the classical distinction between dynamis (capacity) and energeia (actualization) made by Aristotle in Book Six of the Metaphysics -- See Ackrill (1965).
from first to last, movement.” (Sheehan 1981, 539). Heidegger sought to address the Western tradition’s lack of appreciation of movement, indeed its incessant attempt to get some control over being by bringing some stasis to its movement (Sheehan refers to this as the “hypostatization of being”). In that context, Heidegger questioned the foundations of our experience of reality.’ He says that we have inherited a phenomenological mode of experience from the Greeks, evidenced from Homer to Aristotle, which is that we experience things analogically, as they show themselves “as something meaningful” (Sheehan 1983, 137). Indeed, in Western experience “...man [sic] can deal with entities only insofar as they appear as such and so” (Sheehan 1983, 138 emphasis mine). This is the logos: an openness to being (Dasein) that gathers together and lays before us what is there (Heidegger), in the form of a hermeneutic circle which allows it to appear in the analogies of meaning structures. An example based in my earlier discussion of technology may help: The logos of modern technology is an openness to the being of entities that understands them already as potential resources / waste products. The forest thus comes to presence for the technological forester as a resource — such an appearance of the forest comes from the forester’s education and

72 Heidegger, not fancying himself as a political philosopher, (his apparent philosophical silence on his own Nazism proving this point all too emphatically), did not thematize extensively the political psychology of controlling being. But the hypostatization about which Sheehan speaks is a way of controlling being (Sheehan 1981)
training in the logos of modern forest management. Technology is a logos. Similarly, there are logoi of gender and race that give meaning to the appearance of people. But there is a logos more fundamental than technology, race and gender; this is a logos which is an openness to being that makes be-ing itself meaningful.

Heidegger says that what makes being meaningful is time. In Being and Time he describes how Dasein’s authentic appreciation of its own death makes time palpable and gives being a truly urgent meaningfulness. There, the contemplation of one’s own death as the negation of one’s presence brings to one a shattering awareness and appreciation of presence. In his much discussed and mostly misunderstood “turn” (Kehre) (Sheehan 1981, 539) Heidegger articulates the logos of being not as the world-shattering appreciation of presence that sings in the shadow of its own negation, the onset of absence that is death, but as the revelation (aletheia - more accurately: unconcealment) of absence as the fountain of presence as it is manifest in the event of movement, which Heidgger calls ereignis, (1972) and which I will attempt to explain momentarily. The logos of being, the openness to being that gathers together what is there such that its being is meaningful is the logos that gathers together the relations of absence and presence as movement. The body appears in the logos, the meaningfulness, of movement. My theory of the body, then, is a theory of its essences as they are revealed in the logos of its movements, puissance and pouvoir. The logos of puissance reveals the meaning of the body as motile be-ing, an event. The logos of pouvoir reveals the meaning of the moving body as socio-culturally organized.
Heidegger draws his understanding of being as movement from Aristotle saying that it is the play of presence and absence:

For Aristotle, Heidegger points out, all natural entities are kinetic in an ontological way: their \textit{kinesis} is their very being. A moving entity is one that does not fully appear (is not completely present) and yet does appear precisely in its incompleteness. We understand a plant as a plant, for example, only by knowing that its presence is fraught with absentiality: a not yet and no longer, a coming into and a going from presence. Such relative absentiality is what makes the entity \textit{be} the moving entity it is. Therefore, to really know a natural thing means to keep present to mind not only the present entity but also the \textit{presence of the absentiality} that makes it kinetic. The presence-of-its-absentiality (or its privative presence) is the moving entity's being-structure. (Sheehan 1981, 537)

More appropriate to a theory of the body than the observation of the movement of plants is the movement of the body. Levin says: "The field of our motility is the \textit{layout [logos]} of a field of Being: it is how Being manifests, how Being presences, in relation to our motility." (Levin 1985, 94) The puissance of the body is its being, its coming to presence, its essence as movement. In contrast to Sheehan, above, who discerns presence and absence in movement from a relatively disengaged visual perspective (what we know about plants having seen them grow) I will attempt to appreciate the relations of absence and presence by reflecting upon the immediacy, the intensity of our own experience of moving in the Western logos. Reflection (\textit{Besinnung}) is the methodological heart of Heidegger's appreciation of being and movement (Heidegger 1927; Heidegger 1953; Heidegger 1954a; Heidegger 1954c; Heidegger 1966; Heidegger 1972). "Reflection" (\textit{Besinnung}) should be understood as an experience that is different to representational thinking, for which Heidegger uses the word \textit{vorstellen}, which suggests the mind observing itself. (Heidegger 1953, 156, translator's note) Reflection, on the other hand, is a deliberative recollection that considers the sense (\textit{Sinn}) or meaning of the \textit{passage of...}
the event of being. Reflection evokes the spirit of the event of being as coming to presence rather than provides an object-ive re-presentation of what happened. The spirit of the event of being is the sense (Sinn) of it; reflection brings the sense of the spirit of being to the fore. Reflection arises in the resolve to attend to the event of being as movement (Ereignis); it is akin to dwelling in and appreciating the wonder of the journey of life. As such, reflection is the opposite of pat explanations of what happened to one: absent father and overbearing mother, an unresolved Oedipus complex, child sexual abuse, co-dependency, psycho-chemical imbalance or some such. Reflection, says Heidegger,

...is more than a mere making conscious of something. We do not yet have reflection when we have only consciousness. Reflection is more. It is calm, self-possessed surrender to that which is worthy of questioning. Through reflection so understood we actually arrive at the place where, without having experienced it and without having seen penetratingly into it, we have long been sojourning. In reflection we gain access to a place from out of which there first opens the space traversed at any given time by all our doing and leaving undone.(Heidegger 1953, 180)

In “On the Way to Ereignis” Sheehan says:

Only in resolve does one enter Ereignis, only by taking up personally one’s own movement does one authentically discover the movement that is being itself. The meaning of being, as Richardson has said, is not a doctrine to be learned but a risk to be taken. And if one does not take that risk, Heidegger told his students, ‘all talk and listening is in vain.’(1983, 163)

Reflecting on one’s own movements poses a risk to the organization of the self.

As I will attempt to show shortly, an intense awareness of movement deconstructs the self as such and reveals a non-selfish dimension. Deleuze and Guattari describe this as an engagement in plateaus of intensity that free the body of limiting discursive imperatives such as the delineated, discrete self, a self which is constructed/organized (pouvoir) in discourses such as gender, race, and technology. What is revealed in the intensity of
movement is a body that is not externally organized (the subject of pouvoir); it is, rather, a de-organized (determinitorialized) body-without-organs (which Deleuze and Guattari signify with “BwO”) that is free. Agreeing that engaging in the intensities of the moving body poses risks, they say:

And how necessary caution is, the art of dosages, since overdose is a danger. You don’t do it with a sledgehammer, you use a very fine file. You invent self-destructions that have nothing to do with the death drive. Dismantling the organism has never meant killing yourself, but rather opening the body to connections that presuppose an entire assemblage, circuits, conjunctions, levels and thresholds, passages and distributions of intensity, and territories and determinitorializations measured with the craft of a surveyor.(Deleuze and Guattari 1987b, 160)

But with this danger comes the potential for experiments with freedom, a freedom that goes beyond the self. Levin says:

...as we let go of the ego-logical, ego-centric structure which typically characterizes our present experience of motility in its personal-interpersonal field, going (as it were) beneath it in an attempt to make contact with our more primordial attunement by Being as a whole, what we encounter, along the way, is a prepersonal and, in fact a transpersonal dimension; and our contact with the motivating energies at work in this dimension of our experiential motility field can have profoundly therapeutic effects, radically transforming our experience, for example, of the very ground of interpersonal solicitude.(Levin 1985, 97)

Crucial to the following explication of the moving body is the possibilities it affords for collective rather than individual, anomic, experiences of life. Heidegger, in his essay on Heraclitus’ saying on the Logos, “Listening not to me but to the Logos, it is wise to agree that all things are one,” says that an openness to being reveals the essential connectedness of our existence (Heidegger ). Deleuze and Guattari point to this, above, suggesting the body be opened to “connections that presuppose an entire assemblage, circuits, conjunctions, levels and thresholds, passages and distributions of intensity.” Merleau-Ponty refers to this collectivity as a “prepersonal tradition,” that is the body: “My
personal existence must be the resumption of a prepersonal tradition. There is, therefore, another subject beneath me, for whom a world exists before I am here, and who marks out my place in it. This captive or natural spirit is my body.... a communication with the world more ancient than thought.” (Merleau-Ponty, 1962, 254) For Deleuze and Guattari, this prepersonal “tradition” is the BwO, a dimension of the body that is always already there, but which is for the most part already appropriated by discourses that would deny its essential collectivity, by reigning in the freedom of its movements.

What is the BwO, or “How Do You Make Yourself a Body without Organs?” (Deleuze and Guattari 1987a):

At any rate, you have one (or several). It’s not so much that it preexists or comes ready-made, although in certain respects it is preexistent. At any rate, you make one, you can’t desire without making one. And it awaits you; it is an inevitable exercise or experimentation, already accomplished the moment you undertake it, unaccomplished as long as you don’t. This is not reassuring, because you can botch it. Or it can be terrifying, and lead you to your death.... It is not at all a notion or a concept but a practice, a set of practices. You never reach the Body without Organs, you can’t reach it, you are forever attaining it, it is a limit. People ask, So what is this BwO? — But you are already on it, scurrying like a vermin, groping like a blind person, or running like a lunatic: desert traveler and nomad of the steppes. On it we sleep, live our waking lives, fight—fight and are fought—seek our place, experience untold happiness and fabulous defeats; on it we penetrate and are penetrated; on it we love. (Deleuze and Guattari 1987a, 150-51)

Here, as in Heidegger, there is a call to attend to the event of our coming to presence, of appreciating it as a happening, a journey, under way, a practice, fraught with presence and absence, more than individual, never completely revealed, and risky. Heidegger understands this coming to presence as the movement of being; in the movements of individual human beings, the movement of being as whole is manifest mysteriously. Using the somewhat sexier language of desire, Deleuze and Guattari conceptualize the power of
being explicitly as embodiment: they speak of the productive power of desire that takes place in the holism of the BwO. For Deleuze and Guattari, desire is not a means to an end: the desire for sex in order to procreate, the desire for food in order to sustain life, the desire for social networks in order to support and strengthen the ego, the desire for physical exercise to calm one’s nerves, the desire for money to buy desired stuff. Desire is not a lack of something else, a hole that needs to be filled. Desire, they say, is a productive force, like Nietzsche’s “will to power” (Massumi 1992, 82), and “the real is the end product” (Deleuze and Guattari 1983, 26). It is the potency of becoming or actualizing, a potency so intense that it seeks no culmination or resolution. Indeed the culmination of desire is an a posteriori lack of desire, desire’s undoing. Desire is productive affirmation. In Anti-Oedipus Deleuze and Guattari refer to the desiring body as the “desiring machine”—the word machine is meant to evoke the power of machines to produce, rather than mechanical servitude to owners and systems that use them. What does the desiring machine produce? Flows of desire — movement. Crucial to this sensibility of the desiring body is its anti-stasis: it is eventful, productive, affecting. In A Thousand Plateaus they define desire as: “a process of production without reference to any exterior agency.” (Deleuze and Guattari 1987b, 154). What is important here is the notion of desire as a process, which is to say movement. Desire is the fundamental, productive, moving process by which the body is. 

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73 In as much as Deleuze and Guattari eschew foundational philosophy, sensing in it a dictatorial restriction on whatever thinking follows, they do posit the puissance of desire as an energy that exists in some relationship to other kinds of energy — their
In their focus on dynamic processes of production, Deleuze and Guattari share an important thematic focus with Heidegger, who articulates his concerns under the sign of "being." Deleuze and Guattari, however, barely mention Heidegger, and explicitly distance their own work from ontological philosophy. Massumi points out: "To avoid philosophical baggage, they are more likely to say that a thing is 'actual' than that it 'exists.' To drive it home that actuality is dynamic they use the word 'becoming' in place of 'being.' A thing's actuality is its duration as a process—of genesis and annihilation, of movement across thresholds and toward a limit." (Massumi 1992, 37) The "philosophical baggage" that is supposed to tag along with discussions of 'being' is that "being" represents a reified entrapment of desire in transhistorical form, an oppressive "state" that we have inherited from the Greeks. Talk of 'being' is nothing more than an expression of a pathetic nostalgia for the security of Ancient Wisdom, the world of the living dead. But it

particular interest is the energy of capitalism and the ways in which it impacts the flows of desire. There is an essential energy about desire that could be free of culture, an energy that capitalism seeks to harness (resource). As such it is immensely valuable to culture, social organization, and economics. Indeed it is by the organization of desire that culture, society, and economics are produced. The Capitalism and Schizophrenia books tell the story of the fate of desire under capitalism. It shows how desire comes to presence under capitalism.

74 There are only two passing references to Heidegger in A Thousand Plateaus, (125 and 561, note 85) and none in Anti-Oedipus.
would be a significant misunderstanding of Heidegger's thoughts on being to associate them with such philosophical baggage. For Heidegger sees being not as a state, but as movement and because of that sought to *destroy* the ontological tradition that brings stasis to the process, the event of being that is *Ereignis* (Sheehan 1981). Indeed, as I will attempt to show in the following reflections on the being of the body, awareness of its movement is precisely an awareness of the body's being as "a process of genesis and annihilation, of movement across thresholds and toward a limit." When in *Time and Being* Heidegger speaks of *Ereignis* as the "ancient something" he is not referring to an imperial, controlling past that will not go away, but on the contrary, to the potential resistance that being as movement has always posed for hypostatic, imperial, frameworks.

Deleuze and Guattari simply posit desire as the fundamental flow of energy, the puissance, of human being/becoming/actuality, defining it as "a process of production without reference to any exterior agency." (Deleuze and Guattari 1987b, 154) Desire is a power in and of itself, ontologically prior to function, morality, or any other cultural reference. While desire, certainly, is operative in sexual reproduction, it is not confined either to reproduction or genital sexuality. For Deleuze and Guattari, desire extends well beyond what is known generically as sex (love-making, casual genital encounters, sadomasochistic scenes and the like). Desire is the life force by which we move at all. As such, it is the process of all physical activities: walking, reading, conversing, swimming, eating, defecating, sitting, thinking, etc. While Deleuze and Guattari ascribe tremendous power (puissance) to desire, they do not analyze the 'internal' dynamics of that process. I suggest that a reflective analysis of the process of production will reveal not only how
desire (puissance) is resourced by "exterior agency" (pouvoir), but also the internal processual composition of puissance that affords opportunities for resistance to pouvoir, even freedom.75

The puissance of the living, desiring, body is the way it comes to presence in movement. This process of production is the bodily play of presence and absence. Only by moving does the body come to presence. Even when sitting still, the heart beats, the blood flows, the lungs expand and contract with air. What matters in the body's movement is not that it has gone from state A to state B (for example the lungs expanded to lungs contracted, or that I ran from my house to the junction of the Don River and Pottery Road and back); what matters is the eventfulness of the movement. Sometimes we are more aware of our movements than at other times; physical activities, such as running, swimming or sex, can reveal an intensity in the event of the moving body that makes reflection more accessible. If I reflect, for instance, on running through one of

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75 The following reflections on the body, movement and being are distilled from several sources. They are inspired particularly by the later writing of Heidegger, especially his thoughts on ereignis as the eventfulness of being (Heidegger, 1972). I also draw on thoughts from my Master of Science thesis (Pronger, 1991), an article on postmodernism and science (Pronger 1991a), an article on postmodernism and sport (Pronger forthcoming) as well as several papers I have given at conferences over the last number of years (Pronger 1990b; Pronger 1991a; Pronger 1991b; Pronger 1992b)
Toronto's ravines, I get the sense (Sinn) that being appears there as an event, an intense happening.

An event happens. Being happens. Movement is implicit in the happening of an event; this is born out etymologically. Our English word “event” comes from the Latin eventus, whose root is venire, which has its origins in the Greek root BA which means “go.” An event goes. This is not lost in Modern English. For example: I might go for a run. Going for a run is not just a matter of preparing to run: getting dressed, stretched and warmed up and ready to leave; actually moving through the course of my run, I am going running. Running is the way of this particular going. The event of my running consists in such a going. But this is not the sense of simply going away, of leaving behind. Going into that which lies before me is also coming. If I say I am going into the Don Valley I am also coming into the Valley; these movements feel essentially the same.

Going and coming refer to the same thing, the moving event of being. Reflecting on the event of the body’s being (das Ereignis) I draw the sense [Sinn] that the puissance of the body is active, not static. The eventful being of the body is its movement. The body is coming and going. A body which is not coming and going is an abstract body, devoid of being; it is not my body, the palpable body of my friend or lover; it is not the body that walks, runs, and swims. By moving, the body comes to presence. Movement is the essence of the body. When the body completely ceases movement it is no more. In death, after the flesh and organs have completed their decay and the bones have disintegrated, the movements of the body cease and the body as such is no more. In day-to-day speech, in medical and religious practices, we say that lack of movement marks the
end of the life of the body; likewise we will say that movement’s advent marks its
inception. Moving is the being of the body.

Understanding the body as movement is not just a philosophical clarification, a matter of
refining the words that define the body. On the contrary, reflecting on the body as
essentially moving I will suggest, undefines it, evacuates it of its distinction from
everything else and allows its essential relatedness with all elements of existence to show.

Moving, we slip through the barrier of difference; we come and go in the sphere of
essential relatedness, which is the puissance of the body.

Movement is the play of presence and absence. In movement, absence is the opening, the
freedom, by which presence comes to presence. Absence opens presence, allows presence
the freedom to be present. Absence is the essential ‘space ahead’ that allows presencing
to happen, giving presence the very possibility of coming to presence. Absence draws
presence into presence. Presence must have an absence into which it enters or it will no
longer be presencing but will only have been present.

Absence lies before presence, in anticipation. Just as absence lies in the foreground of
presence, so too presence lies in the anticipation of absence. The absential anticipation of
presence is the reception that absence gives presence. Absence must receive presence or
there will be no making present. In this anticipation of presence, absence draws presence.

Thus drawn, presence penetrates absence.

The penetration of absence by presence is not an assault on absence. Only in the
phallologocentric cultures of patriarchal heterosexuality and its homosexual derivatives is
penetration an assault that establishes the power of penetrating males over submissive
While this version of penetration may be the norm in phallocentric cultures, it needn't be the gold standard. I admit that my use of the word “penetration” does have genital sexual connotations that are especially sensitive in the context of oppressive power relations of gender in patriarchy. But my primary empirical point of reference is not genital sexuality. In fact my understanding of absence and presence, of the penetration of absence as an opening that makes presencing happen, comes from my athletic experience. It first occurred to me when I was lost in the intensity of working-out / playing on a rowing ergometer. I became aware of absence as the existential space that lay ahead of my exertions, drawing me into the existential opening that those exertion were. As my feet pressed against the stirrups and my upper body pulled the oar, my body both penetrated absence and was drawn into it.

Understanding penetration, therefore, requires purging it of its phallocentric associations. This is not the penetration of an “inferior” other. On the contrary, because it is the essential foreground of presence, absence is primordially one with presence. In

76 I am here referring to sexualities which have their cultural basis in the power relations of the gender myth. This theme is explored in Chapter Two "Sexual Mythology" of my book (Pronger 1992a)

77 In fact, it is a deeply patriarchal assumption that only men can penetrate. For this assumes that penetration is accomplished first and foremost by a phallus. But it is heterosexist and phallocentric to assume that the phallus is the only thing that can penetrate, or indeed, that the vagina is the only orifice for penetration.
penetrating absence, therefore, presence penetrates itself; being the foreground of presence, absence is essential to making present. Neither presence nor absence happen without each other. In the event of being they are one. That is, in its receptivity, absence opens presence in its own being-present; opening presence, absence draws presence into presence. Foregrounding presence, drawing presence into presence, absence inheres in presence.\(^7\)

Because presence is the \textit{event} of presencing (i.e., not a state but an occurrence) and because absence inheres in the event's happening, absence and presence are essentially one. As I run through the Don Valley, my being there is both absence and presence, at once. I cannot be unless I am both absent and present, unless my presence and absence are fraught with one another. Heidegger speaks of this as \textit{Ereignis}: the event of pres-absential \textit{appropriation}, as it is usually translated (Sheehan 1983). But the word “appropriation” is inadequate to the task, for it still echoes stasis and hierarchy in the sense of (i) the achievement of a state of appropriation, and (ii) an established appropriator (Heidegger mystically refers to it as the “it gives”). There is something simpler happening in movement, a primordial play that precedes any spirit of proprietorship. Absence draws the penetration of presence into itself. In that drawing, presence penetrates itself. Accordingly, drawing and penetrating are also one. Drawing-

\(^7\) Paraphrasing Heidegger on this point, Sheehan (1981) says: "The presence-of-its-absentiality (or its privative presence) is the moving entity's being-structure. We may call it 'pres-ab-sentiality'" (537).
penetrating-absence-presence is the simple event of essential relatedness through which
the body moves, by which the body is. Absence, here, is not a lack, it is the inherent
positive productive generosity of moving, desiring, puissance.

I began this reflection on the essence of the body with the observation that it is a
moving event. That event, I have suggested is the puissant play of drawing-penetrating-
absence-presence. What is suggested by the word “play?” “Play” names activity. In
sports we say that the ball is “in play” which means that it is engaged in the activity of ball-
playing. I play the violin; which means that together the violin and I produce music.

“Play” also connotes freedom, freedom for movement. The sail of a boat needs some play
if it is to catch the wind. The play of the body is the freedom of presence and absence to
draw and penetrate. This freedom (play) is the opening which allows presence to
penetrate absence, an opening which is nothing other than the absential drawing of
presence into itself. The puissance of the body is its freedom to move.79

“Opening,” as I am using it here, is a gerund. This opening is not something static in the
way that a door is an opening to a room. The opening of presence is a happening akin to
the opening of flowers, a play, a dialogue or a friendship. Presence, I have said, comes
into presence through the opening that absence makes. Absence opens the space, as it
were, for presence to happen; as such, absence is of the essence of presence, opening the

79 In his essay “The Essence of Truth” Heidegger (1961) says that the essence (the
coming to presence) of truth is freedom, because freedom lets beings be the beings they
are. Moving, the body is true.
way for presence to penetrate itself. That unitary play of the self-penetration of presence is the freedom which allows presencing to be.

Dancing, for instance, can be a freeing experience because it is the playful event in which presence is opened. Similarly, in running, presence is opened, free to be present. The puissance of the moving body, of its being, is the freedom that allows coming to presence. Such presencing, which is the puissant self-penetration of the body as drawing-penetrating-absence-presence is limitless. Presence, penetrating itself, is limitless. This is the limitlessness of inwardlyness: penetrating itself, presence presses inwardly into itself. Self-penetrating, inwarding movement can have no limits. Limitless inwarding movement is the coming and going of being, the “direction” of self-penetration. The meaning of inward here is crucial. This is not inward in the sense of going into the Self, of focusing on oneself, omphalocentrism. This is inward in the sense of going into the wholeness of being. The “in” of “inward” here connotes the sense of the word “in” as when we speak of being in-tune, in-harmony, or in-love.

Heraclitus says “it is wise to agree that all things are one.” This is the limitless unity of being-as-a-whole, a unity that appears in the play of presence and absence in the moving body. Deleuze and Guattari speak of something similar, calling it the non-limitive BwO, which is not a thing, but an ongoing eventful dimension of human energy. Merleau-Ponty alludes to this essential relatedness as the body’s prepersonal communicative power. Levin, pointing to the importance of our bodily motility, draws together Heidegger’s thoughts on being-as-a-whole with Merleau-Ponty on the prepersonal dimension of the body, saying that through our motility and thus our
"primordial attunement by Being as a whole, what we encounter, along the way, is a prepersonal and, in fact a transpersonal dimension. "(Levin 1985, 97)

So, the essence of the body as puissance is its coming to presence by moving (drawing-penetrating-absence-presence), which is itself essentially playful, free, limitless, productive desire, which is the power of our essential relatedness to all existence.

Earlier, I spoke of Logos and defined it as “an openness to being (Dasein) that gathers together and lays before us what is there (Heidegger), in the form of a hermeneutic circle which allows it to appear in the analogies of meaning structures.” And I said that there are different logos, such as technology and gender. There is also a logos that gathers together the essence of the body as puissance: Eros. Eros is an openness to being that gathers together and lays before us the puissance of our essential relatedness to all elements of existence such that it is meaningful. In other words, Eros opens the meaning of the puissance of our moving being. Deleuze and Guattari speak of...

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80 My use of the word "Eros" is not in any way related to Freud's for the entire complex of life-preservative instincts. Freud's theory of instincts serves a functional logic of the human psyche. Understanding human being primarily in terms of function, I will argue below, is an epistemic strategy of pouvoir. In Deleuzian terms: it is part of the knowledge-based organization of the body that blocks/channels the free-flow of desire. In Foucauldian terms, it is a knowing, inscribing, indeed circumscribing gaze that establishes power (pouvoir) over the body (which for Foucault includes mind/psyche) by determining its proper uses.
Eros as the "energy dedicated to the connective syntheses at the basis of becoming" (Massumi 1992, 192 N. 43) For Eros is the energy that gathers together, (connects), presence and absence such that movement is intelligible. That intelligibility is not just a philosophical or meditative point, although it certainly is that, it is also what is grasped in our dealings with what is there, with what we do with the body. Eros shows the body's potential for infinite freedom as well as its value as a resource. Our dealings with Eros have an effect on how we go about life.

A selective appropriation of conceptions of Eros from classical mythology may help to sketch the sense that I am trying to provoke in my invocation of the god (Boas 1967; Grimal 1986). In Homer, "eros" refers not to a god, but simply the common noun meaning "desire." It is the immensely powerful tendency to make connections: "It is the violent physical desire that drives Paris to Helen, Zeus to Hera and shakes the limbs of the suitors of Penelope" (Hanffmann and Pollard 1970, 407, emphasis mine). As a god, Eros is decidedly not the demon, halfway between god and human described by Plato in his Banquet in which Eros is said to be born of the union of expediency (Poros) and poverty (Penia). Rather, the deity of Eros stems from the fact that s/he is one of the three

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81 I appropriate a god from classical Greek mythology and insinuate it in thoughts which are meant to catch some of the spirit of Deleuze and Guattari, knowing full well that they have little patience for our Greek heritage, but also knowing that Deleuze and Guattari "delight in stealing from other disciplines" on the basis of what is useful (Massumi 1992, 8).
primordial gods along with Chaos and Earth, as described in Hesiod's *Theogony.* As such Eros is a fundamental world force. S/he is playful and destructive. Which means that listening to the logos of Eros is both freeing and risky. While destructive force can be positive, great care must be taken in its implementation. This means that listening to the Erotic logos calls for wisdom (Deleuze and Guattari call it "the art of dosages" (Deleuze and Guattari 1987b, 160)). Listening to Eros does not happen in a cultural vacuum. Eros, the logos of the body as puissance, speaks in the context of pouvoir. So to pouvoir, I shall now turn.

**Pouvoir**

Pouvoir deals with "problems of the body" that are issues for all societies (Foucault 1979, 136; Turner 1984): the organization of desire in physical and sociocultural space and time. In classical sociology (Weber), psychoanalysis (Freud), and critical theory (Marcuse) the problem of desire in modernity has been analyzed as a problem of repression, which Foucault has called the "repressive hypothesis." Weber, believing that there was a close relationship between the rise of industrial capitalism and Protestant asceticism, said that the Protestant sense of 'calling', self-denial and hard work served a social function in the "rational ordering of the body which was thus protected from the disruptions of desire in the interests of continuous factory production" (Turner 1984, 100). Freud's psychodynamics posit the "primal repression" of libido in which primitive forbidden id impulses are blocked and prevented from entering consciousness,

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82 I am deliberately casting Eros as transgendered to emphasize her/his power as the logos of puissance to challenge the pouvoir of gendered discourse.
thus controlling the potential for wild libidinous behaviours. Marcuse (1969) suggests that in order to produce surplus capital, the capitalist system maximizes production by minimizing social resistance in the form of libidinous power by systematically repressing sexual desire; this results in concomitant surplus repression.

Following Heidegger, Foucault and Deleuze and Guattari, I will suggest that the modern body/desire is not repressed in the service of social forces, but is developed, rather, for its potential as a resource. From Heidegger I will speak of the aggressive marshalling of being, which he calls Gestell, as a way of dealing with the body as puissance that radically transforms the body in the production of resources. To explain how that transformation takes place, I will call upon Foucault's concept of the subjection of the body under the "governing" powers of knowledge, discipline and bio-politics. From Deleuze and Guattari I will speak of the coding and decoding of the flows of desire which territorialize and deterritorialize the body as processes of limiting or freeing the body. I bring together these three in this definition of pouvoir: the aggressive resourcing/wasting of puissance by processes of coding and discipline.

As discussed above, the essence of modern technology is the aggressive disposition of beings as resource and waste according to their use-value. Heidegger points out that not just "natural resources" but humans too are disposed according to their use-value. The danger here is that technology reveals our being according to projects which are not sensitive to the intrinsic truth of our being, projects which displace this truth with another, domineering, truth. The essence of truth, says Heidegger, is freedom which lets beings be the beings they are. I have argued that the essence of the being of the body
is its puissance which is: “coming to presence by moving (drawing-penetrating-absence-presence), which is itself essentially, limitless, productive desire, which is the power of our our essential relatedness to all existence.” (see p. 174, above) Technology is a process that transforms the limitless freedom of our essential relatedness to being-as-a-whole, directing that freedom of movement into usefulness. This is a transformation of the meaning of being, which thus transforms the possibilities of being. In technology, the intrinsic meaning of being is re-sourced according to extrinsic requirements. Which is to say that movement is no longer appreciated, reflected upon, indeed pursued for its intrinsic playful relatedness to all existence, but for the use that can be drawn from it.

In the “environment” that is a well-known phenomenon. In the James Bay Hydro Electric project, for example, the being of nature was not reflected upon and cared for in accordance with the intrinsic meaning of nature coming to presence as streams of water, flora and fauna, but instead as a source of energy useful to the requirements of Hydro Québec and its economic success in the exchange of natural resources for capital.

Likewise, in technologies of the body, an appreciation of the intrinsic, Erotic meaning of movement, is replaced by the requirements that bodies function as efficient resources for capitalist production and consumption. Technology challenges the way we care for the body, pressing us as individuals and as a society to abandon its limitless freedom in favor of its technological production.

The body, of course, has become a resource for many social projects. Speaking of the body’s socio-cultural usefulness in general, Bryan Turner, while not using the precise term “resource,” says that in modern social systems the body has become “the principal
field of political and cultural activity" (Turner 1992, 12). Shilling, calling on the substantial literature that says that racism is a socio-cultural phenomenon that uses the body for the creation of hierarchical social difference, describes ways that the body is resourced in the production of social inequalities (1993, 100-27). Bourdieu has written on the education of bodily habits for the embodied production of class differences (Bourdieu 1984). And Donna Haraway has spoken of the body being resourced for the production of gender (Haraway 1988, 592). But most important to a theory of the resourcing of the body is Michel Foucault.

Foucault says that a mode of organization of the body has developed in modernity that is qualitatively different from its predecessors: rather than being a repressive force located as it were externally and inefficiently in the power of the sovereign to seize life and possessions (Foucault 1980a, 135-42) and make that power known by the public spectacle of sovereign power, such as the practice of public executions (Foucault 1979), in modernity (while such external power continues to exist in the state apparatus) power is wielded much more efficiently, meticulously, and insidiously by individuals internally on behalf of the power of social organization. In modernity a special subjectivity has developed, one in which power is diffused through the life of the population. This has been a shift from the negative power of seizure (things, time, bodies, and ultimately life itself) to the positive power of the production of life.

One of the chief characteristics of modernity is the extent of human control, both over nature in general and humans in particular. Foucault says that until the Seventeenth Century, the power exercised over the population was haphazard and inefficient,
dependent upon the intrusion of external authority in the lives of the people. With modernity, just as the power of production of goods was rationalized and made vastly more efficient and capable of high levels of controlled production, so too there were rationalizations of day to day life that were geared to productivity and control: “the controlled insertion of bodies into the machinery of production and the adjustment of the population to economic processes,” which Foucault calls “bio-power,” “a power whose highest function was perhaps no longer to kill, but to invest life through and through” (Foucault 1980a, 141).³³

The old power of death that symbolized sovereign power was now carefully supplanted by the administration of bodies and the calculated management of life. During the classical period, there was a rapid development of various disciplines—universities, secondary schools, barracks, workshops; there was the emergence, in the field of political practices and economic observation, of the problems of birthrate, longevity, public health, housing, and migration. Hence there was an explosion of numerous techniques for achieving the subjugation of bodies and the control of populations, marking the beginning of the era of “biopower” (Foucault 1980a, 140).

Foucault says biopower takes two related forms: (i) the body as a machine i.e., “the anatomo-politics of the human body,” and (ii) the population as a controllable biological set of processes i.e., “the biopolitics of the population.” These metaphors and conceptual frameworks (which in the next chapter I will show are fundamental to the science of

³³ In this conception of power, Foucault is speaking of the historical construction of power as a relation. As such, power circulates in various forms, which he calls discourses. Such discourses can include: gender, race, and sexuality. Modern power is not characterized by a particular discourse, but by the characteristic ways in which discourse(s) are operationalized.
FBPE) are not just ways of thinking about the body, they are political dispositions toward the body that render it a useful resource. Biopower is not just a realm of speculative discourse, one interesting way among many of thinking about life, the body and the possibilities for human existence. Bio-power sets about producing human life, organizing it socially and culturally, limiting the ways in which it may come to presence. As such, it is decidedly a political power.

In modernity an extensive "government of the body" was cultivated as an "indispensable element in the development of capitalism." (Foucault 1980a, 141) Foucault speaks of this as the "management of [the body's] forces." Foucault does not say what he means by the body's forces—although his History of Sexuality traces part of this administration through what he calls the "uses of pleasure." Pleasure, however, is just one facet of body force, one manifestation of the body's capacity for intensity (Deleuze and Guattari 1987b, 154-5), or in the language I have developed here, pleasure is but one of the textures of puissance. I suggest that the management of the body's forces, is actually the resource management of its puissance. This is nothing less than the calculated extraction of its capacity to move. Biopower organizes the movement of the body in the interests of social order for the maximization of capital production. The free play of puissance is marshaled in the service of production and consumption, for which a high degree of social order and control is also necessary. To be highly productive (both as a

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84 Anyone with intense athletic experience knows that pleasure is only one way of looking at the pain of extreme exertion.
producer of goods and images and a consumer of the same—mass consumption being a
form of economic activity in so far as mass consumption is the necessary corollary of mass
production (Featherstone 1991)) the body must move along prescribed paths. Which is to
say that the body as (drawing-penetrating-absence-presence) comes to presence by being
drawn into forms of absence that produce an economic social order. Another way of
putting this is: modern desire (a mode of moving that serves social economics of
consumer capitalism) desires paths that give presence to productivity, either in terms of
the production of “goods” or their consumption. This is desire that moves as a useful
resource. It is desire that inserts the body’s movement into the machinery of production
and economic processes. The corollary to this is wasteful desire: desire that does not
contribute to, or even undermines, production and consumption.

Pierre Bourdieu has developed a sociological theory of the capitalization of the
body. While he does not claim to have developed a full-fledged theory of the body in
society (Shilling 1993, 128) his conceptualization of the commodification of physical
capital enhances what I have been saying about the resourcing of the body in modern
capitalism. Bourdieu points out that the body is commodified in three related ways: as
labour power, cultural symbol and social nexus. Shilling summarizes as follows:

Bourdieu’s analysis of the body involves an examination of the multiple ways in which
the body has become commodified in modern societies. This refers not only to the
body’s implication in the buying and selling of labour power, but to the methods by
which the body has become a more comprehensive form of physical capital [sic]; a
possessor of power, status and distinctive symbolic forms which is integral to the
accumulation of various resources. The production of physical capital refers to the
development of bodies in ways which are recognized as possessing value in social
fields, while the conversion of physical capital refers to the translation of bodily
participation in work, leisure, and other fields into different forms of capital. Physical
capital [the body] is most usually converted into economic capital (money, goods and
services), cultural capital (for example, education) and social capital (social networks
which enable reciprocal calls to be made on the goods and services of its members)

In modern society, the body is a commodity that has exchange value in, at least,
several respects: It has the value of being able to perform work and thus be exchanged in
the labour market. It has cultural value in its capacity for symbolic exchange—for
instance the symbolic value of the bodies of athletes (Hoberman 1984; Hoberman 1994),
or of the hard, slim body of the “physically fit” person (Bordo 1990), the muscular body
of the masculine man (Bordo 1993a; Whitson 1994), the empowered body of the muscular
woman (Bolin 1992a; Bolin 1992b; Bolin 1992c; Markula 1995) and the ironic body of the
gay man (Pronger 1990a). The body also has the social exchange value of tastes, needs,
and habits that operate in the social exchange within and between social groups—
consider, for instance the immensely efficient systems of exchange of sexual pleasure in
the commercialized gay male community (bars, bathhouses, backrooms, cinemas) of a
city such as Toronto.

Massumi points out that the commodification of life is now extensive, and is at its
fullest in high technology capitalism, where

...the presence of the consumer/commodity axis of the capitalist relation [is operative]
in every point of social space-time... Everything can be bought, even life itself. There
is a patent out on the human genome. A new mouse was just copyrighted. Whole
species are now being bought and sold. Life forms are not simply captured by an
external mechanism and put up for sale (as in the fur industry or trade of wild animals
for pets); the very form of a life that has never existed in nature is commercialized at
its point of emergence. It is captured from its future. The capitalist machine has
developed perceptual abilities that enable it to penetrate life and direct its unfolding. It
can go straight to the code of its molarity, resolve it into its constituents parts (in this
case genes) [in the case of physical fitness, metabolism], recombine them to yield a
special order product (adult individuals), and market the final product—or the
transformational process itself [scientific physical fitness regimens]. (Massumi 1992,
133-4)
Bourdieu's conception of the commodification of the body will prove useful in analyzing the body's capital capacities in the science of FBPE in the next chapter. It is important to point out, however, that Bourdieu is not critical of the commodification of the body as such, as my analysis of the resourcing interplay of puissance and pouvoir attempts to be, but of the unequal opportunities afforded people in the hierarchical and privileging context of class for developing and benefiting from such commodification.  

Deleuze and Guattari have also considered the development of capital in their theory of the body, specifically in the relations of puissance and pouvoir. Pre-capitalist desire, they say, was territorialized according to codes which named properties that were seen to be somehow 'inherent' to desire. Homosexual desire, for instance was codified as inherently evil, and subsequently reproduced in the binary logic of good and evil, salvation and damnation, and so on. Similarly the body is cast as inherently base, and the soul inherently lofty. Desire is thus directed and lived according to these codes. The free-flow of desire is truncated by what is thought to be its inherent logic. Shades of Freud here: Life without codes becomes terrifying: “To code desire—and the fear, the anguish of decoded flows—is the business of the socius.” (Deleuze and Guattari 1987b, 139) 

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85 In paper presented at the 1993 meeting of the North American Society for the Sociology of Sport Suzanne Laberge argued that Bourdieu's theory of physical capital can be expanded beyond class to include gender.

86 Massumi defines "socius" as follows: "A society is a dissipative structure with its own determining tension between a limitive body without organs [pouvoir] and a nonlimitive
this way the coding sociale becomes the shelter, the caretaker of flows of desire that must be controlled.

Capitalism, say Deleuze and Guattari, brings about a shift that frees desire from the tyranny of "inherent" codes, but this freedom is very costly.

Capitalism is the only social [system] that is constructed on the basis of decoded flows, substituting for intrinsic [inherent] codes an axiomatic of abstract quantities in the form of money. Capitalism therefore liberates the flows of desire, but under the social conditions that define its limit and the possibility of its own dissolution, so that it is constantly opposing with all its exasperated strength the movement that drives it toward this limit. At capitalism's limit the deterritorialized sociale gives way to the body without organs, and the decoded flows throw themselves into desiring production. Hence, [as Marx has taught us] it is correct to retrospectively understand all history in the light of capitalism (Deleuze and Guattari 1987b, 139-40).

In capitalism, desire is recodified in the quantitative abstraction of value. Everything under capitalism has more or less value. Under capitalism, desire is freed of its "inherent" codification in logics such as good and evil, only to be recodified according to various logics of value. But this is not value only in the sense of workers in the production of capital, alienation from the products of their labour and so on as Marx has worked it out. Deleuze & Guattari say that valued desire, which is to say bodies as valuable, has organized the body in such a way, codified it such that desire reproduces the logics of value in the same way that a musical recording (and this is especially true of digital recordings) reproduces only what the recording company wants! The socialized body is restricted to playing only that which it has been coded to perform. Desire is thus played out, indeed

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one [puissance]. Together, in their interaction, they are called a 'sociaus' (the abstract machine of society). " (Massumi 1992, 75)
produced, in a highly restricted way. Capitalism has freed the flow of desire (puissance) to such an extent that at the same time it must repress and channel desire (pouvoir) so that the organization of capitalism is not undone (Deleuze and Guattari 1983, 22-36). 87 Capitalism, they say, operationalizes desire by translating it into the "abstraction" of pure commodity exchange value. In an historical process, the body/desire which was traditionally defined and controlled by religious tradition in the 'inherent' dynamics of sin and purity, or by psychiatry's analysis of the 'inherent' drives of id and Oedipus is evacuated of any intrinsic meaning whatsoever. 88 Religion and psychiatry, according to

87 A complete discussion of Deleuze and Guattari's voluminous theory and history of the relations of desire and capitalism here is impossible. I am borrowing from them only some basic analytical "tools." (Massumi 1992, 8)

88 This is not to say that religion or psychiatry are chronologically exclusive of capitalism. Obviously, religious influence continues under capitalism, but to a lesser and lesser degree and on more and more capitalist terms. Christianity and Judaism, especially, have been influenced by (capitalist) modernization. Psychiatry is modernized religion. Deleuze and Guattari point out that: "Capitalism institutes or restores all sorts of residual and artificial imagery, or symbolic territorialities, thereby attempting, as best it can, to recode, to rechannel persons who have been defined in terms of abstract quantities. Everything returns or recurs: States, nations, families. That is what makes the ideology of capitalism 'a motley painting of everything that has ever been believed.' The real is not impossible; it is simply more and more artificial." (Deleuze, 1983, 34)
Deleuze and Guattari, constitute a despotic rule over desire, in the form of hermeneutic imperialisms which code the flows of desire in the contexts of religious or psychiatric meanings which they respectively claim to be inherent in the desire. The BwO is thus socialized: “The prime function incumbent upon the socius has always been to codify the flows of desire, to inscribe them, to record them, to see to it that no flow exists that is not properly dammed up, channeled, regulated.” (Deleuze and Guattari 1983, 33)

Capitalism is a social system that first and foremost resources desire, rather than simply repressing it. This happens in an historical (and indeed ongoing) process of freeing desire from its repression in despotic hermeneutics so that it is available to the marketplace -- exchanged as easily and amorally as money. Reworking Marx on the contradictions of capital, Deleuze and Guattari say that such freeing of desire tends toward the destruction of all social systems, including the capitalist one that set it free in the first place. While capitalism frees desire to be a resource, it must concomitantly re-repress it in order to keep it subjugated to the system and thus available as a resource. All in all, they say this is a process of decoding and deterritorializing the flows of desire which perpetuates itself by recoding and reterritorializing the same. But freeing desire, they say, is always dangerous to the socius, for some of it might escape the process that reins it in, the process of recoding and reterritorializing. This, they argue at great length in the two Capitalism and Schizophrenia books, is what produces schizophrenia, sexual “perversions” and other

Religious and psychiatric codes “return” in capitalism as part of the recodification of desire that reigns in its freedom.
"monstrous" social deviations (Massumi 1992, 93-142). In this Deleuzian context, puissance can be conceived as the power of the decoded and deterritorialized BwO, and pouvoir is the power that recodes and reterritorializes. Deleuze and Guattari on this relationship:

...the capitalist machine [sic]... is faced with the task of decoding and deterritorializing the flows. Capitalism does not confront this situation from the outside, since it experiences it as the very fabric of its existence, as both its primary determinant and its fundamental raw material [the flow of desire or puissance as a resource—emphasis mine], its form and its function, and deliberately perpetuates it, in all its violence, with all the powers at its command. Its sovereign production and repression can be achieved in no other way. Capitalism is in fact born of the encounter of two sorts of flows: the decoded flows of production in the form of money-capital, and the decoded flows of labor in the form of the "free worker." Hence, unlike previous social machines, the capitalist machine is incapable of providing a code that will apply to the whole of the social field. By substituting money for the very notion of a code, it has created an axiomatic of abstract quantities that keeps moving further and further in the direction of the deterritorialization of the socius. Capitalism tends toward a threshold of decoding that will destroy the socius in order to make it a body without organs and unleash the flows of desire. (Deleuze and Guattari 1983, 33)

Capitalism responds to the potential 'havoc' of free-flowing desire by reterritorializing it:

What we are really trying to say is that capitalism, through its process of production, produces an awesome schizophrenic accumulation of energy or charge, against which it brings all its vast powers of repression to bear, but which nevertheless continues to act as capitalism's limit. For capitalism constantly counteracts, constantly inhibits this inherent tendency while at the same time allowing it free reign; it continually seeks to avoid reaching its limit while simultaneously tending toward that limit. Capitalism institutes or restores all sorts of residual and artificial, imaginary, or symbolic territories, thereby attempting, as best it can, to recode, to rechannel persons who have been defined in terms of abstract quantities. The more the capitalist machine deterritorializes, decoding and axiomatizing flows in order to extract surplus value from them, the more its ancillary apparatuses, such as government bureaucracies and the forces of law and order, do their utmost to reterritorialize... (Deleuze and Guattari 1983, 34-5)

The plight of the body in consumer culture offers a particularly good example of the process of deterritorializing and reterritorializing desire. The ideal consumer is a
hedonist, succumbing to desire, eating, drinking, pursuing sex, running marathons for fun and so on, expressing the freedom of desire in the ‘vast’ supermarket of consumer ‘choice.’ But maintenance of such hedonism requires subjection to the socio-economic system that keeps one employed and capable of purchasing the products that help one to release desire, thus creating what Bordo (1990, 201) called a contradictory personality structure or what Crawford (1984, 90) described as managed desire. But this is not only the repressive force of having to return to work after a weekend of ‘debauchery,’ but more problematically of being coerced into following restricted channels of ‘free-wheeling’ desire: i.e. commodified forms of experience that are available in the marketplace and within the realm of “normal” desire. This restriction of desire is a process in which the codifying interests of human capital resource management resists the free-flow of energy. This kind of desire, I suggest, is fascist.

I am using “fascist” in the same sense that Foucault does in his description of the work of Deleuze and Guattari: “…not only historical fascism, the fascism of Hitler and Mussolini—which was able to mobilize and use the desire of the masses so effectively—but also the fascism in us all, in our heads and in our everyday behaviour, the fascism that causes us to love power, to desire the very thing that dominates and exploits us.” (Foucault 1983a, xiii). Mark Seem problematizes the popularity and insidiousness of fascism similarly, saying: “Everybody wants to be a fascist. Deleuze and Guattari want to know how these beliefs succeed in taking hold of a body, thereby silencing the productive machines of the libido.” (Seem 1983, xx) And so by fascism I mean the desire to order, organize, control, repress, direct, impose limits, to interrupt the free flow of desire such
that it is subordinated to pouvoir. Fascism crystallizes in the popular desire to be led, to be the Subject of Power. So, this fascism, is a will within us to desire, albeit often unwittingly, a life of domination. Foucault, much like Adorno and others of the Frankfurt School, asked this question: how is it that the population cooperates so well with fascist projects? The answer, he says, lies in the ways our desires are produced in the force relations of power. Deleuze and Guattari are concerned with this also, saying that our desire is produced in spheres of recodification, for example in the consumption of a range of products in the consumer marketplace, in the expression of "normal" or for that matter "abnormal" desire, in making oneself a certain kind of body (fit, productive, marketable). So pouvoir, at work in the body, reproducing a record of subjected desire is body fascism.

It cannot be denied that the word "fascist" is very strong, loaded with emotion, evocative of the worst manifestations of humanity, the ugliest manifestation of life in the Twentieth Century. Rebecca Comay warns against minimizing the horrors of the historical Fascism of the mid-twentieth century, specifically German Fascism, which saw the brutal repression and murder of millions of people, by suggesting, perhaps romantically, that fascism is a universal element of the human condition, our sinful estate. Presciently, she warns against the...

... risk [of] recycling generalized theories of 'totalitarianism' which would relativize the specificity of fascism as a historical phenomenon.... [which] would dissolve the threat of fascism by occluding its specific material determinations. Explaining everything and therefore nothing, the theory of fascism's ghosts would all too easily evaporate its object within the comfortable paranoia of a universal phantomology.... Everywhere and nowhere, spooky, disembodied, fascism would thus become a consoling bogeyman, alluring, enchanting, arousing aesthetic thrills and therefore safely rehabilitated within the economy of the sublime.(Comay 1995, 3)
I am not suggesting that fascism is universal in the human condition, nor am I saying that the historical specifics of German Fascism did not create a particularly heinous reality. Indeed, my use of the word "fascism" is based in the material history of capitalism as an authoritarian force which is aimed at resourcing the essential freedom of the body and transforming the possibilities for being human. Fascism has different techniques; the flagrant brutality of Auschwitz was one of them; the hidden nihilism of pouvoir is another. They are both profound negations of the human spirit, of our potential for wholeness. The Fascism of Hitler and Mussolini, is a kind of crude fascism, resorting to jackboots, torture and murder in order to repressively gain its regime. The fascism I am describing is more "sophisticated" in the Foucauldian sense of being a productive and highly efficient force of subjection at a relatively low cost: i.e., little bloodshed leads to little chance of rebellion. The "positive" (productive rather than repressive) nature of this fascism makes it attractive to the subjected and requires little more than the promise of success within its system to get people participating wholeheartedly.

But, is it not unfair to label aspects of almost everyone's everyday existence, the research of honest scientists, as well as a tradition of physical education with this loaded word? No. For just as Critical Theorists gave us pause to think about the insidiousness of ideology, and not dissimilarly, Freud invited us to consider the terrifying motives of the socially constructed unconscious, and feminists the omnipresence of the patriarchal construction of reality, so too Heidegger, Foucault, and Deleuze invite us to look into the darkness of our modern technological souls. Fascism is totalitarianism, which is to say the total subjection of humanity to the political imperatives of systems whose concern is
their own productivity — not flourishing, enlightening, intensities of Being. “Fascism” is not too strong a word, because the phenomenon at work here is not a cursory imposition on the way we are expected to go about our lives, an occasional oppression, exploitation that takes place just on the surface of human experience, trapping, confining something which in its essence remains free, if it only had the chance. This phenomenon is more than the unwelcome appropriation of bits of life. It is the production of life that seeks nothing less than complete identity with pouvoir. It goes, therefore, beyond Marx’s critique of the alienation of workers in the labour process and the ideological apparatuses that assist in that process. For alienation presupposes at least a duality between an essentially free human being and the appropriation of his or her work in the service of capital—the image of the beautiful creature, chained, is the image of the alienated worker. The fascism of which I speak here, attempts not to chain a naturally free essence. It makes us fascist. According to Adorno and Horkheimer,(Adorno and Horkheimer 1972) Fascism is the last stage in the “logic of decay” that is inherent in the human species itself. “The process of civilization took the form of a spiral of increasing reification which was set in motion by the original acts of subjugating nature and reached its logical conclusion in fascism” (Honeth 1993) This concept of civilization, then, denies any modernist notion of progress, except as it is manifested in the intensification of the forces of production. Similarly, the identity of pouvoir and fascism that I am proposing here is progressive only in the sense of intensifying the forces of production and consumption. So the use of this loaded word, “fascist,” is appropriate precisely because the phenomenon it signifies is loaded.
Deleuze and Guattari's theory of the power of capitalism to utilize the body by removing its 'intrinsic' codes (e.g. as the temple of the Holy Spirit or source of evil passions) and "free" it to the abstractions of monetary value is helpful in showing how desire is a resource for capitalist production, especially in "late" consumer capitalism (Jameson 1984). It is also helpful in revealing how desire can become a waste product by virtue of the same system that produces it as a resource -- for example, the lack of economic productivity of the schizophrenic, drug and sex 'addicts,' and some athletes such as surf bums. And certainly it is true that capitalism's "ancillary apparatuses, such as government bureaucracies and the forces of law and order [are doing] their utmost to reterritorialize" (Deleuze and Guattari 1983, 35) the body by empowering the police, doctors and medical institutions to reign in desire where it 'gets out of hand,' arresting those in possession of 'illicit' drugs, or medical institutionalizing people, for instance. But reterritorialization includes much more than institutional repression following on too much freedom.

Reterritorialization is productive. Following Foucault's productive theory of power, which is not a departure from Deleuze and Guattari, reterritorialization occurs where desire is channelled (Deleuze and Guattari's own term), specifically where desire is produced in the economic logic of resource and waste management. Here is the cultural imperative for desire to produce itself either in terms of its overall economic utility (a resource) or accept (or as Deleuze and Guattari and Massumi and numerous queer theorists suggest suggest celebrate and pursue) a marginalized life as a "waste." Either puissance is rendered useful to pouvoir or it is cast aside. This is not the controlled desire
of Weber’s asceticism or Elias’ civilizing process; it is desire transformed as essentially useful to power. Here is puissance giving pouvoir the power of existence.

In fascist culture the power of existence (puissance) is not replaced by the power of government (pouvoir), rather, pouvoir achieves puissance in fascist desire. Pouvoir produces puissance as pouvoir, and puissance gives pouvoir its puissance. Which is to say, in fascism existence and government are one and the same. Fascism is complete where the power of existence (puissance) can no longer reflect upon itself in its essential freedom, but only as it is useful to government. Here is the danger which Heidegger says lurks in the modern technological mode of being. (Heidegger 1938; Heidegger 1953; Heidegger 1954b)

Pouvoir, then, is a fascist government of the body that produces useful desire, a way of moving/being that is essentially economic. Pouvoir can be conceptualized in my analysis of the body as the moving event of being (above) as resourcing puissance by insinuating itself in the structure of puissance as drawing-penetrating-absence-presence: Pouvoir appropriates the absential space which in puissance draws presence into itself (an intrinsic meaning structure) and instead charts the course by which desire comes to presence as a resource (an extrinsic meaning structure). Rather than opening a limitless

89 This dichotomy between extrinsic and intrinsic should not be confused with external and internal systems of power — as Foucault has contrasted pre-modern and modern political systems of control. I am suggesting that an extrinsic meaning structure (use-value to a social, political, economic system) becomes internalized and charts the course of the body’s power of movement, displacing the body’s intrinsic freedom.
freedom for coming to presence—which is the intrinsic truth of the (non-technological) body—through pouvoir, absence draws presence into usefulness, a limited manner of coming to presence whose logos is not intrinsic reflective freedom and attunement to being-as-a-whole (the essence of being as movement) but is the extrinsic technological logos of economic utility which determines useful and useless desire. The reflective opening of being that absence is is closed in the channelling, directing, coercive power of pouvoir. The wonder of absence is the opening of fecund, infinite possibilities for being, which Deleuze and Guattari call the “undifferentiated BwO.” Pouvoir sets about limiting (human) multiplicities (Foucault). Life under pouvoir is like a train travelling on a track. It moves, but, in an incommensurably limited way. Under pouvoir, absence opens presence, but with predictable destining of a train trip.

Produced by pouvoir, desire is the powerful autogenous force by which the body brings itself to presence essentially as a resource. The ethical problem here is that pouvoir, by the process of resourcing desire, evacuates it of its intrinsic freedom and essential relatedness. Pouvoir, productively resourcing puissance, aggressively marshalls the intrinsic meaning of the body, effectively making extrinsic meaning intrinsic. In short, the body is technologized, essentially a resource, brought to presence in its use-value. Therefore, under pouvoir desire is free only in so far as it functions within the economics of usefulness, participating in production and consumption. Desire’s freedom as a resource is the “virtual” freedom of consumer choice and career planning, a far cry from the freedom of puissance.
But in this argument that bodies/desires are produced as resources for the economic system, how do we account for the growing underclass, the mass of desire that is underutilized in this system both in terms of production and consumption? Capitalism has refined its human resource base, so well, is producing them to be so efficient, that most of the population becomes waste products, detritus next to fewer and fewer perfectly productive bodies. There is an analogy here to nuclear energy which is the most intensive exploitation of a resource, getting the most energy out of the least material. Likewise we now have the technology to get the most work out of the fewest number of people, the ultimate exploitation. And just as in nuclear energy there is vast waste and destruction in its production, so to the high technology of human resources produces vast human waste in the form of an evergrowing underclass. And the enthusiasm of New Right governments to cut even the most rudimentary support for these people is testimony to their status as detritus. In this economy of bodies and desire, then, it becomes imperative for individuals to capitalize on the economic utility of their desire maximally, to compete with each other in the marketplace of producing consuming desire if they are to be part of the system at all.

Rendered useful by puissance, desire's power of connection, the essential relatedness that appears Erotically, is transformed. With puissance connections are made, but they are functional and rendered meaningful in the extrinsic system of use-value. Puissance is not just the production of resources; it is also the dividing up of reality into resources and waste products. This is the point that Alderman brings to Heidegger's critique of modern
technology: the productive transformation of what is as useful and useless being. Where the body is subjected to modern technology useful and useless bodies are discerned. The way in which this process is internalized is particularly interesting here. And it marks an important difference between the resourcing of "nature" and the resourcing of desire. Strip mining, as an example of modern natural resource management, is an aggressive transformation of the wilderness, as it were by an external force: industrial, technological Man. The resourcing of desire, on the other hand is internal. Desire produces itself as a resource (as though the wilderness strip mined itself). It does this by making useful and useless paths of desire. Desire that does not contribute to the economics of production and consumption is useless, the wasted power of movement. So the development of paths of desire which allow it to render itself (the body) a useful resource is strategic to the success of pouvoir as a resourcing of the body. This is a crucial point: Pouvoir is not an accomplished fact, but an ongoing process of resource production.

The relationship between puissance and pouvoir is itself a power relation, which is first and foremost an ongoing process, not a fait accompli. Foucault, from whose theory of biopower I am borrowing heavily, is often criticized for offering an overly determined theory of the body, the argument being that a body produced entirely in discourse is a body without agency, a body purely dominated. I think this criticism is inappropriate. For Foucault power is always a process. The following quotation makes this point clear.

Power must be understood in the first instance as the multiplicity of force relations, immanent in the sphere in which they operate and which constitute their own organization; as the process which, through ceaseless struggles and confrontations transforms, strengthens, or reverses them; as the support which these force relations find in one another, thus forming a chain or a system, or on the contrary, the dysfunctions and contradictions which isolate them from one another; and lastly as the
strategies in which they take effect, whose general design or institutional crystallization is embodied in the state apparatus, in the formulation of the law, in the various social hegemonies. (Foucault 1980a, 92-93)

The body understood as a dynamic ongoing event of coming to presence both in its intrinsic puissance and extrinsic pouvoir happens as a process of multiple force relations. In the first place this multiplicity involves the infinite interplay between puissance (as the intrinsic, playful, free, limitless, productive desire in its essential relatedness to all existence) and pouvoir (as the extrinsic government of the usefulness of desire). From my discussion thus far the multiplicity of force relations that unfold under the categories of puissance and pouvoir can be listed in the following tensions:

- non-limitive BwO - limitive BwO
- infinite - finite
- useless - useful
- intrinsic meaning - extrinsic meaning.

In this multiplicity, the power of modern human being is produced. There are of course, other force relations that I am not developing here, but which also are immensely important in the production of the modern body—notably the multiple force relations of race, class, gender, regionalism, linguistic heritage and so on which support or undermine the economic resourcing of the body that is the central concern of this thesis.90

Because the body is a moving event, these force relations take place in an ongoing process. This is a process which through the "ceaseless struggles and confrontations" of

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90 The extent to which race and gender contribute to the resourcing/wasting of the body/desire in the science of FBPE will be addressed in the next chapter.
puissance and pouvoir *support* the modern technology of the body, "thus forming a chain or a system, or on the contrary, the disfunctions and contradictions which isolate them from one another." Deleuze and Guattari have thematized this supportive interplay, arguing that while pouvoir (as resourcing capitalism) seeks to exploit puissance for the production of capital, it creates freedoms (sometimes momentary, sometimes virtually permanent) that can escape its regulating grasp: in schizophrenic experience, playing with recreational drugs, sexual outlawliness, rave culture (Jordan 1995), for example. And finally, "the *strategies* in which they take effect, whose general design or institutional crystallization is embodied in the state apparatus, in the formulation of the law, in the various social hegemonies" are the various programmes for the making of technological desire—for example: the science and institutionalization of FBPE.

Biopower, Foucault points out, operates in two basic forms, which are mutually supportive of each other: one produces the individual body as a machine, an "anatomopolitics of the human body" and the other deals with "regulatory controls: a biopolitics of the population." The latter focuses on the biological processes of the body in terms of controlling "propogation, births and mortality, the level of health, life expectancy and longevity, with all the conditions that can cause these to vary." (Foucault 1980a, 139) These regulatory controls of the population's biological processes serve the interests of keeping the individual body functioning biologically well as a machine as well as controlling the larger population's biological process such that it serves the disciplinary needs of the capitalist socio-economic system which requires ever greater 'efficiencies.' In other words, the movement of the body is directed both individually and collectively.
That direction is accomplished through the canny intertwinnings of discipline and knowledge. Discipline, says Foucault is the political technology of the body that makes individuals useful (Foucault 1979, 26, 211) and controls human multiplicities. The body cannot be a useful resource where it effectively resists being one; which is to say that desire that cannot be harnessed and developed if it is not available as a resource. Where the body is coerced into presence primarily, if not exclusively, in terms of its utility it is rendered docile.

The social disciplinary techniques of which Foucault speaks are to be contrasted with religious disciplinary techniques. Christian religious disciplines of the body were (are) geared to transcendence, control over the body that leads to "higher" realization of the body (Susan Bordo refers to it as teaching the soul how to "live" without a body); the point of the discipline being spiritual freedom. The modern social discipline that Foucault describes, moves however in the opposite direction: its goal is not freedom, but subjection.91

Integral to making the body docile and thus useful is the conception of the body as intelligible, which is to say the body is rendered useful by the manner in which it is known. Here is the intimate connection of knowledge and power about which Foucault speaks and which formed the basis of much of the theory of science developed above. The paradigms of systems of knowledge determine what is seen and thus what becomes real.

91 I will discuss "discipline" more thoroughly and in an applied fashion in the next two chapters.
Regarding my theory of the body, this becomes a matter of paradigms (specifically the power play of puissance/pouvoir) determining what is seen in the systems of knowledge of the body and the realities that they set out to produce.

Ian Hacking, drawing on his study of nineteenth century statistics, has explored the way knowledge power produces human beings; he calls this process “dynamic nominalism”, or “making up people.” (Hacking 1992)92 . As paradigms for what a person is, or more importantly can become, get better known, more and more people begin to behave in ways that fit the paradigm. “Making up people changes the space of possibilities for personhood.” (Hacking 1992, 79). Hacking emphasizes the historical nature of making up people: only under certain historical conditions does it make sense to make people up in a certain way. So for instance, making up people as resources in the sense that I have described the resourcing of the body is historically contingent upon the development of consumer capitalism and the historical displacement of God with Man as the centre of our affairs. In other words, all of humanity, throughout all of history does not emerge in this analysis as resources for economic systems; rather, it is in the context of the technological imperatives of modern consumer capitalism that such an existence becomes possible.

92 This notion of "making up people," as Hacking notes (1992, 73-4), is fairly widespread, and has much support in lesbian and gay studies, regarding the social construction of homosexuality. See (Weeks, 1985, 1986, 1981; Stein, 1992; Plummer, 1981)
Making up people is not a simple affair. People do not simply start living their lives according to new categories of person (a human resource) and historical circumstances that make such new categories viable. The history of the homosexual category is a good case in point. Sexology invented the homosexual as a kind of person in the late 19th century, and through psychiatry it exerted considerable influence on how people were treated and how they came to be and define themselves. Many “homosexuals” came to embrace the idea of a homosexual identity and developed communities and cultures around this identity. But these communities radically transformed the pathological homosexual identity proffered by psychiatry into the emancipating identity and “lifestyle” of contemporary urban gay culture. Hacking conceptualizes this tension between the development of categories of people and actual people in terms of vectors. “One vector of labeling from above, from a community of experts who create a ‘reality’ that some people make their own. Different from this is the vector of the autonomous behaviour of the person so labelled, which presses from below, creating a reality every expert must face.”(Hacking 1992, 84) This point echoes what I have said about the force relations of puissance and pouvoir: it is a process, not a fait a compli and what is produced in the process is seldom if ever, precisely what pouvoir set out to produce.

The science of physical fitness, specifically as it is manifest in the CSTF, attempts to make up people in the dynamics of puissance and pouvoir. The next section attempts to prove this.
Chapter Four

ANALYSIS

4.1 INTRODUCTION

The science of FBPE is a practical, textual discourse (Whitson and MacIntosh 1990, 41). It is practical in the sense that it is engaged in the world (Rouse 1987, 26ff) It is textual in that it exists in structures of signification (Radloff 1993), and discursive in so far as it exists in the conversational play between written texts as well as between written texts and the lives of people. This science occurs in the production of practical, textual discourses.

There are three intertwining realms of this discourse: academic, institutional and bodily. The academic discourse is played out in the literature of the “exercise sciences,” which is to say in academic journals, learned conferences, scholarly reference books and databases, textbooks, university courses and so on. The institutional discourse occurs in the publications, policy statements, and institutional power of governments, educational organizations, and professional organizations and businesses which have an interest in the connection between physical education and health and human performance, broadly defined. The bodily discourse operates in the interaction between the academic/institutional discourses and the bodies of people: this involves bodies used in experimental research, bodies that are the subject of institutional policies as well as bodies whose lives are affected in the promulgation of the science of FBPE. These three realms of discourse are, of course, interdependent. The academic realm is pursued in accordance with (ie funded and otherwise supported) institutional objectives for the
transformation of the bodies of the population. Institutional objectives are set according to the bodily life of the population (i.e., epidemiological views of its health, physical fitness, willingness to pursue prescribed ways of life etc) and in the light of the reality of the body as it is represented in the academic realm. Academic discourse depends upon the access which it has to the life of the body—the ways the body can be manipulated in experiments according to political and cultural attitudes to the body. And bodily discourse depends upon the ways and extent to which academic and institutional discourse intervenes in the life of the body. Moreover, these three discursive realms occur in the larger discursive context of social and political cultures of the body in general.

The science of FBPE is fully expressed in science-based physical fitness testing, where all three discursive realms are operative. This is most true in the case of the Canadian Standardized Test of Fitness (CSTF): It was developed by credentialed exercise scientists on the basis of the academic discourse. It is the product of government initiatives in health promotion. And it is designed as a tool to motivate people to organize their bodies according to the texts of exercise science. While there are many different kinds of physical fitness tests (indeed, the science of fitness testing is a whole subspeciality of exercise science), the CSTF is particularly well-suited for an analysis of the science of FBPE. It is fully credentialized in the Canadian exercise science discourse: the design of the test, as well as the training and accreditation of the testers fall under the academic and institutional authority of the Canadian Society for Exercise Physiology (formerly the Canadian Association of Sport Sciences) -- the preeminent organization for exercise science in Canada. It has been supported and authorized by the Government of
Canada under the auspices of the Federal Department of Health (formerly the Ministry of Fitness and Amateur Sport). The test belongs, undeniably, within the canon of exercise science texts.93

I will analyze the CSTF as it is administered in the Department of Athletics and Recreation at the University of Toronto. This setting is fully credentialized in the science of physical fitness and testing. The testing site (the physical fitness laboratory) is authorized by CSEP as an Accredited Fitness Appraisal Centre. The Laboratory is overseen by tenured exercise science professors, one of whom, Prof. Michael Plyley is a past president of CSEP (when it was CASS). The laboratory also functions as a credentializing facility for physical fitness appraisers, under the guidance of Prof. Plyley.

Whereas commercial physical fitness facilities that offer physical fitness testing, could be criticized for emphasizing marketing over scientific integrity, the University of Toronto DAR testing service is most closely allied to the exercise sciences. Which is to say that power understood in “the received view” of the relations of power and science as an external corrupting influence (See theory of science, pp 86 ff, above) is less likely present in the university’s fitness testing facility than in that of a commercial establishment. It is a highly credible programme from the standpoint of exercise science. The CSTF is an

93 This is not to say that there is no debate about the veracity of the test; indeed it continues to be updated according to new developments in the exercise sciences. But it is fully part of the canon of exercise science.
exemplary text in the discourse of exercise science, and the DAR testing service is an
exemplary instance of the implementation of the discourse.

I will examine this textual discourse in two ways: First, I will describe it
according to the "received view" of scientific texts as transparent, objective, non-political
representations of the natural (biological) reality of the human body—this will show the
ostensive meaning of the text according to the science of FBPE. I will call this the
"natural reading" of the fitness testing. Then, in order to show the politically productive
power of the discourse, I will analyze it in the light of the theories of science and the body
I developed earlier. I will call this a "deconstructive reading" of fitness testing.

In the "natural reading" the texts are best understood from the top down: from
institutional policy to the texts of basic research and a "scientific consensus" on the
"nature" of the relationship between physical activity, fitness and health, to their
implementation in everyday life in the practice of fitness testing, exercise prescription,
exercise adherence, and retesting. Indeed, there is a clear chain of authority indicated in
the Introduction to the Operations Manual of the CSTF: Since 1975, when Recreation
Canada formed an "Expert Committee" to design "a field test and clinical laboratory test
of physical fitness," government policy on health and fitness has authorized the
development of a scientific tests of physical fitness suitable for assessing the "nation's
fitness." (Canadian Association of Sport Sciences 1987b, 2). The three realms of the
discourse of the science of FBPE, then, are arranged hierarchically: Institutional
discourse authorizes academic discourse to intervene in bodily discourse. My explication of the “natural reading” of the science of FBPE as it is manifest in the University of Toronto Department of Athletics and Recreation physical fitness testing will follow the order of this hierarchy of discourses. I will give an overview of the institutional discourse on health and fitness, followed by a brief overview of the academic discourse on physical fitness (there is an enormous published literature), and will follow that with a description of the CSTF as it is administered at the University of Toronto.

4.2 THE NATURAL READING OF THE SCIENCE OF PHYSICAL FITNESS

The CSTF is an excellent example of the science of FBPE. It exists as an educational tool, teaching participants about their bodies, their physical fitness and what they can do to improve upon it. It is the work of science in that the measurements and prescriptions emerge out of established, credentialized scientific practices and scientific literature on physical activity, fitness and health. The vast majority of the designers of the CSTF hold PhDs and professorial appointments in the exercise sciences at accredited Canadian universities. The test offers participants an objective appraisal of their bodies and a sound scientific basis for continued or increased participation in physical activity. Because it is a test developed under the authority of the federal government, administered in the sport sciences laboratory of the University of Toronto, it also gives participants the assurance that they are not engaged in commercial quackery, but in a respected, institutionally endorsed, and factually correct appraisal of their bodies. The CSTF is an educational tool,
built on credible science and endorsed by public policy for the promotion of health, the three discursive realms of the science of FBPE, respectively: bodily, academic and institutional.

4.2.1 **HEALTH PROMOTION AS THE INSTITUTIONAL CONTEXT FOR THE CSTF**

The Canadian Standardized Test of Fitness belongs intellectually and institutionally to the arena of preventive health care, often known as “health promotion”, specifically as an aspect of “lifestyle management.” In the following, I will attempt to present established views about lifestyle management in the context of health care. Admittedly, this statement is not without some irony. Health promotion is widely viewed among its proponents as expressing a break with established perspectives on health, perspectives that conceptualize health more in terms of curing the sick than in maintaining and preserving health by identifying the social determinants of health and focussing on "population health" and "healthy communities." Indeed, health promotion is seen by its champions as a new anti-establishment paradigm, which is bringing to the field of health care a full-blown paradigm shift (Kickbusch 1994; Rootman and Raeburn 1994) as might be described by Thomas Kuhn(1970). Some proponents of health promotion trace its roots to the feminist and environmental movements (Kickbusch 1994, 8), suggesting that that attests to health promotion's anti-establishment roots. Other feminist accounts of health promotion, however, do not see an alliance of health promotion with the emancipatory impetus of feminism, but see it as more closely resembling the controlling culture operative in the marketing of consumer goods (Grace 1991, for example). Moreover,
within that particular anti-establishment culture there is a significant establishment.

Indeed the proponents of health promotion have tried very hard to make health promotion the established health paradigm. And key documents, such as the World Health Organization’s *Ottawa Charter for Health Promotion*, exist to do just that. Government support for health promotion also attests to the growing establishment of the field. Health promotion, however, is not a dominant paradigm in the professional health field.94

94 The following can be considered "established views" for a number of reasons: The review of health and health promotion is based largely on a recent book, *Health Promotion in Canada: Provincial, National and International Perspectives* (Pederson, O’Neill, and Rootman 1994), the editors and contributors of which are established scholars and professionals in the field of health promotion. They are credentialized in the notes on contributors as follows: The chief editor, Irving Rootman has a Ph.D. in sociology from Harvard University and has held the following positions: at the Canadian Ministry of Health and Welfare he has been Chief of the Epidemiology and Social Research Unit of the Non-Medical Use of Drugs Directorate, Chief of the Health Promotion Studies Unit in the Health Promotion Directorate and Director of the Programme Resources Division. At the University of Toronto he is the Director of the Centre for Health Promotion and a Professor in the Department of Preventive Medicine and Biostatistics. He is also Co-Director of the North York Community Health Promotion Research Unit. One of the other editors, Michel O’Neill is a Professor of Nursing at Laval University and has been involved in community health for 20 years as a "community health worker, professor, researcher, consultant, and activist."
The Introduction to the volume is by Ilona Kickbusch, who is Director of the Lifestyles and Health Department at the World Health Organization Regional Office for Europe. She is responsible for the areas of "health promotion, Healthy Cities, mental health, the tobacco and alcohol action plans, abuse of psychoactive drugs, nutrition, and AIDS." She was the key investigator of the WHO's approach to health promotion and "was responsible for the Ottawa Charter for Health Promotion." She is a member of the faculty of the School of Public Health at Yale University. One of the foundation articles in this volume, "Health Promotion and Social Change in the Health of Canadians" (Badgley 1994) is by Robin Badgley who is Professor and Chair of the Graduate Department of Community Health at the University of Toronto. He has chaired two national inquires on behalf of the Government of Canada, has been a member of the Pan-American Health Organization's Advisory Committee on Medical Research and is Chair of the Ontario Minister of Health's Community Health Framework Committee. By virtue of the credentials of these authors, both in terms of their academic status and work they do for official Canadian and international health bodies, it is safe to say that their work represents respected perspectives on health and Health Promotion in the established field of health and Health Promotion Establishment credentials, I will argue later, are important to the rhetoric of lifestyle management. The reader of lifestyle management is supposed to believe what the lifestyle management
The government’s interest in and active endorsement of health promotion is important. By channeling funds and administrative support for research and implementation strategies for health promotionootnote{Histories of the Canadian Government role in health promotion can be found in: (Hall 1980; Hancock 1985; Laframboise 1990; Last 1986; 1988; Pinder 1994; Sgro 1982)} the Government of Canada has put political weight behind a concept of health and human behaviour. Health promotion is thus not just a concept, just one philosophy of the body, life and human behaviour among others, it is part of a Canadian programme to govern people’s bodies. By embracing health promotion, the Government of Canada wants to change the way people live. Most importantly, this is an attempt to get people to live in accordance with a scientific understanding of the body, to produce their bodies in accordance with philosophies and politics of the body that are implicit in scientific approaches to the body and the government’s interest in bodies.

Health has become a major concern of the “international community,” as well as federal, provincial and municipal governments, even the government of the University of Toronto. Each jurisdiction has organizations, ministries and departments dealing with health. For the “international community” there is the World Health Organization; the Government of Canada has a ministry known as Health and Welfare Canada; the Province of Ontario has
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texts say because they carry the authority of science, and various institutional authorities (the World Health Organization, the Government of Canada, etc.)
a Ministry of Health; the City of Toronto has a Board of Health and the University of Toronto has the "Healthy U of T Programme," which endeavors to get:

all members of the U of T community to explore and develop new and innovative ways of improving the quality of life in our university. The Healthy Lifestyle Network is one of the initiatives in this programme. Participating services and departments have joined together in a unique, co-operative and comprehensive resource network to assist ALL members of the university—Students, Faculty, Staff—to improve their lifestyle balance. (University of Toronto n.d.)

An overview for the context of the CSTF is as follows: The CSTF is an appraisal strategy which is intended to motivate individuals who participate to alter their way of life such that it conforms to the concept of a healthy life as established in the texts of exercise science. Lifestyle management is one of four "action areas" for health in Health Promotion, namely (i) health status, (ii) health care, (iii) lifestyle and, (iv) environment (Kickbusch 1994, 8). Health Promotion, concerning itself with the environmental determinants of health as well as lifestyle and health status and medical care, represents a paradigm shift from an earlier concept of public health which was known as Health Education which focused exclusively on individual behaviour or lifestyle. Health

96 The "Healthy Lifestyle Network" is an institutional network of "health services" at the University of Toronto. On campus it includes the following: Counseling and Learning Skills Service, Department of Athletics and Recreation, Hart House, Consumer Health Information Service, Health Services, Sex Ed Centre. Off-campus it includes: Addiction Research Foundation, Departments of Family and Community Medicine at downtown hospitals, and the Academy of Dentistry.
Promotion and Education vie with the medical model of health, i.e., the clinical treatment of disease, for paradigmatic status in the realm of health. 97

To explain this context further I will review several concepts of health and briefly discuss the role of the state in the administration of health. I will review the efforts being made to bring about a hegemonic paradigm shift from the treatment of disease to its prevention and the fostering of well-being. I will discuss the paradigm shift that has taken place from Health Education to Health Promotion, paying special attention to the ways that shift has affected concern about lifestyle.

4.2.1.1 Concepts of Health

The English word “health” originates in the German *hailipa*, meaning whole, which had the meaning “uninjured, sound, healthy, entire, complete” (OED, 1971) and came to us through Middle English as *hail*, (OED, 1971) hence the expression “hale and hearty.” Rootman and Raeburn (1994, 56-7) say that lay people (i.e. non-health-professionals) understand health more in terms of its absence (someone who is not sick is healthy). They point out that definitions of health are culturally contingent: for instance working class people will emphasize functional aspects such as being able to accomplish tasks, and middle class people tend to include psychological aspects, although there is

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97 Henceforth, I will capitalize “Health Promotion” when referring to the successor paradigm to Health Education, i.e. one which stresses environmental concerns rather than just lifestyle. The words “health promotion” (without capitalization) refer to the entire area of preventive care, i.e. the other of palliative care.
considerable variation among the classes (Rootman and Raeburn 1994, 56-7).

Emphasizing the cultural contingency of notions of health, Spector (1985) says that traditional Chinese, North American Native and African concepts of health considered being in harmony with nature to be central to health.

The operative medical definition of "health" usually revolves around the notion of the absence of disease (Rootman and Raeburn 1994, 57), which makes sense, given that modern medicine focuses on curing disease. Medical and related physiological concepts of health focus on the state of an individual. Wakeley for instance, defines health in terms of the individual’s “condition of soundness of the mind and all the bodily organs” (1975, 200). Some medical and physiological definitions expand health beyond the absence of disease, but remain focused on the individual. MacPherson (1992) says: “The state of health implies much more than freedom from disease, and good health may be defined as the attainment and maintenance of the highest state of mental and bodily vigor of which a person is capable” (265). The Consensus Conference on Physical Activity, Fitness and Health (1992) conceptualized health in not just physiological ways: health is

defined as a human condition with physical, social, and psychological dimensions, each characterized on a continuum with positive and negative poles. Positive health is associated with a capacity to enjoy life and to withstand challenges; it is not merely the absence of disease. Negative health is associated with morbidity and, in the extreme, with premature mortality. (Bouchard and Shephard 1992, 84)

The focus in this definition is still on the individual. There is mention of the social dimensions of health, but this is seen as merely a contributor to the health of individuals. Shephard (1994) confirms this individual focus in his report on the Consensus Conference
to the American Academy of Kinesiology and Physical Education in 1994 in which he expands on the official definition, saying: “a comprehensive approach would require consideration of such indices as health-related fitness, both acute temporary and more permanent chronic disabilities, absenteeism, overall social productivity, and the individual’s demand for all types of medical services...” (Shephard 1994, 289, emphasis mine).

In contrast to the individualism of medical and physiological definitions of health is the more social, indeed environmental, conceptualization of health. This was first officially stated by the World Health Organization in 1947: “Health is a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity” (Rootman and Raeburn 1994, 58). The definition was expanded by the WHO in 1986 to include an ecological dimension (World 1986). The broadening of the definition of health is intimately related to paradigm shifts (or at least attempts at such) in the health professions. The expanded definition of health is ecological in the sense that individuals, their families, society and the environment are understood to comprise a whole which may or may not be healthy. Out of that comes notions such as “healthy cities” i.e. whole urban environments that promote health in a variety of ways: socially, culturally,

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98 This paradigm shift is described in more detail in the context of the role of government, below.

99 "Healthy Cities" is a category of health promotion for the WHO.
individually, in terms of the physical environment, as well as providing adequate health care and social supports.

4.2.1.2 The Role of the Canadian State in the Conceptualization and Administration of Health

The development of Health Promotion in Canada has been documented by Robin Badgley (1994) and Lavada Pinder (Pinder 1994). The earliest government interventions in the field of health were regulatory: setting professional standard for practice, and enacting sanitation and quarantine regulations (Badgely 1994, 21). Health promotion was first formally recognized with the establishment of the Ontario Board of Health in 1882. The major concern then was promoting sanitation. The Federal Government made its first commitment to health promotion immediately following World War I, awarding annual grants for the control of venereal disease. Badgley describes that initiative as an important forerunner to more contemporary government interventions in public health:

Remarkably comprehensive in scope and anticipating the blending of contemporary approaches that were only to become prominent again half a century later, the strategy then adopted included: enabling legislation, designated public administrative channels, changes in health services by means of clinical facilities providing free care for veterans, a strong partnership between government and voluntary agencies, and mobilization at the community level, often led by well-known community leaders. (Badgely 1994, 23)

The Department of National Health and Welfare Act of 1944 established the statutory basis for Canadian government involvement in health promotion (Pinder 1994, 93). That aside, health promotion actually took a back seat to Medicine in the Canadian health scene. Indeed as late as 1969, a major federal report, Task Force on the Cost of Health...
Services in Canada, (Canada 1969) included health education as an after thought (Badgely 1994, 25) and conceptualized health education as a tool for modifying the extent to which people use health (i.e. medical) services, attempting to foster "a sense of responsibility" (Badgely 1994, 25). It was not until the Lalonde Report, A New Perspective on the Health of Canadians (Canada Department of National Health and Welfare 1974), that health promotion garnered any serious government attention. Most government money for health, in the form of transfer payments to provincial ministries of health (the British North America Act placed responsibility for health and welfare in the provincial domain), was directed at the medical treatment of disease. From 1948, grants were given for hospital construction; in 1958 a national hospital insurance plan was introduced and in 1968 the national Medicare programme was instituted. The government paid fifty percent of the costs of medical and hospital services and placed no limit on such spending.

Physicians and hospitals proliferated. Pinder says that the effect of this was essentially two-fold:

First, there was soon little money for anything else associated with health but care and treatment. Community services, prevention of disease and disability, and promotion of health were poorly financed. Second, "Medicare reflected the uncritical belief that scientific medicine could solve most of society's health problems,"(Canadian Public Health Association 1992) and the public came to believe that health was a product of institutional care and medical intervention (Pinder 1994, 95).

In the 1960s and early 70s there were some "low-profile... efforts to promote child and maternal health, immunization, dental health, good nutrition and mental health"(Pinder 1994, 95). In 1961 the Department of Health and Welfare hired its first health educator. In 1962 he published the first edition of a health education newsletter, now called Health Promotion, and sent it to a mailing list of 200. Attesting to the growth of interest in health
promotion over the last thirty years is the fact that *Health Promotion* now has a
circulation of over 200,000.\textsuperscript{100} By the end of the 1960s skyrocketing costs of medical
care had become a concern. Numerous reports (Canada 1969; Canada 1973; Ontario
1974, among others) said that there needed to be a shift to less expensive forms of health
care, which would stress health promotion and disease prevention. Indeed the current
context for government interest in health promotion is cost containment of health
(Pederson, O'Neill, and Rootman 1994; Pinder 1988; Pinder 1994; Rootman and Raeburn
1994).

The Lalonde Report (1974) suggested that the Canadian health care system needed
to change its focus from palliative care to health promotion and disease prevention
(Raeburn and Rootman 1989; Rootman and Raeburn 1994). Advocates of Health
promotion have made a "conscious bid to support a paradigm shift—to change the way
decision makers think about health and to introduce new principles and priorities into
health policy" (Kickbusch 1994, 8). Promoters of Health Promotion see it not as a mere
adjunct to medical practice, but as a new model for health care, in which palliative care is
but one part. "Health promotion is not the social work of medicine, for which a few extra
dollars should be made available. It is truly about a new public health, a new type of

\textsuperscript{100} The journal has changed significantly during that period. In its earlier stages it was
devoted to various issues, such as women's health, AIDS etc. It now has more of a
market focus and is concerned more about the economics of health care than grassroots
issues.
health policy based on the determinants of health" (Kickbusch 1994, 14). The determinants of health are now defined quite broadly in professional health promotion circles, such that they include, a range of environmental, economic, social, cultural concerns as well as individual physical and psychic parameters. While this paradigm shift has not yet actually occurred—the medical paradigm is firmly entrenched and systems of health care operating under it still receive by far the most money and attention—there has been a growing interest in health promotion. Kickbusch boasts that the Lifestyles and Health Department at the WHO's Regional Office for Europe is "the largest in the house." (Kickbusch 1994, 14). Canada is viewed by the authors of Health Promotion in Canada (Pederson, O'Neill, and Rootman 1994) as the world leader in Health Promotion. Yet, while there has been considerable intellectual work done in the conceptualization of health promotion, government policies and socio-economic initiatives which would change the actual practices of health care in Canada, are still negligible (Pinder 1994, 102-3). Most such initiatives have been geared to single issues such as AIDS, impaired driving and strategies to curtail the use of recreational drugs, rather than larger, more ambitious projects such as curtailing poverty, stopping pollution, reducing stress in the work place, and getting rid of sexism.

In its earlier incarnation as Health Education, health promotion focused on the lifestyle of individuals. The idea was that individuals should adapt their lifestyle to conform to scientific conceptions of a healthy way of life; this would prevent disease and lower health care costs. Pinder periodizes this early development (1974-84) with the
name the “lifestyle decade” (Pinder 1988, 96-99). In 1976 the Information Directorate of the Department of Health and Welfare launched “Operation Lifestyle” which “delivered lifestyle messages to Canadians, provided resources such as the FIT-Kit for use in the workplace and a computerized Lifestyle Profile, and presented Lifestyle Awards” (Pinder 1988, 97). The programmatic effect of the Lalonde report became closely identified with concern about individual lifestyle (McKewen 1979; Pinder 1994, 97). By 1978 Health Promotion had its own federal Directorate (which was incorporated into Health Promotion and Programs Branch of the Ministry of Health in 1995) and physical fitness had a dedicated agency called Fitness Canada.

Even before the publication of the Lalonde Report, professional promoters of physical fitness had gathered for a National Conference on Fitness and Health in 1972. This conference was convened by the Minister of National Health and Welfare, John Munro (by the time of the conference, Munro had been succeeded by Marc Lalonde.) The Governor General of Canada, Roland Michener, attended the conference in his official capacity as representative of the Queen of Canada. Attending were a select, invited group of administrators, professors, doctors, and directors of programmes of physical education and health (Canada 1972, 7) It was in every sense an official meeting. It produced twenty-four recommendations. The highest priority item among those was given to Recommendation Number One which calls for a “comprehensive educational and

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101 O'Neill (1994, 41) says the problem of the lifestyle focus dates back to the end of the Second World War.
promotional program of physical fitness and health.” The point of such a programme being to “motivate” Canadians “into changing their living habits.” The Conference Recommendations focus on lifestyle and the provision of tests, and services that would “motivate” people to change their way of life. Indeed the second highest priority (Recommendation Number Two) asks Recreation Canada to “seek the cooperation of established ‘professional behaviour modification agents’ and agencies who could provide expertise in changing the value system of Canadians, related to physical fitness.” (Canada 1972, 124)

The Canadian Standardized Test of Fitness was developed as a direct result of the recommendations of this Conference (Canadian Association of Sport Sciences 1987b, 3), specifically Recommendation Number Nine: “It is recommended that Recreation Canada should take the initiative and assemble a group of physical activity and health professionals in order to design a field test and a clinical-laboratory test of physical fitness, and standardize cardiovascular performance fitness tests.” (Canada 1972, 126)

Five of the twenty-four recommendations deal with testing of fitness (Recommendations 4, 5, 9, 10, and 11). The Conference Proceedings justify an interest in physical fitness testing by saying: “Since evaluation of physical fitness is essential in the delivery system, tests to measure and classify the level of physical fitness of individuals must be designed” (Canada 1972, 126). The Conference also recommended “that the federal government establish a fitness survey which would have as its primary function the continuing evaluation of the nation’s fitness.” This recommendation led to the Canada Fitness Survey in 1981, funded by Fitness and Amateur Sport. This survey used the CSTF
and tested 15,519 individuals. "The largest and most comprehensive study of physical activity and fitness ever undertaken" (Canadian Association of Sport Sciences 1987b, 3). Clearly, the Government of Canada's concerns about physical fitness, especially in the field of testing, were directed by the 1972 National Conference to the issue of the way *individuals* go about their lives. And the Conference encouraged the government to use every means possible to motivate individuals to change their lives and their "living habits" and "values." That included mass marketing campaigns, widespread testing of individuals, and bringing to bear the technological expertise of "professional behaviour modification agents." The current CSTF, the offspring of the 1972 Conference, continues this focus on shaping individual lifestyle and values.

The focus on individual lifestyle that became preeminent in the Lifestyle Decade (and continues in the CSTF and the CLA) has been much criticized. Criticism has been directed at the failure to account for the larger social factors that effect health; that failure has led to a tendency to "blame the victim." This criticism of Health Education, says O'Neill (1994, 41) parallels a critique of medicine that emerged in the late 1970s (Bozzini et al 1980; Crawford 1978; Illich 1976; Krauze 1977; McKeown 1976; Powels 1973).

The critical perspective places responsibility for the production of disease more on society than the individual—he calls this school "Critical Health Education" (1994, 46ff). To some critics, society is entirely responsible (Freudenberg 1978). Others argue for some individual responsibility in a social context (Allison 1982). O'Neill says: "The "society-blaming" ideology of the critical approach stems from a theory of the determinants of health and illness that emphasizes various social, economic, cultural, and political factors
(as opposed to more individualistic factors such as personal behaviour, lifestyle, or genetics)" (1994, 47). Individual health, in this perspective, is the product of an ecosystem of health and disease, in which the health status of the individual is the result of the environment in which s/he lives. That includes factors such as economics, gender, occupational risks and the effects of the physical environment (e.g. air and water pollution). In this framework, socio-economic structures such as class are seen to have a profound effect on health: poverty, for instance, produces ill health. The critical approach, therefore, seeks change in physical and political/economic/cultural parameters. Rather than admonishing individuals for living unhealthily, the critical perspective calls for larger structural changes.

Crawford explores the political ideology of the health focus on individual "victims" (Crawford 1980). He says the health consciousness movements (holistic health and self-care) continue to medicalize life by perpetuating the same political orientation around health as does traditional biomedicine, i.e. a focus on the individual in the understanding and treatment of disease and the production of health. He calls this "healthism" which he defines as:

the preoccupation with personal health as a primary—often the primary—focus for the definition and achievement of well-being, a goal which is to be attained primarily through the modification of lifestyles, with or without therapeutic help. The etiology of disease may be seen as complex, but healthism treats individual behavior, attitudes, and emotions as the relevant symptoms needing attention. Healthists will acknowledge, in other words, that health problems may originate outside the individual, e.g. in the American diet, but since these problems are also behavioral, solutions are seen to lie within the realm of individual responsibility. For

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102 Shroff (1996) has documented the changing political and economic landscape in Canada that has led to the establishment of ideologically healthist health policy.
the healthist, the solution rests within the individual’s determination to resist culture, advertising, institutional and environmental constraints, disease agents, or simply lazy or poor personal habits. In essence, then, cause becomes proximate and solution is constructed within the same narrow space (Crawford 1980, 368).

Healthism, Crawford argues (1978; 1980) is a political ideology strategic to an ongoing crisis in health care. He says there are three features to this crisis: (i) skyrocketing costs of medical care, (ii) a growing awareness of the environmental, and therefore political, nature of many diseases, (iii) popular dependency on the medical professions for the care of health. Together, these constitute a political crisis. Healthism, he argues, has the political ideological function (in the Marxist sense of false ideology) of deflecting public concern away from the larger social, political, economic issues, which is to say systemic matters that create health and disease to issues of the individual self, thus preventing a popular uprising against a system in crisis. He also says that this individualism is class specific, appealing to the culture and ideology of the middle and upper classes, and having little relevance to the lower classes.¹⁰³

¹⁰³ This raises the issue of "lifestyle" as a middle class consumer choice in the logics of consumer culture. Which means that the pursuit of the "healthy lifestyle" is class-based and a viable option only for those with the material wherewithal to participate in the culture of consumption. Featherstone (1991) argues this point. I will discuss Featherstone in the literature review later in this chapter.
Crawford's ideological critique of healthism is enhanced by Vertinsky's (1985, 74-76) critique of health promotion in physical education. She points out three ways that the individualistic focus on lifestyle does damage to individuals. First, from the argument that "individuals are personally responsible for their own health" (Evans 1982, 33) follows the sequitur that "their own illnesses must also be their own fault and that people are therefore victims of their own self-abusive behavior, rather than their socioeconomic circumstances and genetic heritage" (Vertinsky 1985, 74-5). The economic/political result of this is that governments and other organizations that can accuse individuals of being victims of their own scurrilous behaviours (smoking, unprotected sex, recreational drug use) can claim that these individuals should pay the costs associated with their ill health. Moreover, their disease can be seen as a manifestation of their moral depravity.

Second, in the work-place due to environmental conditions and the stressful imperative that workers be ever more productive, workers are often not free to determine their own health, yet they are blamed by their employers for not taking appropriate responsibility for their health—this is especially poignant in work places that have institutionalized fitness programmes. Third, because the administration of "healthy lifestyle" is closely tied to patterns of consumption (the ability to purchase equipment, athletic facility memberships

104 Vertinsky (1985) parallels Crawford (1978, 1980, 1984) but does not actually refer to it. Vertinsky uses the words "health promotion" to denote what I have been calling health education, which is preoccupied with individual lifestyle. This is in contrast to the use of the words "Health Promotion," below.
etc) the individualist imperative to take control of one's own health is based in middle and upper class capacities for consumption, leaving those who cannot afford to embrace a "healthy life" in the logics of consumption out of the picture. 106

The critical perspective on health education (O'Neill and Pederson 1994) constitutes a paradigm shift from an exclusive focus on individual lifestyle to the larger environmental determinants of health which include individual concerns, but in a more social context. This orientation is distinguished from Health Education by the term "Health Promotion." Badgely says that the term "Health Promotion" "connotes a wider range of means [to achieving health] including regulation, community action, and basic changes in social structure" (1994, 27). Rootman and Raeburn thus define Health Promotion in the Canadian context as follows:

Health as perceived in the context of Canadian health promotion has to do with the bodily, mental, and social quality of life of people as determined in particular by psychological, societal, cultural, and policy dimensions. Health is seen by Canadian health promoters to be enhanced by sensible lifestyles and the equitable use of public and private resources to permit people to use the initiative individually and collectively to maintain and improve their own well-being, however they may define it. (Rootman and Raeburn 1994, 69).

Similarly, and more succinctly, the WHO defines health promotion as "the process of enabling individuals and communities to increase control over and to improve their health" (World Health Organization 1984, 3) Health Promotion might appear to have a strong Freirian element, in that it seeks to give individuals in communities control over the

105 See also the class/economic critiques of physical fitness below.

106 See also (Featherstone 1991, 193) on the problems of the body in consumer culture.

There is further discussion of this point later in this chapter.
determinants of their health (Freire, 1970). However, while Health Promotion seeks to turn power over to people in communities, it continues to be a professionally driven phenomenon; it does not originate in communities and is not a social movement. Ilona Kickbusch says: “Health promotion is not, and in my view never was, a social movement” (1994, 8). She defends Health Promotion, however, by saying:

Many of the professionals involved in health promotion had participated in or supported social movements, and had been influenced by the means of social activism and its goals. Health promotion was and remains profoundly committed to democracy and participation. In particular, it aimed to change professional, institutional, organizational, and political approaches to health (1994, 8).

The cornerstone of this paradigm shift is an increased sensitivity to the politics of health (Minkler and Cox 1980; Wallerstein 1992; Wallerstein and Bernstein 1988). With this is the notion that health and disease are powerfully effected by a wide range of politics. For example: women’s health is profoundly affected by the politics of gender and reproduction; the health of the poor is effected by the political economy of capital; the health of us all is effected by the politics surrounding environmental issues; the health of gay men with AIDS is effected by the politics of homophobia; and so on. The medical paradigm conceptualized health as an issue of treatment of disease. The Health Education paradigm, added to that a focus on individuals adapting their lifestyles. The Health Promotion paradigm expands on its predecessors to include a range of environmental concerns, conceptualizing health as a collective issue (Rootman and Raeburn 1994, 61). Raeburn and Rootman refer to this as the “expanded health field concept.” and list five determinants of health: (i) public policy, (ii) society, culture, environment, (iii) community/social support, (iv) personal behaviour/skills and (v) health
services. (Raeburn and Rootman 1989, 63) In this expanded concept, individual lifestyle (iv) continues to be a determinant of health, but one contextualized by other more explicitly political determinants (i, ii, iii, and perhaps v). The relationship between these various determinants of health was conceptualized by Trevor Hancock and Fran Perkins in a publication of Health and Welfare Canada, then titled Health Education but now called Health Promotion. That conceptualization is called the “Mandala of public health” and places the individual at the centre of a number of determinants of health: family, community, biosphere, lifestyle, personal behaviour, psycho-social environment, human biology, medical care systems, human environment, physical environment and culture. In this concept then, the individual human subject is made healthy/unhealthy by the confluence of these factors. Some authors have suggested that taking the multiple determinants of health seriously requires a complete rethinking of the politics of health, one which truly empowers people and communities to wrest control over their destinies from the medical professions and health promotion professionals by fully embracing Paulo Freire’s “education for critical consciousness.” (Minkler and Cox 1980; Wallerstein and Bernstein 1988)

Some critics of the modern medicalization of life are less than enthusiastic about expanded definitions of health. Crawford (1980) argues that subsuming so much of life under the rubric of health is an ideological strategy of healthism, which amounts to a depoliticization of political life. Crawford quotes Daniel Callanhan: “Such an ideology has the practical effect of blurring the lines of appropriate responsibility. If all problems—political, economic and social—reduce to matters of ‘health’ then there ceases to be any
way to determine who should be responsible for what... " (Crawford 1980, 381). In the light of this kind of criticism, expanded definitions of health give only a nod in the direction of the larger political issues, and effectively maintain the ideology of healthism. Indeed, the "Mandala of Public Health" continues to place the individual at the conceptual centre. And this perpetuation of individualism is not only a conceptual matter for health promoters, it continues to be the material basis of contemporary health care. While Health Promoters have adopted an expanded vision of health, health policy as it is reflected in the allocation of resources continues to focus on the individual and disease, as evidenced in the continued pre-eminence of doctor-centered biomedicine and burgeoning medical high technologies that deal only with individuals. In the case of physical fitness, while the lifestyle focus of the CSTF can be conceptualized as but one element in a "Mandala" of health, this is only a philosophical concept in the profession and academic discipline of Health Promotion. In practice, as an actual intervention into the lives of people, the CSTF protocols, printouts and counseling do not reflect in any way the expanded definition, and make no mention of the politics of health.107 The participant (or reader) of

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107 My deconstruction of the CSTF later in this chapter attempts to prove this. Also, the Consensus Statement (Bouchard, Shephard, and Stephens 1992), a "definitive" appraisal of exercise science research on physical activity and health makes no mention of environmental factors and restricts any socio-cultural concerns very briefly to the "demographics" of age, sex and education. Indeed the 1,055 page proceedings, which purport to review all germane literature on physical activity, fitness and health make virtually no mention of the environment, defined in any way, as contributing to
the CSTF is given assessments only of their individual fitness and lifestyle; there is no assessment of the way in which other determinants of health may have an impact. Indeed, it is designed with the explicit intent of motivating individuals to change their way of life to conform to scientific concepts of healthy living (Canadian Association of Sport Sciences 1987a, 7). And in terms of offering participants strategies that might effect their health, it suggests nothing beyond personal adaptation to the environmental status quo. The CSTF exists entirely outside the contexts of Health Promotion, operationalizing instead “healthist” philosophy of the “Lifestyle Decade.”

4.2.1.3 THE CONTEXT FOR THE CSTF AT THE UNIVERSITY OF TORONTO

It might be argued that while the physical fitness test itself does not reflect the larger concerns of Health Promotion, the institutional context for it does. In the case under study here, the CSTF administered by the University of Toronto Department of Athletics and Recreation, the context is completely individualistic and healthist. All the nodes of the “Healthy Lifestyle Network” offer health services individualistically. Resources listed for promoting health do not include political action (no environmental, women’s, ethnic, or other political organizations are mentioned). No resources for effecting change in the university’s physical, cultural, social, economic environment or the surrounding urban environment are suggested. The focus is purely on the individual participation in physical activity and health. Bouchard and Shephard (Bouchard and Shephard 1992) mention the physical environment in their foundational model of health and physical fitness, but cite no literature and give no consideration to an expanded definition of health.
seeking help for his or her *individual* health. The same is true of the Department of Athletics and Recreation. All health services there are individually oriented. The *AC Guide*, which list all DAR offerings, suggests nothing of a political, economic or environmental nature for dealing with health. In summary, the institutional discourse for the CSTF, as it is administered at the University of Toronto, is part of an individualistic, "healthist" ideology and economy of health care. The CSTF is operationalizing a minor government policy on lifestyle management as part of an overall strategy for increasing public "health" and decreasing public expenditure on health care.

The Department of Athletics and Recreation at the University of Toronto has a "fitness unit" which offers a number of health and physical fitness appraisal and consultation services to members of the university community. These include physical fitness testing, and exercise and dietary prescription and a computerized comprehensive lifestyle assessment (CLA). These evaluative and consultative services are provided in order to bring people into institutional discourses of health promotion by teaching them the scientific truth about their bodies and their way of life so that they can reform

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108 It is a minor policy in comparison to policies for the dominant medical paradigm.

109 This department is administratively separate from the School of Physical and Health Education, but there is overlap in facilities, faculty and student participation in the physical fitness testing.
themselves where appropriate or by affirming patterns of life that are already being lived in accordance with scientific thinking on health.

The CLA, for instance, was designed to facilitate “preventive lifestyle management practices,” encouraging participants to seek professional help in areas of their lives which the assessment programme finds deficient. The CLA is meant to bring members of the university community into the University’s institutional discourse on Health Promotion, organized under the name “The Healthy Lifestyle Network (University of Toronto n.d.) -- this pamphlet calls the CLA an “entry point. One enters the discourse by answering questions about one’s way of life. The computer then evaluates the participant’s way of life, affirms those aspects which it judges to be sound for the pursuit of a scientific concept of health and directs the participant to the appropriate services for those aspects that deviate from the programme’s concepts. The CLA is based on health education and early intervention programmes for drug, alcohol and tobacco use (Skinner 1994, 37). It employs a battery of modified scientific questionnaire that are used for assessing people’s health status (e.g. the Alcohol Dependency Scale and the Drug Abuse Screening Test which Skinner (1994, 32) says studies have shown to be highly effective in producing accurate DSM-III diagnosis). The following “lifestyle areas” are interrogated and assessed: nutrition, eating habits, caffeine use, physical activity, body weight, sleep, social relationships, family interactions, tobacco use, alcohol use, non-medical drug use,

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110 While the CLA is offered primarily on a volunteer basis, some people are required to undergo the CLA: all second year students in physical education (1995) are required do the CLA as a condition of passing a required course called "Personal Health."
medical/dental care, motor vehicle safety, sexual activities, work and leisure, and emotional health. The test is meant to be instrumental, for instance, in directing people who are not sufficiently physically active to submit to physical fitness testing and counselling and exercise prescription—services offered on a not-for-profit basis by the Department of Athletics and Recreation. The CLA is a highly structured technology for enticing people into the University’s institutional discourse on health, which is, of course, part of the larger discourse on health promotion described above.

Other “entry points” into the university’s discourse on health are more informal. The Department of Athletics and Recreation simply advertises physical fitness testing in its programme guide. While the University of Toronto does not promote fitness testing aggressively, in the commercial physical fitness industry fitness testing is frequently offered as part of the membership package in fitness clubs. By testing a person’s fitness ‘strengths’ and ‘weaknesses’ the club can show and refine the person’s need for the club’s services — many clubs, including the most prestigious and science-based such as the Fitness Institute, encourage their members to test and retest regularly. At the University of Toronto, the fitness test, exercise and dietary prescriptions are offered in four different formats: The Canadian Standardized Test of Fitness, (which includes appraisal, counselling on exercise and rudimentary counselling on diet—mostly regarding weight reduction), a “General Fitness Consultation” (which is devoted to the design of an exercise programme—a followup to the fitness test), “Nutrition Consultation” (which deals specifically with diet) and “Specialized Fitness Assessments” (which are more accurate
tests of physical fitness, directly measuring aerobic power and body fat composition, and are considerably more expensive to administer).\textsuperscript{111}

4.2.2 THE CANADIAN STANDARDIZED TEST OF FITNESS AS A NATURALISTIC TEXT OF THE BODY

The Canadian Standardized Test of Fitness is a "set of procedures used to evaluate specific fitness components. These include standardized measurements of anthropometry, aerobic fitness, muscular strength, flexibility and muscular endurance, and are accompanied by norms and percentiles for Canadians 15 to 69 year-of-age." (Canadian Association of Sport Sciences, 1987b, 2)\textsuperscript{112} The Canadian Society for Exercise

\textsuperscript{111} For the most part, participation in fitness testing is voluntary. Some employers, however, require physical fitness testing for some of their employees. For example: police officers, fire fighters, soldiers, and airline pilots. Also some educational settings require physical fitness testing: physical education students (at the University of Toronto), some high schools (St. Michael's College School). So that control over their athletic performance may be maximized, members of varsity sports clubs and teams are sometimes required to undergo "specialized fitness assessments" and "nutrition counselling."

\textsuperscript{112} The Operations Manual is designed to be used in conjunction with the CSTF Interpretation and Counselling Manual (Canadian Association of Sport Sciences, 1987a).
Physiology (CSEP, formerly the Canadian Association of Sport Sciences\textsuperscript{113}) has adopted the CSTF in the National Physical Fitness Appraisal Certification and Accreditation (FACA) programme, which the CSEP was mandated to administer by the Canadian Minister for State, Fitness and Amateur Sport in 1979. The Fitness Directorate is now under the authority of the Health Canada. Ability to conduct the CSTF is the basis for registration as a Registered Fitness Appraiser (RFA). Individuals accredited to conduct more advanced fitness protocols\textsuperscript{114} undergo certification as Certified Fitness Appraisers.

Physical fitness testing at the University of Toronto’s Department of Athletics and Recreation is conducted by individuals who are either RFAs or CFAs. Qualified appraisers are expected to have fundamental knowledge of physiology, fitness assessment, exercise prescription, nutrition and motivational aspects of physical activity and counselling (Canadian Association of Sport Sciences, 1987, 3). Often the appraisers are graduates of university or college physical education programmes, or are enrolled in such programmes. The School of Physical Education at the University of Toronto offers undergraduate courses in all these areas.

The CSTF was developed to be a “springboard for lifestyle change” (Canadian Association of Sport Sciences 1987a), indeed, “the most important aspect of the CSTF

\textsuperscript{113} For a discussion of this name change, see the section on the historical development of lifestyle management in Chapter Four.

\textsuperscript{114} This would include maximal VO2 testing -- the aerobic fitness test of the CSTF is a submaximal estimate of aerobic capacity.
The appraisal process is the promotion of a physically active, wellness-oriented lifestyle.” (Canadian Association of Sport Sciences 1987b). It sets out to change the lives of participants by giving them scientific knowledge of their bodies and motivational counselling. The knowledge produced in the appraisal is not the most accurate available to exercise science—the test is the product of a number of compromises regarding cost and safety (eg estimating aerobic capacity in a graduated step test is far less expensive and safer than direct measurement with the Beckman metabolic cart in a maximum effort test), diversity of population (eg. the test is based on very broad population samples and therefore estimates the capacity of highly fit people poorly), and temporal economy (eg. overall flexibility, strength and endurance are calculated on the basis of specific tests because a more general test would take a very long time).\footnote{\textit{The Operations Manual} makes specific mention of such limitations regarding the CAFT, saying that it may be only mode-specifically valid, i.e., only testing stepping not generalizable aerobic fitness. Fitness Canada has convened an "Expert Committee" to investigate and incorporate new research into the Fourth Edition (due in the winter of 1996-7) of the CSTF Operations manual (Canadian Association of Sport Sciences 1987b).} But because the test is primarily a motivational tool, these complexities are set aside and the data are presented as a truthful representation of the body. Within the limitations of the protocol, every effort is made to produce knowledge of the body as accurately as possible. Individual fitness testers can and do modify the meaning of the results where they could be interpreted as more de-motivating than motivating.
The test is designed as a “seven step model” for counselling which divides into three stages (Canadian Association of Sport Sciences 1987a):

**Stage One: Setting Goals**
- Step 1. Build rapport
- Step 2. Establish lifestyle goals

**Stage Two: Collecting Data**
- Step 3. Conduct the appraisal (according to the CSTF Operations Manual)

**Step 4. Interpret the results**
- Step 5. Discuss activity preferences and results

**Stage Three: Planning Action**
- Step 6. Match preferences and appraisal results
- Step 7. Design a program

This structure allows the participant to become comfortable in the laboratory setting, to make known his/her interests in physical activity and gives the appraiser the opportunity to get to know the participant qualitatively before undertaking the quantitative data collection analysis and interpretations which are then followed with an action plan that conjoins the qualitative and quantitative information in a motivational plan for behaviour modification.
The test is administered under controlled conditions. At the DAR it is conducted in the physical fitness laboratory. The CSTF manual requires specific equipment: room thermometer, table, chair with arm support, stethoscope, sphygmomanometer (a blood pressure cuff), stopwatch, metric measuring tape, set square, spring or Beam Scale, fat calipers, anthropometric tape, ergometer steps, cassette tape and player, hand dynamometer, flexometer, and gym mat (Canadian Association of Sport Sciences, 1987). The reliability of the measuring instruments is supposed to be verified periodically.

To maintain standardization in appraisal, participants are informed before they arrive for the test that they are to wear shorts and a short sleeved shirt, not to eat or to consume caffeine or smoke for at least two hours before the test, and to refrain from exercising or drinking alcohol for six hours prior to the appraisal. The participants also complete a consent and release form and answer the ParQ (a questionnaire that screens for risks such as heart attacks). They also fill out a lifestyle questionnaire—which is a much simpler version of the Computerized Lifestyle Assessment. It asks questions about the participants’ history in terms of having done fitness tests before, strength training, physical activity, occupation, smoking, nutrition, and general health. The appraiser uses this as preassessment qualitative data, pointing out aspects of the participants’ life that lend themselves to increased physical activity and leading a new, healthier life.

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116 The laboratory functions both for research purposes and as a service to DAR members— the presence of various machines for exercising and measuring creates a "scientific" environment.
example: “I see that you like going for a walk once a day. You might want to start walking twice a day. Have you ever thought of jogging? You might like that too.” The appraiser also screens the participant with a series of questions and observations regarding pregnancy, current medications, ease of breathing at rest, coughing, swelling in the lower extremities, or any other problem which the appraiser thinks will expose the participant to “unnecessary discomfort or risk” (Canadian Association of Sport Sciences, 1987b, 6) and to determine whether the participant has followed the instructions for preparation for the test. (See Appendices 1, 2 & 3). The point of the pretest screening is essentially two-fold: to ensure that the participant is not at risk of injury or illness as a result of the test, and to ensure the maximum scientific accuracy of the test; for instance: (i) the norms and percentiles used in the CSTF were taken from a population that excluded pregnant women, which means that it cannot accurately assess such people and (ii) caffeine is understood to increase heart rate, which means that the resting heart rate calculation would be abnormally high for someone who had recently consumed caffeine—this would skew the heart rate calculations which account for the difference between resting, exercising and post-exercise rates. The last element of the screening process is the measurement of resting heart rate and blood pressure—the participant is not allowed to take the aerobic and muscular strength and endurance tests if the blood pressure is higher than 150/100 mmHg after two readings. These measurements are also used as reference points for the test of aerobic fitness. If the participant has met all the pretest criteria, the appraiser decides to go ahead with the examination.
Following the pretest screening, the CSTF examination is composed of five elements: anthropometry, aerobic fitness, muscular strength, flexibility and endurance, and an appraisal report. The CSTF Operations Manual gives very specific instructions on how to measure the various elements of fitness, reproducing in the human service environment the culture of accuracy and control that is characteristic of a good scientific experimental environment. The participant is expected to cooperate completely with these control needs. Indeed, the Manual points out that the consent form which was signed in the pretest screening ensures that the “participant clearly understands the nature and procedures of the CSTF and what his/her responsibilities are with respect to the performance of the test.” (Canadian Association of Sport Sciences, 1987b, 6, emphasis mine.)

\[\text{117} \] The participant has the choice of not participating in any part of the test and can stop performing "whenever significant discomfort is experienced." (Canadian Association of Sport Sciences, 1987b, 6). The participant does not have the option of modifying the test or of shaping it according to their own desires. Indeed, strict compliance is necessary if the test is going to be scientifically "valid."

This issue of scientific control will be significant to my analysis of the test later. It establishes scientific authority over the body in the fitness testing setting. Short of opting out of the test, the participant has no opportunity to contest that authority or to modify the particular discourse that is being carried out upon his/her body. Through this controlling process their bodies are made "docile" in the interests of the scientific
**Anthropometric Measurements**

A series of body measurements are taken in order to assess body weight, adiposity and fat distribution. (See Appendix 8) Traditionally, evaluations of body weight and composition have been based on Weight and Height Tables and Percentage of Body Fat Estimates. These tables are now considered to be too general, overly simplistic and not "universally applicable."(Canadian Association of Sport Sciences, 1987b, 14). To address these problems Fitness Canada convened an Ad Hoc CSTF Advisory Committee in 1984 which decided that body weight should be assessed by taking into account a variety of factors: Body Mass Index, Waist to Hip Ratio, Sum of Skinfolds, and Sum of Trunk Skinfolds. Together, these are taken by CASS to be an acceptable means of appraising body composition for the purpose of health risk management. Together, these measurements estimate adiposity and fat distribution. The *Manual* explains these measurements as follows:

First, consider BMI (Body Mass Index) an indicator of proportional weight. Should an individual have a high BMI value, (i.e., within the Risk Zones), one must then determine if this is a result of excessive body fat content or elevated muscle mass. This can be determined by considering the SOS (Sum of (five) Skinfolds.) If the SOS value is also high, this is a definite indication of too much body fat and corresponding health risk. Conversely, should an individual have a low BMI, within the Risk Zones, one must determine if that individual has too little fat by considering the SOS. Hence, the SOS value facilitates a more accurate interpretation of the BMI value.

Within the past few years, it has been shown that not only is the total body fat content an important factor in assessing body weight, but also and perhaps even more so is the pattern of fat distribution. An excessive amount of fat in the trunk region has been discourse. This tightly controlled situation also bears out what Rouse says about the "tight coupling" between the worlds of the research laboratory and "ordinary" life.

(Rouse 1987, 230)
shown to be associated with increased morbidity; i.e. glucose intolerance, hyperinsulinemia, blood lipid disorders, and mortality. Some investigators have suggested that the WHR (Waist Hip Ratio) provides a valid representation of this pattern of fat distribution and that ratio has been incorporated in this procedure. And, since the SOTS (Sum of (two) Trunk Skinfolds) provides a very direct measure of subcutaneous fat in the trunk region, this value is also considered, adding to the discriminatory capacity of this procedure. (Canadian Association of Sport Sciences, 1987b, 14)

By these four measurements the CSTF assesses the amount of body fat. They are taken as follows:

The Body Mass Index is determined by measuring height and weight: the participant is told to stand against a wall where a tape measure has been fastened—she is directed to stand without footwear, with arms hanging by the sides and feet together, with the heels and back in contact with the wall, she is instructed to look straight ahead, stand tall and take a deep breath while the measurement is taken with a set square to the nearest half centimeter. Weight is determined by having the participant stand on a weighing scale and the weight is recorded to the nearest tenth of a kilogram. The waist to hip ratio is determined by measuring with a metric tape: chest, waist, hip and right thigh girths. There are specific directions in the Operations Manual regarding what fingers to use to hold the tape, how to determine the correct horizontal plane, how much pressure to apply to the

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118 The Operations Manual gives very specific instructions on how these measurements are to be taken, and appraisers are expected to be able to perform this task in a very specific manner. This will be an important point in my analysis of the rhetoric of the procedure in chapter Six.
tape, at what point of the participant’s breathing cycle to take the measurement and the correct body comportment of the participant.

Skinfold measurements are taken from five locations using Harpenden or Lange calipers: at the triceps, biceps, subscapular, iliac crest and medial calf. Because there is considerable potential for inaccurate measurements with this method, they are taken twice and the mean of the two is taken as the correct measurement. The participant is told to relax (so that the skin will be elastic) and the assessor grasps a fold of skin as well as the underlying fat tissue, applies the calipers to the area, releases the trigger and records the measurement to the nearest .2 centimeters once the caliper jaws have stabilized (about 2 seconds).

Test of Aerobic Fitness

In the CSTF, the aerobic test of fitness is the Canadian Aerobic Fitness Test, which was originally called the Canada Home Fitness Test, because it was designed with the hope that many Canadians would use it at home as a “motivational tool” (Canadian Association of Sport Sciences, 1987b) to monitor their own fitness levels—it is now a test administered by an accredited person. The test consists of “a series of stepping sequences performed on a double 20.3 cm steps to a six-count musical rhythm set by a cassette tape with progress increases in tempo.” It is a submaximal test of aerobic fitness that estimates maximal aerobic power (VO₂ Max.) One’s aerobic power is one’s ability to do work. A standard text of exercise physiology explains the significance of VO₂ Max. to the scientific concept of physical fitness:

The maximum rate at which an individual can consume oxygen (VO₂ Max.) is an important determinant of the peak power output and of the maximal sustained power
output or physical work capacity of which an individual is capable. Indeed, one
definition of physical fitness is VO2 Max.... The capacity for VO2 Max. depends on
the capacity of the cardiovascular system. This realization that physical work capacity,
VO2 Max., and cardiovascular fitness are interrelated has resulted in a convergence of
physical education (athletic performance) and medical (clinical) definitions of fitness.
From the physical education-athletics perspective, cardiovascular function determines
VO2 Max., which in turn determines physical work capacity, or fitness. From the
medicoclinical perspective, fitness involves freedom from disease. Because
cardiovascular disease represents the greatest threat to health of individuals in
contemporary Western society, medical fitness is largely cardiovascular fitness. One
of the major ways to determine cardiovascular fitness is to measure VO2 Max.
Therefore, VO2 Max. is not only an important parameter of metabolism, it is also a
good measure of fitness for life in contemporary society (Brooks and Fahey 1984,
emphasis mine).

For physical fitness testing then, aerobic fitness is the capacity to do work which
is a measure of fitness for life in contemporary society, and it can be measured in terms of
VO2 Max. A true maximal test involves exercising to the point of exhaustion, to the
precipice of physical collapse. This kind of testing is often conducted on competitive
athletes, who are accustomed to pushing themselves to their limit. Maximal testing is not
feasible for the general population because: (i) it requires expensive equipment, (e.g. a
treadmill, and metabolic cart), (ii) it is difficult to get people who are unaccustomed to
pushing themselves so hard, to do so for the test, (iii) people who are unaccustomed to
intense exercise may find the experience so unpleasant that it discourages them from
exercising in the future—this is especially problematic given that the point of physical
fitness testing is motivational (Canadian Association of Sport Sciences 1987a, 7)(iv)
there are dangers associated with such exertion—people who are not physically fit are at
greater risk than those who are. Because of this, the CAFT is designed to estimate VO2
Max. by a submaximal test. Performance at a submaximal level is used to predict maximal
performance—this is based on norms according to age and sex and exercise habits that
have been established in progressive aerobic fitness tests that proceeded to maximal output. This prediction is "based on the existence of a linear relationship between workload and heart rate and between heart rate and oxygen consumption." (Canadian Association of Sport Sciences, 1987b, 24).

The procedure is as follows: The appraiser determines the tempo/stage at which the participant should begin (the stages are progressively more difficult by virtue of increased tempo); this is based on age and sex. The participant is taught how to go up and down the two steps in time to a temporally calculated tape of music. The participant is told that the first session will last three minutes, at which point s/he is to stop and stand motionless while the appraiser takes the heart rate at a cue on the musical tape. If the heart rate is equal to or exceeds the Ceiling Post-Exercise Heart Rate, the test is stopped and the post exercise measurements are taken: the participant sits and post-exercise blood pressure is taken twice, once between :30 and 1:00 minutes and between 2:30 and 3:00 minutes. Then, between 3:00 and 3:30 minutes the heart rate is taken. If the participant’s post-exercise heart-rate is less than the ceiling, s/he goes to the next stage at a higher intensity. This continues every three minutes until the ceiling is reached.

Muscular Strength, Flexibility and Endurance

The CSTF is concerned about muscular strength, flexibility and endurance in order to prepare the 'human machine' for the performance of daily physical tasks as well as for participation in physical activity. This concern is based in a mechanical/functional understanding of the body: the CSTF as well as the science of biomechanics understand the body in terms of mechanics and motors ("The basic unit of skeletal muscle is the
motor unit" (Canadian Association of Sport Sciences, 1987b, 27). The muscles need to be trained and maintained if they are to function as good, efficient machines. In this paradigm of the body the machine functions best if it is strong, able to endure work and flexible. The CSTF Interpretation and Counseling Manual explains this as follows:

Muscular strength and muscular endurance are two quite different qualities of a muscle. Muscular strength is defined as the maximum tension or force a muscle can exert in a single contraction. Weightlifting is the classic activity demanding great amounts of muscular strength. Muscular endurance relates to the ability of a muscle to perform repeated contractions over a period of time. This quality is important in activities like running and cross-country skiing. While few day-to-day activities require significant muscular strength, many of them demand good muscular endurance from a variety of muscle groups. Washing windows, cleaning floors, painting, gardening, raking leaves, and shoveling snow all require prolonged muscular exertions. (Canadian Association of Sport Sciences, 1987, 27)

Muscular strength is measured with a hand dynamometer, which the participant holds in line with his/her body and squeezes as hard as possible. Each hand is measured twice. Endurance is measured by the performance of pushups and sit-ups.

Pushups: Males and females do different versions of the pushup, females performing a modified version of the male pushup. The manuals offer no explanation of these differences, although it is clear that the assumption is that men have more upper body strength than women. The goal is to perform as many pushups as possible while maintaining the correct form. The test is stopped when the participant "strains forcibly or is unable to maintain the proper push-up technique. Participants must perform the pushups exactly as instructed. Failure to do so will result in a push-up not being counted.

Males: The participant lies on his stomach, legs together. His hands, pointing forward, are positioned under the shoulders. The participant pushes up from the mat by fully straightening the elbows and using the toes as the pivotal point. The upper body must
be kept in a straight line. The participant returns to the starting position, chin to the
mat. Neither the stomach nor thighs should touch the mat.

Females: The participant lies on her stomach, legs together. Her hands, pointing
forward, are positioned under the shoulders. The participant pushes up from the mat
by fully straightening the elbows and using the knees as the pivotal point. The upper
body must be kept in a straight line. The participant returns to the starting position
chin to the mat. The stomach should not touch the mat. The lower legs remain in
contact with the mat, ankles plantar-flexed. (Canadian Association of Sport Sciences,
1987b)

Sit-ups: In this test the participant performs as many sit-ups as possible in sixty seconds.

Only those sit-ups that have been performed exactly as directed are counted. The
participant lies on a gym mat with hands at the side of the head on the ears while the
appraiser holds the ankles to ensure that the feet do not leave the floor.

It is imperative that the participant is well instructed in the correct performance of the
sit-up. The participant should be informed to initiate the sit-up by flattening the lower
back followed by actively contracting the abdominal muscles and then continuing the
movement with a well controlled "curling up" of the trunk to the point where the
elbows touch the knees. This is followed by a "curling down" of the trunk with a
particular emphasis on the lower back fully contacting the mat before the upper back
and shoulders touch the mat. A "rocking" or "bouncing" movement is not permitted.
Also, the participant's buttocks must remain in contact with the mat and the fingers in
contact with the side of the head at all times. (Canadian Association of Sport Sciences,
1987b, 13)

Once the participant is "fully informed" of the procedure and has had an opportunity to
practice the sit-up and do it correctly, the appraiser gives the "command 'begin'", starts
the timer and counts the number of sit-ups and monitors their form.

At the University of Toronto Department of Athletics and Recreation the pushup
test has been dropped and the sit-up test is conducted differently. Rather than a full sit-up
it is a partial curl up. It is not timed but performed with a metronome and discontinued
when the sit-ups get behind the beat or cease to raise the body high enough as indicated by
the distance that fingers travel along the mat with each sit-up. The instructor does not hold the ankles.

Neither the CSTF Operations Manual nor the Interpretation and Counseling Manual offer much justification for concern about general body flexibility, except that the 1981 Canadian Fitness Survey showed that “improving flexibility rates highly with Canadians as a very important reason for being active—especially among adults over 55 who tend to consider it an even more important reason than weight control. Good flexibility helps the older adult accomplish life’s daily tasks with ease and comfort.” (Canadian Association of Sport Sciences, 1987, 29) The Manual does mention that flexibility in the specific area of the body that is tested by the flexibility test in the CSTF—the hamstring muscles and the lower back muscles—contributes to “proper posture” and reduces the risk of developing lower back problems (Canadian Association of Sport Sciences, 1987, 29). Helen Lenskyj, commenting on this section of this dissertation, says: “I suspect the lack of emphasis on this [ie. flexibility] is a direct result of women’s superior flexibility.”

Flexibility is tested with a flexometer. (See Appendix 9.) The participant warms up for the test by doing a modified hurdle stretch on each leg for 20 seconds.

The participant, barefoot, sits with legs fully extended with the soles of the feet placed flat against the two horizontal crossbars of the flexometer. The flexometer should be adjusted to a height at which the balls of the feet rest against the upper crossbar. The inner edge of the soles are placed two cm from the edge of the scale. Keeping knees full extended, arms evenly stretched, palms down, the participant bends and reaches forward (without jerking), pushing the sliding marker along the scale with the fingertips as far forward as possible. The position of maximum flexion must be held for at least tow seconds. Advise the participant that lowering the head will maximize the distance reached. If the knees flex, the trial is not counted. Do not attempt to
hold the knees down. In addition, do not allow jerking, bouncing action. (Canadian Association of Sport Sciences, 1987b, 13)

When the data collection is complete, the appraiser either calculates the results of the data collection or enters them into a computer which will do the calculations and print the results.

**Appraisal Report**

Once the testing procedures are complete, the participant is given an appraisal report. In some cases this means that the appraiser must perform a series of calculations first. At the University of Toronto, and many other physical fitness testing sites, the results of each test are entered into a computer which does all the necessary calculations, and prints out a report which the appraiser then reviews with the participant. (See Appendix 4) At the University of Toronto’s Department of Athletics and Recreation participants are given a printout generated by a computer programme called *Fitstat*. This prints out three sets of information: one is called “Infostat” which gives the results the CFTA, short prose explanations of the nature of each of the tests, the position of the participant either in terms of ideal physical fitness or in relation to norms in the Canadian population, and advice on how to improve a particular aspect of physical fitness, if improvement is deemed necessary. Another printout is called the “Quickstat: Fitness Profile” which gives a numerical summary of the test results and bar graphs that illustrate the participant’s percentile in each test. The third printout is called “Histostat: History Profile” which gives comparative numerical results to those participants who are engaged in the appraisal/reappraisal process, allowing for historical comparisons of fitness.
progress. The appraiser reviews these printouts with the participant, further explaining the results and developing the physical activity programme and plan of action.

The CSTF Operations Manual’s companion, The CSTF Interpretation and Counselling Manual, directs appraisers in the procedures for delivering a physical fitness appraisal and exercise prescription to a participant. This is an hermeneutical guide:

119 It gives some background on the goals and objectives of the fitness appraisal and the "benefits" of periodic monitoring of physical fitness through an appraisal and reappraisal process. It reviews the basic concepts of physical activity as conceptualized by the Canadian Association of Sport Sciences, the National Fitness Appraisal Certification and Accreditation Program and Fitness Canada (a directorate of Fitness and Amateur Sport, in 1987, when the Manual was published). It gives definitions of health and physical fitness. There is a brief review of the epidemiological literature on physical fitness and health and physical activity is placed in the context of other "healthy" practices (i.e. diet, sleep, non-smoking, etc.). The Interpretation and Counselling Manual has a chapter on counselling and techniques for motivating participants to be more physically active. There is a chapter on the specifics of interpreting results of the test and designing programs, and gives technical/scientific information on the test, physical fitness, health and exercise prescription. For pedagogical purposes, case studies are included. There is also a chapter on advanced counselling skills, which guide the appraiser through various difficulties with participants. There is a suggested reading list. The appendices include various forms for recording data and calculating physical fitness "facts" about the participant.
advising the appraiser on how to interpret the knowledge produced in the qualitative and quantitative parts of the test in such a way that the participant will not only want to be physically fit, but will also actually change their behaviour. To that end two fundamental strategies (for which there can be many variations) are pursued: (i) reason, and (ii) self-discipline. These could be called strategies for adopting the new life.

(i) Reason:

The participant is invited to accept the truth about his/her body and way of life as it has been revealed in the test and to appreciate the reasonableness of living a physically fit life and to embrace a rational approach to achieving or maintaining such a life. The protocol assumes that anyone taking the test needs either to change their life in some way or to work at maintaining their current fitness. For some, this means taking up an entirely new life: a more active, more disciplined, "health-oriented" way of life. For others, who are more physically fit, only some aspects of their lives need to be changed. The test assumes that everyone can and should improve their fitness levels. To

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120 For instance, even someone scoring in the ninetieth percentile in aerobic fitness, while congratulated for their high level of fitness is encouraged to consider improving: "Your VO₂ of 31mL/Kg/min is at the 90 percentile. You are obviously a seasoned exerciser and you are congratulated on your progress. For you to maintain your score be sure to continue with the same volume of work. If you wish to further your score it will be necessary for you to become involved with some more advanced training such as aerobic intervals which increase intensity while still allow [sic] a long duration workout."
appreciate the reason in the proposition that s/he should improve or work at maintaining their current fitness, the participant is expected to accept the scientific truth revealed in the appraisal. Indeed, the entire testing enterprise is based in faith in the authority of the test and the science which created it. The participant is expected to trust the test because (i) it is a test endorsed by the established authority on physical fitness in Canada (CSEP) and (ii) it is carried out by an accredited Standardized Test of Fitnesss Appraiser, accredited by CSEP. Trusting this authority, the participant is asked to weigh the consequences of ignoring or heeding the options to become more physically active and disciplined in other aspects of their lifestyle.

To convince the participant of the significance of the objective data which is reported in absolute quantitative fashion, the participant is ranked in their percentile position relative to either: the rest of the Canadian population of their age and sex (where 50% is the average Canadian and 100% is the ideally fit Canadian) in the case of aerobic power, strength and flexibility, or in the case of the anthropometric parameters, relative to optimal health where a high percentage is too fat and a low percentage is too lean and 50% is ideal. The participant is given graphs that illustrate his/her position. Where the score is poor, the participant is encouraged to change their behaviour to avoid dangers to their health or suffer the possibility of increased “health risk.” Where the score is good, Consult a training specialist for this kind of program.” (from Infostat printout 02/03/05, U of T). The assumption that everyone who takes the test needs to work at improving or at least maintaining their fitness is also born out in the fact that the test is conceived as a “motivational tool.”
the participant is congratulated and encouraged to maintain that behaviour and consider further improvements. At the University of Toronto a computer printout called “Infostat” interprets the “natural” physiological meaning of each testing parameter in general as well as the individual score for the participant. It is an important document because it attempts to establish an identity between the life of an individual and the truth of exercise science: the measuring that took place in the test is rendered meaningful by reference to the science upon which it is based specifically as it reveals the body of the individual. It also recommends action to be taken on the basis of the meaning of the test results. It gives the individual true knowledge about him or herself that can become the basis for action for living a better life and reducing the risk of ill-health. Having had the truth of his or her natural body explained to him or her, s/he can then live differently. The advantage of individual testing over more general advice about the benefits of physical activity and other forms of lifestyle management is that the individual is compelled to face the truth about her/his own body, rather than abstract concepts about bodies in general.

The Interpretation and Counselling Manual advises that simply being an “expert” on physical fitness and “preaching” to the participant will not be enough: the appraiser must engage the participant in a more participatory fashion if s/he is going to fully appreciate the message of physical fitness and modify his/her behaviour accordingly: the appraiser must also be a “counsellor/consultant.” (Canadian Association of Sport Sciences 1987a, 11) To that end the appraiser is encouraged to engage in “Active Listening” which is a matter of paying close attention to what the participant has to say and feels, so that her/his feelings and thoughts can be absorbed into the process for
behavioural change. This is meant to increase the participant’s trust in the appraiser and the appraisal process. The appraiser should be able to connect what the participant is saying about his or her life to viable options for living a healthier life. “Active listening” does not mean that the appraiser accepts any challenge to the truth of the test and results. Rather, it presents the appraiser with the challenge of mediating between the truth of the test and the experience of the participant, and helping the participant adjust to that truth as best s/he can. With “active listening” the appraiser tries to be sympathetic to the feelings of the participant in the face of the truth that has just been revealed about his/her body and prospects for a healthy life in the future. To that end there is considerable emphasis on finding out what physical activities the participant likes to do so that the appraiser can help him or her choose activities that will improve those parameters of fitness that the test has revealed are in most need of work. The importance of this is emphasized in the “Seven Step Model” in which five of the steps are geared to responding to the participant’s stated needs (building rapport, establishing lifestyle goals, discussing activity preferences and interests, matching preferences and interests, and designing a program). The reasons for this are obvious: if the participant is going to accept the results of the test and live life in the light of it, on a ‘voluntary’ basis, they need to appropriate its meaning into their own sense of themselves. “Active listening” on the part of the appraiser gives the participant the perception that they are actively involved in the hermeneutic discourse on their body in the test and ensuing exercise programme: the participant is going to make choices for his or her own reasons. The appraiser attempts to suggest as many different physical activities as possible so that the participant feels s/he
making choices (See “Lifestyle Information Tools” in appendix 5). The participant is also given the opportunity to think more ‘deeply’ about their “lifestyle needs” (such as being in a group, being independent, being themselves (Canadian Association of Sport Sciences 1987a, 45) and rationally consider which activities would “most probably satisfy those needs.” The appraiser, on the basis of her/his expertise then helps the participant decide whether the activity will meet the fitness goals in the light of the results of the fitness test.

Another rational appeal involves the FITT Principle of aerobic exercise prescription. If the participant is going to be effective in improving aerobic fitness s/he needs to operationalize him or herself according to the FITT (frequency, intensity, type and time) principle: frequently enough, at the appropriate intensity, for a sufficient amount of time, doing an appropriate type of activity. The participant’s desire to engage in an activity is subordinated to a rational calculation regarding how well the activity will fulfill the needs of the FITT principle. The FITT principle also makes it clear to the participant the level of personal commitment that will be necessary to living the new life. The participant is given a number of guides to ensure that s/he is engaging in the activity with sufficient exertion: (i) an aerobic walk/jog prescription that suggests how far they must walk in 15 minutes in order to achieve the necessary intensity; (ii) Target Heart Rate Zone for the participant is taught how to palpate the pulse and calculate whether s/he has brought the heart rate into training zone appropriate for her/his age (neither too low an intensity such that training will not occur, nor too high such that there is risk of injury), (iii) Heart Rate Graph which indicates the amount of time one is to spend at different intensities, and (iv) the Borg Scale
which allows one to approximate heart rate according to perceived exertion.\textsuperscript{121} (See Appendix 6)

A sense of rational choice is emphasized in the dietary counseling aspect of the test as well. It is usual for fitness testing facilities to have literature on “healthy eating.” At the University of Toronto participants are given a number of publications that emphasize rational choice as the modus operandum for eating: *Food Smarts: Choosing Food for Healthy Living* published by the Ontario Ministry of Health (Health and Welfare Canada 1985), *Fiber Facts* published by Kellogg’s (Kellogg’s 1985),\textsuperscript{122} *Healthy Weights: A New Way of Looking at Your Weight and Health* (Ontario Ministry of Health 1994), and a calculator published by the Canadian Heart and Stroke Foundation, called the “Fitness Wheel” which tells how much fat, and fibre are in a vast array of foods, the number of calories it takes to use up each of those foods and the amount of time it takes walking, swimming, jumping rope, or cycling to work off the energy in those foods. (For example: ten potato chips require 22 minutes of walking to burn off their 108 calories, an orange takes only 13 minutes).

\textsuperscript{121} There is currently considerable debate regarding what constitutes a suitable level of exertion. See: (Blair 1995; Pollock, Feigenbaum, and Brechue 1995). But these debates do not preclude the importance of a rational and calculated approach to training.

\textsuperscript{122} While the CSTF as it is administered at the DAR is mostly free of commercial ‘interference,’ the use of this publication by Kellogg’s -- a decidedly commercial enterprise -- should be noted.
While the CSTF deals primarily with the appraisal of physical fitness and exercise prescription and rudimentary advice on diet, it also contextualizes these elements of lifestyle management in a larger rational picture a properly organized life:

Although closely related, physical fitness (and physical activity) is just one component, albeit an important one, of optimal health or well-being. It is one of a number of positive lifestyle behaviours which contribute to well-being. This is something the fitness appraiser must keep in mind during the appraisal and counseling process. An enthusiasm for physical activity must be balanced with the knowledge that other lifestyle changes a participant might make could have an equal or greater effect on their health. (Canadian Association of Sport Sciences 1987a, 8)

To that end the participant answers a lifestyle “Lifestyle Questionnaire” which asks questions about sleeping and the use of alcohol and tobacco (See Appendix 7).

Participants may be encouraged to consider more fully other aspects of their way of life by completing, for instance, the Computerized Lifestyle Questionnaire (CLA), which like the CSTF tries to analyze and change individual lives rationally according to the authority of scientific knowledge. The following is a brief overview of the CLA.

The programme is very easy to follow, giving specific directions along the way on how to proceed. It begins with a welcome screen and a friendly invitation for the participant to do the questionnaire “together” with the computer. The participant answers multiple-choice questions by keying in numbers. If s/he does not want to answer a question s/he has the option of declining to do so. The participant answers a series of questions in each “lifestyle area” and is given immediate “feedback” on the acceptability of their lifestyle; the “feedback” rates the lifestyle area as “excellent, good, fair, and try to improve,” or “low risk, moderate risk, caution, and potentially hazardous.” Before the “feedback” is given, there is a question about the degree to which a particular area is a concern for the
participant: “major concern, minor concern, no concern at all.” The nutrition section asks questions about what types of foods the participant eats and their habits in eating snacks, salting their food and so on. The caffeine section asks about quantity and strength of coffee, tea and colas drunk. The physical activity section asks questions about physical limitations to engaging in exercise, frequency, and general daily activity level. The weight questionnaire determines the Body Mass Index, and whether the person is “eating disordered”. The sleep section inquires about quantity and quality of sleep. The relationship query asks about marital status, presence and closeness of friendships, religious practices, membership in social/political/service organizations. A similar questionnaire asks about family relationships: sense of fair treatment, ease of communication, and personal freedom within the family. There is a series of questions about physical and sexual abuse: frequency, presence of support. The questions on tobacco use deal with cigarette smoking: number smoked per day, for how many years, what time of the day. The alcohol section asks questions about quantity of drinking, frequency, effect on social life and if the answers to the first questions lead the programme to the conclusion that there is a problem with drinking it goes on to ask more questions about the effects of the drinking on the participant’s physical, psychological, working and social life—questions such as “Do you get physically sick because of your drinking?” “Have there been major arguments in your family because of your drinking?” “Have you been in trouble with the law because of your drinking?” Those are questions from the “Alcohol Dependence Scale. (ADS)” There is a series of questions on “non-medical use of drugs.” It asks about “abuse” of prescription drugs and illegal drugs; there
are questions about frequency, intensity, methods of taking drugs. If the programme

determines there is a problem with drug abuse, it initiates the Drug Abuse Screening Test
(DAST) which asks questions about the impact of drug use on the life of the participant—
these are similar to the more "advanced" questions on alcohol (ADS). The questions on
medical and dental care concern frequency of visits to doctor and dentist, frequency of
blood pressure checks, teeth brushing and flossing, use of sun screen. The motor vehicle
questions are about use of seat belts, exceeding speeding limits, and wearing a bicycle
helmet. The questions on sexual activity focus on sexual intercourse, which the
programme defines as: "having vaginal intercourse," "having oral-genital sex," and
"having anal intercourse." It asks questions about condom use, knowledge of partner's
sexual history, frequency of sexual intercourse, number of partners in the last year, and
use of intravenous drugs. The questions on work and leisure focus on satisfaction, stress
and the balance between work and leisure. The questions on mental health are directed at
levels of happiness, depression, calm, energy.

Following the questions, the programme offers a "Lifestyle Summary" which
indicates with bar graphs the results of the questionnaire in terms of "lifestyle risk",
"lifestyle concern" and "lifestyle strength". These are explained as follows:

LIFESTYLE RISK - You should take immediate action to improve this lifestyle area.

LIFESTYLE CONCERN - With a little more effort you could turn this
lifestyle area into a strength.

LIFESTYLE STRENGTH - Excellent. Keep up the good work in this lifestyle area!

Each "lifestyle area" is rated and it is shown whether the participant considers the area to
be a concern. The participant can then request a print-out of the assessment (See
Appendix 4). The print-out reproduces the “lifestyle summaries” from the final screens. The summaries are followed by two pages entitled “What next?” which lists various sources for “further information, assistance and/or counseling.” That is followed by six to fifteen pages entitled “Your Lifestyle Report”. The more “risky” one’s lifestyle, the more pages of text are provided.

The “Lifestyle Report” begins with a cautionary note saying that while considerable care has been taking in making the report complete and accurate, individual idiosyncrasies may not be accounted for. If the participant has any concerns or doubts, they are told “to be sure to consult a health professional.” The Lifestyle Report reiterates the health status for each “lifestyle area.” These ratings range from “excellent,” to “good,” to “fair,” to “caution” to “hazard.” Following each judgment there is a prose passage that connects what the person has admitted about their way of life with the CLA’s advice on how to live healthfully. For instance: if someone says they are consuming one serving per day of milk products, their health status is judged to be “fair” and the following advice is given:

Good start; you’re on the right track, but you should add at least one more serving to your diet every day. Throughout adulthood, our bodies need two servings daily of the calcium, vitamins and protein found in milk products to maintain strong teeth, bones and muscles.

Areas that are deemed “excellent” give validation for that status and encouragement to continue living the same way. So for instance if one is fairly physically active both in terms of frequency and intensity then the CLA classifies one’s status as “excellent” and offers the following encouraging words: “By exercising 3 or more times a week for 15-
20 minutes you are helping maintain your physical and mental health. Keep up the good work!

Encouraging words are offered where the participant is assessed as living a “good” lifestyle. For example, someone who reports a harmonious family setting in which there are occasional difficulties will be rated in the lifestyle area called “family functioning” (which in the “Lifestyle Summary” is called “family interactions”) as “good,” with the following encouraging words: “Your family is a source of strength. Like all families, there are some weaknesses, but on the whole your family promotes healthy functioning for its members.” Interestingly, someone who is not living with a “family member”, defined as “a spouse, common law partner, child, parent, or other relative” is given no assessment regarding their family function. Presumably, familial interaction has a bearing on health only where there is co-habitation. A “fair” rating encourages the participant, to continue doing what is “right” and stresses that it would not be very difficult to bring one’s life into line. This example is taken from the fruit and vegetable area of the nutrition section:

You are eating three of four servings of fruit and vegetables a day. Good start! You are on the right track, but throughout adulthood, you body needs the vitamins and minerals in 5-10 servings of fruits and vegetables daily to ensure healthy tissue and skin. Just increase your current daily vegetable by one or two serving (sic), and you’ll be getting enough of these valuable foods. The fruits and vegetables you eat can be fresh, frozen, canned or in the form of juice. Remember to include dark green and orange vegetables, and orange fruit daily.

An assessment of “caution” admonishes the participant to change his/her behaviour and offers only partial encouragement for the present way of life. For example, in nutrition, under meat and meat alternatives status the following is written following the caution assessment:
You are eating four or more servings a day of meat or meat alternatives. It is important to recognize the need for the protein, iron, and vitamins found in these products, but remember—the best diet is a balanced diet. You may be having too many servings from this food group, at the expense of other groups.

Finally, one who is assessed as living a lifestyle areas hazardously is told firmly that it is bad for them and that they should do something about it. For example, someone reporting the following amount of drinking in a month: 15 days of no drinks, 1-2 drinks on 4 days, 3-4 drinks on 5 days, 5-8 drinks on 4 days and not drinking 9 or more drinks on any day is assessed as living hazardously and given the following advice: “The amount of alcohol you reported consuming on heavy drinking days (i.e. when you have had 5 or more drinks) is approaching a level where there is increasing risk of accidental injury, health, and social problems.” This is followed by the Alcohol Dependence (ADS) Interpretation Guide, which suggests that the participant undergo brief counseling. “Recommendations for a Healthy Lifestyle” follow:

1. You should discuss any personal concerns or questions that you have about alcohol with your doctor.
2. Research has shown that having 4 or more drinks a day for men can be hazardous to your health.
3. One or two drinks per day has generally been found to be safe. Keep your drinking within a safe level!

With the CLA, much like the CSTF, the participant is expected to defer to the authority of the test and the science that lies behind it. Respecting that authority, the participant should follow its reasoning and modify life accordingly. Where that could prove difficult to accomplish, the participant should “be sure to consult a health professional.”

Acknowledging that giving assent to a rational programme for life is one thing and
following it through is another, the CSTF appraiser (a "health professional") offers the participant disciplinary strategies.

(ii) **Discipline:**

Having been apprised of the biological truth of their bodies and given rational approaches to changing that truth so that they can be more fit, participants are offered a series of nine "behaviour reinforcement tools" which are intended to help the participant exercise some discipline over their lives so that they will not deviate from their chosen path. The CSTF counseling protocol directs the appraiser to help the participant fill out the forms and thus formalize goals, strategies, and monitoring techniques. These tools are:

1. Action-Plan Worksheet
2. Body Weight Record Chart
3. The W5 Diary for the Weight Conscious
4. Determining the Aerobic Walk-Jog Prescription
5. Target Heart Rate Zone
   - Heart Rate Graph
   - Borg Scale
6. Fitness Profile
7. Self Contract
8. Decision Balance Sheet
9. Progress Chart

The "Action Plan Worksheet" is a rational management tool that sets out the goals, action plans, and methods of appraisal that will be used to implement the new life. (See Appendix 10) Reminded that s/he will be reappraised in the future, the participant is encouraged to adhere to the programme so not to be found failing to fulfill the promise
made to him/herself and the fitness appraiser to live the new life. The “Body Weight Record Chart” allows one to plot changes (or lack thereof) in weight relative to goals set: it also sets a regimen for weighing oneself so that one does not have the opportunity to avoid the truth — the point being that regular monitoring and inscription will compel one not to deviate from one’s established goals. The “Self-Contract”, witnessed by the appraiser, seals the deal. The “W5 Diary for the Weight Conscious” gives the participant the opportunity to reflect on their eating habits, confess them in writing, and strategize in writing to avoid eating that way in the future. Heart rate monitoring, like regular weighing, keeps the participant from avoiding the truth, in this case sufficient intensity during exercise. To encourage one to strive to be better than the rest, the “Fitness Profile” allows one to compare oneself to the rest of the Canadian population of the same age and gender. The “Physical Activity Program Decision Balance Sheet” gives the participant the opportunity to strategies in writing against the possibility of failure; the participant is encouraged to keep the balance sheet prominently displayed so s/he can remind him/herself both of her/his commitment to change, knowledge of possible failures and strategies for dealing with such eventualities. The CSTF recommends that one share the balance sheet with significant others who could help one stay the course.123 The final disciplinary help given is the “Progress Chart” in which the participant can write an overall report card for him or herself.

123 This is the only reference the CSTF makes at any point to anyone beyond the individual undergoing the test — emphasizing the individualist (healthist) nature of the test.
With these disciplinary tools one is able to emerge from the fitness test, knowing the truth of oneself, not only physically, but also behaviorally, having considered what the future could hold, and how one is going to deal with it by disciplining one's behaviour.

In summary, the natural reading of the CSTF reads the body as an individual biological entity—revealed under the authority of established science authorized by the Government of Canada -- that can limit or enhance a person's health depending upon how responsibly the individual treats it: by exercising regularly according to the FITT principle, eating correctly, monitoring weight and fitness levels while correctly managing other elements of life such as sufficient sleep, alcohol consumption and not smoking (Canadian Association of Sport Sciences 1987a, 7). It is an entirely individualist project that depends upon rational and disciplined control of the body, its functions, its desires, its use of time, its sense of itself, place in the world, its hopes and fears for the future. This natural reading admits no politics, neither in the scientific knowledge of the body, nor in the ensuing organization of its life. The fitness test simply shows the truth of the body and counseling directs its future according to the truth: it is up to the individual to change behaviour and live the new life or suffer the natural consequences of his or her irrationality and lack of self-discipline.
4.3 DECONSTRUCTIVE READING

To begin with, there was the scale of the control: it was a question not of treating the body, en masse, 'wholesale', as if it were an indisociable unity, but of working it 'retail', individually; of exercising upon it a subtle coercion, of obtaining holds upon it at the level of the mechanism itself—movements, gestures, attitudes, rapidity: an infinitesimal power over the active body. Then there was the object of the control: it was not or was no longer the signifying elements of behaviour or the language of the body, but the economy, the efficiency of movements, their internal organization; constant bears upon the forces rather than upon the signs; the only truly important ceremony [for power] is that of exercise. (Foucault 1979, 136-7)

4.3.1 INTRODUCTION

I began this chapter by saying that the science of FBPE in the CSTF is a practical, textual discourse. The natural reading views the discourse as simply describing and improving "functional capacity," which can create a better, healthier life. Thus the texts are read only in so far as they contribute to this functional project: increasing physical fitness for health. In the natural reading the functionality lies in the effectiveness of the CSTF in maximizing the body's potential physical fitness and thus health. The CSTF defines fitness "in an applied sense...as 'a set of attributes of functional capacity that are related to the ability to perform physical activity.' These attributes are the specific components of fitness: body composition, aerobic fitness, muscular strength, flexibility, and muscular endurance" (Canadian Association of Sport Sciences 1987a, 9) By manifesting function, physical fitness contributes to "optimal health... wellness and well-being" which can be defined as "a positive, dynamic state of well-being whereby an individual, through a sense of self-responsibility, is continuously moving towards his or her potential for optimal functioning." (Canadian Association of Sport Sciences 1987a, 8). The textuality is of concern in so far as the texts effectively describe and direct function
towards increased capacity—this involves maximizing accuracy within the limitations of
the test and ensuring consistency with the background texts of scientific research. Hence,
the test is conducted with great technical care to ensure that the text produced will
describe as accurately as possible the 'reality' of the body being tested. And there is a
substantial background of academic literature that justifies the science of the test. In the
natural reading discourse is of a concern in so far as the CSTF is successful in motivating
those who undergo it to live life according to the needs of increased functioning, as
defined by the CSTF.

In contrast to the natural reading, a deconstructive reading does not accept the
scientifically-based testing of the body as a socially innocent act of representation and
helpful guidance in the care of the natural biological body. Indeed, deconstruction, is “a
critical analytical procedure which attempts to explain the cultural significance of texts by
showing their social and political construction” (p. 100, above). The following
deconstruction brings together the political philosophy of scientific textuality and the
theory of the body I developed earlier. In short, it analyzes the operations of the texts of
the CSTF in the production of the body in the play of puissance and pouvoir.

The fitness test provokes the body to appear in a certain way; then represents that
appearance in process of inscription and calculation; interprets that appearance; and
prescribes a way of life based on that appearance. My question is: what kind of body,
what kind of desire, is made to appear in the process of provocation, inscription,
calculation, interpretation and prescription? How is desire governed in this textual
process? The explicit lesson of the test is that the body has physiological functions that
are measurable and can be improved by a disciplined regimen of exercise in tandem with other regulations of the way of life such as diet and abstaining from the use of drugs. The implicit lesson is that there is a ‘right’ way to understand, indeed produce the body, to experience desire, and this production is the governing production of pouvoir, the resourcing of puissance. Here lies the danger of which Heidegger speaks: failure to appreciate our essence, which I have argued is the loss of appreciation for the freedom of puissance, as it is appropriated by pouvoir.

At the outset, let me say what I am not saying: I am not saying that physical activity, choice of dietary and other disciplines are inherently bad. It probably is true that regular, disciplined physical activity and moderation in the expression of one’s desire can increase the functional capacity of the human “organism.” As I said in the introduction, my critique is analogous to the critical sociology of sport. One can engage in a sport, and gain skills that help one become successful in playing the game; but learning a sport is never a purely technical matter. (Bain 1990; Birrell and Cole 1994; Cahn 1994a; Cahn 1994b; Coakley 1990; Connell 1987; Connell 1990; Dewar 1990; Duncan 1994; Dunning 1994; Duquin 1984; Greendorfer 1983; Hall 1985; Hall 1993; Hall 1996; Kidd 1987; Kidd 1995; Lenskyj 1986; Lenskyj 1990; Lenskyj 1992a; Lenskyj 1992b; Lenskyj 1994b; Lenskyj 1995; Messner 1992; Messner and Sabo 1990; Messner and Sabo 1994; Pronger 1990a; Pronger 1990c; Sabo and Gordon 1995; Sabo and Runfola 1980; Theberge 1994; Whitson 1984; Whitson 1990; Whitson 1994) For when one is learning the technical skills of a sport one can at the same time in the same setting — depending on how the sport
culture is structured—learn, internalize and operationalize cultural discourses, such as class, race, gender and sexuality. In that non uncommon situation, sport becomes much more than a simple game of physical skill; it is an institutionalized indoctrination in how to live a classist, racist, sexist and homophobic life. As it is often said in the history and sociology of sport: sport is not just a game. In a similar vein, I will undertake to show that fitness testing is not just a simple matter of analyzing the body and suggesting strategies for improved physiological function. The following analysis attempts to reveal the full cultural implication of what the science of fitness testing teaches. There is much more to it than improved physiological function which the science of physical fitness, as disseminated in the CSTF, takes to it. The problem, then, is not with physical activity per se, but the paradigmatic approach to it.

I am not arguing that the knowledge of the body produced in the CSTF is false. Indeed, within its paradigm, it produces knowledge that is pragmatically probably true: when the body is dealt with in accordance with the paradigm, trained appropriately for instance, there probably is increased cardiovascular function. As Rouse (1987) and Bazerman (1988) both point out, the pragmatic truth of modern science lies in the fact that it works. But the deconstructive question here is what is the political nature of this truth? What does it mean for the body to work according to the exercise science paradigm? What do the texts of the CSTF say about the body and how it should go about being, how it should move, how should desire be expressed? How do these texts “make up the body?”
I am not entering into debates within the scientific paradigm of the CSTF. Debates, for example, regarding: the intensity at which one should engage in aerobic activity in order to have a significant training effect; the accuracy of sum of skinfolds testing in predicting fat content, the accuracy of the step test as a predictor of VO₂ Max., the suitability of hand grip strength as an indicator of overall strength, and so on. Within the accepted paradigm, these are interesting questions that have been pursued extensively within the literature and there is considerable scholarly debates in each of these areas—but they operate within the political philosophy of the body and science that I am about to critique. I am moving outside that paradigm in order to see what fitness testing does to the body/desire, precisely because of its paradigm. This analytical manoeuvre, therefore, brackets questions that emerge within the paradigm.

Latour studied the production of scientific knowledge in the laboratory. He focussed on the way that scientific knowledge is made in the production of texts and how that production is a social enterprise. (Latour and Woolgar 1986) My analysis mirrors Latour’s in so far as it also looks at the construction of scientific facts about the body as a social phenomenon that takes place in the production of texts. But whereas research science produces texts about reality in general; fitness testing produces texts about individual bodies on the basis of the general knowledge that has been constructed in the laboratory. As Rouse has shown, laboratory life is reproduced outside the laboratory in the everyday world:

Developments become disseminated into the world outside the laboratory by standardizing scientific techniques and equipment and by adjusting nonscientific practices and situations to make them amenable to the employment of scientific
materials and practices. The result is that the world is increasingly a made world, in the sense that it reflects the systematic extension of... technical capacities, the equipment they employ, and the phenomena they make manifest. (Rouse 1987, 211).

In the following I will attempt to show how the socially constructed world of the exercise science laboratory is disseminated in everyday life throughout the CSTF. I will also attempt to show the cultural meaning of the body that is being constructed and disseminated in the texts of the fitness test. This then, is an account of the way that exercise science through physical fitness testing “makes up people” (Hacking 1992).

In the natural reading, fitness testing is properly understood from the top down, as I said earlier: from the authority of institutional policy, to the scholarly scientific consensus about physical fitness to the implementation of policy and scholarship in the analysis of the bodies, lives, indeed desires of individuals. On the other hand, a deconstructive reading—drawn from Foucault’s insight that power is diffuse, establishing governments of the body at the level of the individual—reads fitness testing from the bottom up, searching for the production of power at the level of the individual. Because fitness testing is a textual discourse, my deconstruction of it will search for the traces of power production in the texts which the test produces on the body of the participant. This is a matter of revealing the traces of wider socio-cultural discourses of power as they are manifest in the production of texts through the various elements of the fitness test (examination, interpretation and counseling or prescription). In physical fitness testing there is a powerful convergence of texts applied to the life, the body, the desires of the person tested. For this reason it is appropriate to conceive of the participant in the test as a reader of texts. Indeed reading is the actual mode of participation in the test. And
learning to read the body in a certain way is the desired effect. By reading the body this way the participant-reader is supposed to start to produce the body a certain way.

In the natural reading of fitness testing the discursive textuality of the test disappears in the assumption that the test is simply showing objective facts about the body. Bazerman points out that "one peculiar aspect of the accomplishment of scientific discourse is that it appears to hide itself... to write science is commonly thought not to write at all" (1988:14). Bazerman and Latour have both shown how research science is centrally a matter of writing, and I argued in the theory of science (above) how that writing involves the production of knowledge and reality along hegemonic lines, a production which hides its governmental nature under the guise of objective representation. I will now endeavor to show how the CSTF is indeed a matter of reading and writing the body/desire as one strategy within a much larger political process that produces a technological governance of the body.

My analytical plan is to deconstruct the confluence of texts that are written and read in the CSTF in the process of governing desire. I will do this by analyzing the production and invocation of texts in each of the three elements of the test: examination (performance and appraisal of tasks), interpretation, and prescription (counseling).

The test addresses the body's puissance. It is fundamentally concerned with the body's capacity to exist, to move, to be, to come to presence. Indeed it is concerned with the body's essence: how does it come to presence; how its puissance can be governed, brought to presence not in the wilderness of puissance that Deleuze and Guattari call the nonlimitive BwO, but as rationally, instrumentally organized and controlled by pouvoir.
The test sets about its task in three stages: (i) bringing the body to presence in a manner that is consistent with its proper resourcing and control as that resourcing and control has been developed in the paradigms of exercise science—performing disciplined tasks which are then measured, i.e., the examination; (ii) convincing the participant-reader that the way it has been brought to presence in the examination tells the truth of the body and of the need to change its essence, so that it will come to presence in the future properly governed — this is the hermeneutic rhetoric of the interpretation; and (iii) writing a script for operationalizing the government of the body in the future (prescription). All of this is accomplished by the production of authoritative scientific texts on the body, teaching the participant reader the essentials of the language of these texts and convincing them to start writing their lives with this governing language. In short, the government of the laboratory moves into the government of day to day life by the production of authoritative texts on the best way for desire to express itself.

The CSTF is constructed in a five-fold order of texts which I will call (i) interactive texts, (ii) procedural texts, (iii) direct reference texts, (iv) regressive reference texts, and (v) shadow texts. Together these form a discourse on the body that is read by the appraiser and the appraised through the three elements of the test, with the explicit intention that the appraised will read his or her body in accordance with that discourse and will go forth from the fitness test living according to the interpretive framework and prescription for the future.

The first order of texts, which I call interactive, are texts that are produced in the conduct of the CSTF. They include the procedures, performance of tasks, inscriptions
or data entry, computer printouts, "behaviour reinforcement tools" (Canadian Association of Sport Sciences 1987a) and other printed inspirational pamphlets (for example some that are regularly given at the University of Toronto's Department of Athletics and Recreation fitness tests: Healthy Weights: A New Way of Looking at Your Weight and Health (Ontario Ministry of Health 1994), Food Smarts: Choosing Food for Health Living (Ontario Ministry of Health 1994), The Fitness Wheel (Heart n.d.) and Fibre Facts Kellogg's, 1985), "The Fit Principle" (Main, Stewart, and Bradshaw 1984)). These are texts that are meant to actualize the science of physical fitness in the lives of individual people. The procedures themselves are texts because they treat the body as an object that can be measured, calculated, which is to say, read. Indeed, in the procedures the body is compelled to move in very precise ways so that it can be read in the language of the science of physical fitness. The first order of texts is dynamic in as much as the texts are literally produced in the interactions between the tested, the tester, the testing protocols, results reporting and exercise prescription. I call these first order texts because they have the important function of trying to make life conform to the world which "higher" order texts make. Similarly, they are first order in the sense that they are the front line texts that attempt to disseminate the reality and knowledge of the laboratory into the rest of the world. Being interventions into the lives of people, they are of the first order in that they attempt to actually make people up, giving them a certain kind knowledge of the body and attempting to motivate them to move, to produce their desires in certain ways. The other orders of texts are background to this textual intervention.
My analysis of the first order of texts does not include an analysis of readers' responses to this textual production. The focus of this dissertation is the political construction of the body in the scientific texts of physical fitness, specifically in the CSTF. Analyzing participant's interpretations of those texts is a large research project beyond the scope of this dissertation, but one which would be a logical subsequent undertaking.

The second order of texts are the official procedural texts of the CSTF: the Operations Manual (Canadian Association of Sport Sciences 1987b) and the Interpretation and Counseling Manual (Canadian Association of Sport Sciences 1987a). At the University of Toronto's Department of Athletics and Recreation, an Accredited Fitness Appraisal Centre, these procedures are followed faithfully.124

124 In order to confirm that the CSTF is conducted in accordance with the directives of the Operations and Counselling manuals, I observed ten tests being conducted at the Department of Athletics and Recreation at the University of Toronto. I also draw on background knowledge from my own experience as a fitness appraiser — I have been a Registered Fitness Appraiser, under the auspices of CASS, and have worked as an appraiser at the Department of Athletics and Recreation at the University of Toronto.
Third order texts are those that are directly referenced in a scholarly manner in the first and second order texts. For instance one of the first order texts *Fibre Facts* (Kellogg's 1985) lists fifteen references on the back cover: some of a popular nature e.g. (Burkitt 1983), and some are institutional reports e.g. (Health and Welfare Canada 1985) and others scholarly e.g. (Gibson, Anderson, and Scythes 1983). The procedural texts offer reference lists totaling together 43 entries: 10 are institutional reports; 27 are from medical and exercise physiology scholarly journals; four are from exercise physiology textbooks, one is a popular book of behavioral science (Davis, Fanning, and McKay 1983) and one is from a professional journal (*The Canadian Association for Health, Physical Education and Recreation Journal*). The Interpretation and Counseling Manual also offers 33 “Suggested Reading[s]” for “professionals” (i.e., Certified Fitness Appraisers) and “participants.” Professionals are advised to read: exercise physiology texts such as the American College of Sports Medicine’s *Guidelines for Exercise Testing and Prescription* (1986), “counseling and communications skills” manuals such as *The Skilled Helper* (Egan 1975), as well as Government institutional documents on “Fitness and Lifestyle” such as Fitness Ontario’s *Sticking With Fitness* (Fitness Ontario 1984) which “…provides an update summary of research on adherence and practical implications for fitness leaders.” (Canadian Association of Sport Sciences 1987a, 42, emphasis mine). “Participants” are advised to read books such as *The Aerobics Program for Total Well-Being* (Cooper 1982), *Eating for the Health of It: A New Look at Nutrition* (MacDonald 1985) or various pamphlets available through Government agencies (e.g. Participation, Fitness Canada), life insurance companies (e.g. 
Metropolitan Life), food manufacturers (e.g. Kellogg's) or medical associations such as the Heart Foundation. The third order of texts gives intellectual and institutional authority to the first two orders.

The fourth order of texts which I am calling background texts form an infinite regression of scientific and institutional texts that surround the first three orders. There are two kinds of fourth order texts. (i) There are texts that are referenced in third order texts and the infinite regression of referencing from there: every scholarly text cited in the third order texts refers to more scholarly texts, which in turn refer to more scholarly texts, which refer to more scholarly texts, and so on (see my discussion of textual regression in the theory of science, p. 114, above). (ii) Because scholarly referencing always refers back in linear time, and because the scholarly context of the test is not only the past but also the present, fourth order texts also include supplementary texts that have been recently published and that can inform the work of appraisers (who may have been certified after the publication of the 3rd edition of the CSTF, 1986, and been informed of current research in their training—which is a policy in the conduct of the National Fitness Appraisal Certification and Accreditation Program—or who may have continued their supplementary reading). The continued use of the CSTF and fitness testing is also conducted in the context of more recent research. Thus "consensus documents" such as Physical Activity, Fitness and Health (Bouchard, Shephard, and Stephens 1992) and other recent scientific literature on fitness and health (all of which refer to more texts, that refer to more texts...) also form part of the infinite regress of texts in the fourth order.
The only texts included in the first four orders are those with "official" status, i.e., texts produced under the authority of credentialized science or endorsed by that science. The first two orders of texts include only those that are part of the CSTF as it is administered in a credentialized fitness testing centre, by Certified Fitness Appraisers, under the authority of the Canadian Society for Exercise Physiology, under the authority of the Government of Canada. The third order of texts are those that are 'legitimately' referenced in the first two orders under that authority. This is not to say that all the texts are scholarly science; they are, however, made part of the order by virtue of the combined authority of the scientific and institutional realms of discourse. Within the discourse of this fourth order has developed the growing dominance, for instance, of the biophysical sciences in university physical education departments, the "technicist tendency" in such curricula and the professionalization of physical education as a field (see the discussion of these developments in the literature review p. 52, above). The hegemony of these fourth order texts in the field of physical education contributes to the formation of the fifth order of texts, which I call shadow texts. What is and is not included in the fourth order is important because Government institutional and scientific textual discourses are not the only ones that come to play in physical fitness testing. There are myriad other textual discourses that are not included in the institutional and scientific canon. In the CSTF these other discourses languish in the shadow of the official texts. They constitute a vast fifth order of texts that I call shadow texts. Foremost among them is the participant-reader's own experience, knowledge, or narrative on his/her body/desire. There are also alternative accounts of health, body and fitness, in feminist writing. There are different
cultural texts on health emanating out of various traditions, for example First Nations, and “Third World.” There is popular fitness and production of the body expressed in magazines, television, film and popular culture in general. There are phenomenological discourses on the body. There are critical textual discourses on the body, such as queer theory and continental philosophy. Nothing of these shadow discourses is to be found anywhere in the first four orders of texts. I will argue later that the exclusion of these shadow discourses constitutes a crucial element in the rhetoric of the first four orders of texts in the attempted production of a hegemonic, resourceful government of the body—but I am getting ahead of myself.

I now turn to my deconstructive analysis of the order of texts in three elements of the CSTF (examination, interpretation and prescription).

The three elements of the test manifest two of Rouse’s important observations on the way science works: (i) nature is provoked to appear paradigmatically in the laboratory, and (ii) there is a “tight coupling” between the socio-cultural organization of the laboratory and ‘life on the outside.’ The examining procedures provoke the body to appear according to paradigms used in the exercise science laboratory, thus disseminating that paradigmatic provocation from the research laboratory into the wider community. The prescription attempts to establish the conformity of life outside the laboratory to the paradigms of the body used in the laboratory, and the interpretation attempts to convince the participant/reader of the appropriateness of the paradigm for their own lives, thus bridging (i) and (ii). Together, the three elements attempt to make up people by producing first order texts on the bodies of the participant-readers. I will deconstruct
these elements: examination, interpretation and prescription. This is a process in which the body is produced and codified in the examination in a highly controlled, channeled and limited way. The interpretive element solidifies the meaning of the codes that were inscribed in the examination, and the prescription projects this codification on to future desire.

4.3.2 EXAMINATION:
The point of the examination is to produce texts on the body. It does this several ways: a formal written “Personal Data Questionnaire”, informal questioning by the appraiser, measuring (anthropometry, and aerobic, strength, flexibility and endurance measurements), inputting the measurements into a computer, generating a printout of the results of the appraisal, offering other printed materials, constructing a verbal text on the participant-reader’s body (the verbal discourse between appraiser-reader and participant-reader) and in some cases an invitation to engage in the production of more texts (e.g. undergoing the Computerized Lifestyle Assessment, or having an individual weight-training programme designed).

This first order of texts, which are interactive, are quite different to other interventions in health promotion, such as the pamphlets, posters and advertisements of Participation or other institutional initiatives. Most of the texts of health promotion are

125 While the test is formally arranged in three successive stages, examination, interpretation and prescription, in actuality, the latter two often occur simultaneously with the examination.
general; they describe health and bodies in general and they are applied to the lives of individuals by their own initiative and discretion. The most important interactive texts of the examination, on the other hand, are highly individualized: they are written about the participant-reader's own body. This is the power of the text working with the individual; such individualizing Foucault says, is one of the hallmarks of modern power (pouvoir).

Pre-modern power, says Foucault,

[was] full of loopholes. It was a discontinuous, rambling, global system with little hold on detail, either exercised over consolidated social groups or else imposing itself only by means of exemplary interventions. ... Power had only a weak capacity for 'resolution,' as one might say in photographic terms; it was incapable of an individualizing, exhaustive analysis of the social body. But the economic changes of the eighteenth century made it necessary to ensure the circulation of effects of power through progressively finer channels, gaining access to individuals themselves, to their bodies, their gestures and all their daily actions. (Foucault 1980b, 151-2)

The examination achieves high "resolution." The questionnaire and questioning of the appraiser-reader exposes details about the participant-reader's desire for food, alcohol, tobacco, drugs, physical activity and interpersonal intimacy — assuming the participant-reader tells the 'truth,' and even if s/he doesn't, these issues of desire have at least been raised as issues for the individual. The measuring of the body and its movements achieves an even higher resolution than the questioning because the participant-reader is unable to mediate the textual production by their own interpretation of their lives. The

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126 All the texts produced in the test, except the pamphlets, are individualized. I suggest that these individualizing texts are the most important to the test because it is they that actually test the participant-reader. The pamphlets are supplemental to that task and are readily available in other settings.
measurements are simply taken and the participant-reader has no say in what the measurements are.

In *The Birth of the Clinic* (1975) Foucault says that the production of texts on the lives of individuals was once reserved for the great, the powerful and famous. But with the birth of the inscribing practices of modern medicine, every life could be written about. The examination of the CSTF inscribes the everyperson, producing texts that are meant to change the nature of their desire, the way they come to presence, to direct their essence. And so I turn to the question of the body’s essence in the examination. How is the power of the body as puissance and pouvoir produced in the examination?

The examination is in no way phenomenological; it does not allow the body to passively appear from itself, by virtue of its native power, its puissance. Heidegger defines phenomenology as “to let that which shows itself be seen from itself in the very way it shows itself from itself.” (Heidegger 1927, 58), which according to the theory of the body I developed earlier, would be letting the body show itself from itself by virtue of the power of its being, which is its puissance. The examination does not simply observe the body. The examination acts upon the body to provoke it to appear according to the paradigms of exercise science. The examination, especially in the provocation to perform tasks and be measured, reproduces the practical paradigms of the body that are employed in the laboratory science of physical fitness; which is that the body’s puissance is resourced as pouvoir; Eros, the logos of puissance is entirely shadowed by the logos of technology. This technological paradigm becomes operative in a set of biopolitical practices that deal with the body’s powers such that it is pouvoir that shows. These
practices can be conceptualized as producing the body in ways that express the biopolitical dynamics of puissance and pouvoir: the body as individual and technological. The body not produced in these ways is meaningless to exercise science. The examination is a process that renders the body meaningful in the technological paradigm of exercise science. Of course, exercise science is not alone in this technological treatment of the body—indeed, as I argued in the theory of the body, this mode is characteristic of the embodied power relations of modernity. My task now is to demonstrate precisely how the process of examination in the CSTF technologizes the body, operationalizing the power of pouvoir, obfuscating the power of puissance.

4.3.2.1 Individual

The puissance of the body is its power to connect, to be connected, to make connections. Puissant desire comes to presence in the freedom to connect, in the collectivity of existence, in the logos of Eros. Which is to say that the body is made meaningful in its connectedness, its "prepersonal field." (See discussion of connectedness and the prepersonal field pp 162). Physical activities usually take place in highly connected ways: some people participate in teams, be it Varsity hockey, swimming, or track, a masters swim club, or some-such. Often the connectedness is looser than highly organized team sports: swimming during a recreational swim period, running through urban streets, connecting in the intensity of the run with other runners, pedestrians, dogs out on walks, streetscapes, moving in the warp and woof of urban life. Even running 'alone' in the forest, one runs with nature, connecting in powerful ways with the environment. Paddling on a northern lake 'alone,' one experiences the intensity of being part of nature. Going dancing, almost invariably, entails dancing with others in a club or
at a party. Much of sexual experience involves making connections. That is the Eroticism of puissance. As Massumi says, puissance is "a capacity to multiply connections that may be realized by a given 'body' to varying degrees in different situations." (Massumi 1992, xvii). The essence of the body is the connectedness that the movement of being produces, which is the production of the fecund unity of presence and absence, which Deleuze and Guattari call the "undifferentiated BwO."

The examination produces the body in the opposite direction to the connectedness of the puissant moving body. It is not a collective event. The body is brought to presence in an entirely individual, way. People are removed from their collective world and tested by themselves, in spaces that are separated from the rest of the community.127 There must not be any assistance given to the participant reader to accomplish any of the tasks.128 The appraiser-reader does not do any of the activities of the examination with the

127 At the University of Toronto, this is especially the case. The test is conducted in the Athletic Centre, but far removed from the areas in which physical activity normally takes place. It occurs in an isolated corner of the facility in which the sport sciences laboratories are located.

128 While in maximal testing the testers and fellow teammates will often cheer the participant on - giving at least psychological support to their exertions -- in the CSTF protocol, psychological encouragement is not even given -- and while the reasoning for that is that there is a chance that the participant reader will go beyond their physical capability and risk injury, the effect is that they perform the test completely individually.
participant reader; s/he demonstrates how the task is to be performed and then stands back and records the results of the individual’s performance, emphasizing that it is a body of a disconnected, anomic individual that is being examined. The only thing being tested, the sole concern of the CSTF is the individualized body.

In this individualizing, the examination reproduces the “naturalistic” paradigm of the biophysical sciences of the body which conceptualizes and organizes the body in its experiments as an individual organism, which has a social and cultural life that is entirely separate from its physiology. Individualism is part of the practical paradigm of the exercise sciences, a tacit and relatively unreflected agreement on the nature of reality of the body (see p. 92, above) that habitually deals with it as a purely individual biological entity. There is no evidence of critical reflection on this paradigm in the first four order of texts. Such discussion occurs only in the fifth order, shadow, texts — an important aspect of the rhetoric of the CSTF which I will discuss later. Exercise science conducts experiments by routinely and thoughtlessly individualizing bodies. It records and analyzes physiological parameters as entirely individual: aerobic capacity, adiposity, weight, fat distribution, flexibility, strength and so on are always studied as individual phenomena. Even population studies, such as the Canada Fitness Survey, (Canada 1983) individualize the body—the Canada Fitness Survey used the CSTF to test the fitness of individual Canadians which it then collated as a fitness profile of the Canadian population. The paradigm thus conceptualizes fitness as a purely individual phenomenon. Nothing beyond individual bodies is mentioned in any of the first four order of texts, with one exception; the Health Promotion literature suggests that the individual needs to be considered as only
part of a larger, holistic phenomenon of health. But no part of the CSTF refers even obliquely to that holistic conception.129

Such individualism is hardly surprising given that it is characteristic of virtually all modern medical science—a political construction of the body and health that Health Promotion attempts to counteract, but despite its growing academic status, with respect to the CSTF it remains a shadow discourse which has no impact whatsoever on the CSTF.

My critique here may make more sense if one considered an alternative vision of exercise physiology (a physiology that does not exist), in which physiological capacity could be studied as a collective capacity: the capacity of a family, a group of friends, or a rugby team to perform tasks as physiological collectives, pooling their interconnected puissance. Instead, exercise science sets up bodies to produce their physiological capacities completely on their own. Collectivity is not in the paradigm of the body for the exercise sciences.

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129 In their outline for the model of physical activity, fitness and health used at the International Consensus Symposium (1992) Bouchard and Shephard (Bouchard and Shephard 1992), devote only three scant paragraphs to "Social Environment" and "Physical Environment," which are the only non-individualist references in the 1055 page document which is purported to present the scientific consensus on physical activity, fitness and health. I will discuss this important fourth order text more thoroughly in my discussion of rhetoric in the section on interpretation, below.
The individualism of the examination could be analyzed as ideological, promulgating a false consciousness of the bourgeois individual as the most beneficial organizing principle of human life and deflecting the concern of the participant-reader away from the wider political issues that constitute the potential for fitness and health (see my discussion of individualism in FBPE in the literature review above, pp 17ff). I suggest that this individualism is more fully appreciated as a productive social disciplinary practice.

From a Foucauldian perspective (Foucault 1980b) the examination appears to be more powerful than a disembodied ideology, in the Marxist sense of promulgating the "false consciousness" of the bourgeois individual (Lukás 1971), with its implicit repressive hypothesis. For the examination actually produces the body as an individual phenomenon—the examination does not so much repress a "true" consciousness of the participant's collective reality, an essence that is repressed in the examination, but rather produces a body that comes to presence as an individualized reality. This is an important distinction that Foucault draws between his analysis and that of the Marxists who see human nature enslaved/repressed by the historical processes. Foucault suggests that we are actually made up in historical processes: "Man [sic] is an animal of experience, he is involved, *ad infinitum*, within a process, that by defining a field of objects, at the same time changes him, deforms him, transforms him and transfigures him as a subject.” (Foucault 1991, 124) ¹³⁰ The CSTF is designed to be a transformative event in which the participant-reader is formed in particular ways. The body is compelled to move and produce texts individually: all that appears in the examinations is an individual body. The

¹³⁰ Marx himself also makes this point (1959, 320).
ensuing texts that are produced in the interpretive element of the CSTF are produced not from a “false consciousness” of the body as individual, but from a biopolitical practice of producing the body individually, and creating knowledge on the basis of that individuality; as such it is “true”, not false consciousness of the body. It is true knowledge of the body as it is separated out from its puissant connectedness and rendered by the power of pouvoir. This point draws on Rouse’s synthesis of Heidegger, Kuhn and Foucault: the paradigms of science are not just theoretical/ideological -- they are practices that actually produce reality. The production of the body in the examination is case in point. A practical paradigm (Kuhn) of the body is projected on to it such that other ways of its being are precluded (which is Heidegger’s point on the ta mathemata of modern science and the confinement of the “world picture” in his essays on modern technology(Heidegger 1938; Heidegger 1954b)) and this produces a body disciplined (Foucault) in accordance with the practical imperatives of the paradigm.

The practice of producing the body individually in the examination is a highly practical boundary project (Haraway 1985) that channels the flow of desire such that it appears limited to individuality. The body is physically incapable of connecting with others in the examination. It is compelled to express its power to move in individual ways, in ways that allow the test to inscribe texts about it in accordance with the individualism of its paradigm. The collective expression of puissance is negated in the individualism of pouvoir, which essentially binds puissance to the government of boundaried individualism. All that comes to presence for the test is desire, “dammed up, channelled, regulated”(Deleruze and Guattari 1983, 33) by its individualized construction.
The problem with the modern production of the individual is not simply that the connectedness of desire, the undifferentiated BwO is truncated; differentiation is not in itself a negative enterprise, as long as the social construction of difference remains within power of those who are so constructed. This is is one of the impulses of postmodern feminism, queer theory and anti-racist thinking: we are constructed in differences which we can celebrate, transform and transgress (Bordo 1993b; Butler 1990; Flax 1990; Haraway 1985; hooks 1990). The critical issue here is the way in which power circulates in the production of individuals in the interplay of puissance and pouvoir. In the case of the CSTF, this is a question of whether the textual production of the individual opens opportunities for celebration, transformation and transgression, in short freedom in the construction of the body in the play of difference (pouvoir) and unity (puissance), an opening of the potential of puissance, or attempts to circumscribe, channel, and control desire under the government of pouvoir. The examination produces a text which inscribes individualism as a "natural" element of the body's nature, not a socially constructed production of the body. All the research science texts of the third and fourth order deal with the body as a naturally individual organism—the paradigm is that in nature bodies exist individually; physiological function is conceptualized and manipulated in laboratory experiments as an individual phenomenon. There is no opportunity in the examination process for the participant reader to produce a text on his or her body that transforms or transgresses that individualism. It can be produced in only one way. This fact reproduces the paradigmatic political culture of the exercise science research laboratory; the power relations characteristic of the exercise science laboratory between
the researcher and the researched which is a remarkably simplified relationship of dominance and submission in which the object of study must submit entirely to the direction, the way of being that is dictated by the researcher, are also operative in the nonresearch setting of the CSTF: just as subjects in experiments must submit entirely to the established procedures of the experiment (\textit{ta mathemata}) such that they are passive objects for the experimental event, so too the participant-reader of the CSTF must submit to the established procedures of the CSTF. An experimental subject in the biomedical exercise sciences does not have the freedom to construct him/herself in transformative or transgressive ways in the experimental setting; likewise in the "made world" outside the experimental laboratory, the participant-reader of the CSTF cannot transform the individualized production of the body.\footnote{Qualitative research methodologies do permit, indeed encourage, active participation of those whose bodies/lives are being researched in the construction of the research project (Cole 1991). Such research methodologies, however, are absent in the third and fourth order texts of the CSTF. They are reflected in the fifth order shadow texts.} The examination enforces individualizing discipline in order to produce a text on the body; it does not celebrate freedom. There is only one way to do the test. The test must be performed according to the paradigmatic procedures as outlined in the CSTF \textit{Operations Manual} or no text can be produced. The examination admits only what is already part of its paradigm, its practical way of dealing with the body individually.

The CSTF, and the exercise sciences, of course, are not solely responsible for individualism. Giddens (1990), Kirk (1994) and others have argued that individualism is
one of the essential features of modernity. Foucault would not disagree. He says that what distinguishes modernity is the way in which power is exercised in the constitution of the individual, which he calls the "anatomo-politics of the human body" (Foucault 1980a, 139). So I turn now to the question of the anatomo-politics of the body in the CSTF's examination of the individualized body.

4.3.2.2 Technology:
The examination is essentially a technological enterprise, transforming intrinsic playful, free, limitless, productive desire into useful movement and meaning structures. The body's free-wheeling capacity to move is extracted in the examination process such that it can be appraised of its use-value. This is a disciplinary practice that controls and produces the body such that it produces texts that render it meaningful in a system of use-value. As such it is part of a much wider cultural discourse, perhaps the pre-eminent discourse of modernity, in which the meaning of being is marshaled as a resource. That, of course, is the larger discourse described by Heidegger, Foucault and Deleuze and Guattari, and summarized in my theory of the body. My task here is to demonstrate how this technological discourse is operative in the examination of the CSTF.

The examination technologizes the body by disciplinary practices that bring it to presence so that it can be coded in a hermeneutic of use-values. Just as the examination reproduces the individualistic paradigm that is operative in the research exercise sciences, so to it reproduces the technological paradigm which is at work in the same. That technological paradigm requires that nature (the body) be compelled to appear in such a way that it can be codified. These codes are then taken to represent not only the nature
that appeared in the experimental process, which is assumed to be a reflection of reality outside the experimental setting, but also as a way of ordering nature (the body) in the future such that it will appear (come to presence) in ways that are similar to those in which it was produced in the experimental setting. Indeed, this is the sequence of the CSTF: (i) the examination orders (disciplines) the body so that it can be coded; (ii) the interpretation attempts to convince the participant of the propriety of the codes; (iii) the prescription sets out a programme for the ordering of future life according to the codes.

I will deconstruct the technology of the examination by first analyzing the disciplinary procedures which make possible the codification of the body. Then, I will examine the codes themselves to show how they linguistically organize the body in the dynamics of puissance and pouvoir. Rouse (1987, 22) makes the important point that experimental science does not take place in an observatory, but in a laboratory. The examination of the CSTF follows the laboratory model for producing knowledge: the body is not passively observed, it is acted upon, “challenged” (Heidegger 1954b, 295-6) to move in specific ways. This power to compel the body to move in specific ways such that it can be codified according to the pre-established, paradigmatic, hermeneutic structure of the exercise sciences, which Hacking (1982) has called “styles of reasoning” (Keller 1995, 12) and which Keller calls “discourse,” is the pre-eminent power relation of the laboratory (Rouse 1987, 224) in that it restricts the coming to presence (the essence) of the body to the operative paradigm of the laboratory. In the CSTF, the body is not observed moving in its own way, in its own time, on its own terms, for its own

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132 See my discussion of codes and their reproduction in the theory of the body.
purposes. It is not a reflective process in the sense of dwelling on the body's puissance as it reveals itself, which is to say in the logos of Eros. In the examination people do not move according to their vocation for movement: a runner does not run, a dancer does not dance, a swimmer does not swim, a weightlifter does not lift weights, a sex-worker does not perform sexually, a mother does not carry her child to the playground and back. Instead all participants are compelled to move according to the procedures that will produce "standardized" signs that can be coded in the hermeneutics of the exercise sciences. In order to produce such signs a disciplinary regime is enforced. The production of codes depends upon bodies being correctly "inserted" (Foucault 1980a, 141) into the codifying machines of exercise science.

Bodies are brought into the exercise science research laboratory so that meaning can be produced. For the purposes of research, bodies come to presence as emitters of signs that can be codified, inscribed and analyzed. As such, the bodies are nothing but resources, in the Heideggerian sense, for the production of signs. And as Heidegger points out, this is the danger that lurks in Gestell, the "enframing" of human beings as resources, an enframing that "blocks" other possibilities for coming to presence (Heidegger 1954b, 307). The only appearance of the body in exercise science research is what is useful to the production of established codes. For instance, an experiment conducted to determine the "level of work performance a person can adequately tolerate" (Jetté 1983, 403), using the Canada Home Fitness Test (the precursor for the Canadian Aerobic Fitness Test) collected data only on pulmonary ventilation, heart rate, and anthropometry as they appear in gasometers, ECG data computers and tape measures and weigh scales; no other
appearance was part of the experiment or was inscribed in the report; all movement had to
take place in the precise pre-established manner that is dictated by the data collection
parameters of the instruments. To be meaningful to this kind of research, bodies must be
ordered in such a way that they conform to the hermeneutic system that has been laid out
in advance (paradigms of quantitative analysis, mechanics, etc., which I will describe
shortly). This means that the bodies must conform to the procedures and equipment that
are used in a laboratory for gathering data or provoking the production of signs. The
body must become subject to the governing organization of the laboratory and its
hermeneutic instruments. In this sense it becomes subject to the government of the
laboratory. This requires rigorous adherence to the technological paradigms of laboratory
life.

The CSTF examination reproduces the same technological mode of dealing with
human beings, requiring them to submit entirely to the government of the examining
procedures. No other manner of coming to presence is meaningful to the examination,
which means that the essence of the body for the CSTF lies in its subjection to the
procedures which can produce signs within its hermeneutic system. As Heidegger
suggests about the ta mathematik of modern science, only that which is contained in the
original projection onto a sphere of beings can emerge in a scientific study, (Heidegger
1962, 251) and only that which is contained in a technological “world picture” (the
reestablished hermeneutic system) can be seen in the rigors of the CSTF examination
process (Heidegger 1938).
Such resourcing of the body for the production of signs demands the subjection of the body/desire to the government of the laboratory. The body is not free to move in the examination. It is compelled to move within a highly organized structure. In my theory of the body I invoked Heidegger's concept of truth: "the essence of truth is freedom" and "freedom lets beings be the beings they are." This truth, I suggested emerges Erotically, which is to say in the logos of the freedom of moving which is the eventful essence of its being, its puissance. The examination, on the other hand, produces not the truth of puissance, but of pouvoir: it shows human being as it is governed by the CSTF procedures. The body is subjected to the governance of pouvoir by disciplinary techniques, the "mechanics of power" aptly described by Foucault in the following passage on the historical advent of that power in the eighteenth century:

What was then being formed was a policy of coercions that act upon the body, a calculated manipulation of its elements, its gestures, its behaviour. The human body was entering a machinery of power that explores it, breaks it down and rearranges it. A 'political anatomy', which was also a 'mechanics of power', was being born; it defined how one may have a hold over others' bodies, not only so that they may do as one wishes, but so they may operate as one wishes, with the techniques, the speed and the efficiency that one determines. Thus discipline produces subjected and practised bodies, 'docile' bodies. Discipline increases the forces of the body (in economic terms of utility) [the increase of pouvoir] and diminishes these same forces (in political terms of obedience) [the decrease of puissance]. In short, it dissociates power from the body; on the one hand, it turns it into an 'aptitude', a 'capacity', which it seeks to increase [aerobic capacity, flexibility, strength]; on the other hand, it reverses the course of the energy, the power that might result from it [puissance], and turns it into a relation of strict subjection [pouvoir]. (Foucault 1979, 138)

This subjecting transformation of the body is accomplished by disciplinary techniques that bring it to presence in strictly limited ways. I will now attempt to demonstrate how the procedures of the examination are disciplinary in the above sense. The examination makes the body available for codification by ensuring its docility, which is to say its lack of
resistance, its paucity of puissant energy to show itself from itself. The body, treated ontologically as an object, has no power to act from itself, to appear phenomenological, in its puissance. By an “object” I mean a being (entity) which is dealt with practically as a thing that is acted upon rather than as a being that acts from itself. It is through discipline that this ontological comportment is enforced. Foucault says: “At the heart of the procedures of discipline, it manifests the subjection of those who are perceived as objects and the objectification of those who are subjected.” (Foucault 1979, 184-5) The true power of the examination is its power to produce the self-disclosing human subject (puissance) as an other-disclosed, which is to say technological object (pouvoir).

Disciplinary techniques coerce the body (the non-limitive BwO) into appearing as a limited, organized object. Foucault outlines four disciplinary techniques two of which are clearly operative in the examination of the CSTF and which I will explore presently: (i) the art of distributions, (ii) the control of activity. By these disciplinary techniques, the body is set up for its codification, which is to say its movements are limited to those forms which are amenable to codification. The disciplinary techniques of the examination reign in the joyous, chaotic, Eroticism of the body; they invoke closure on the “gaiety, ecstasy

133 I stress practicality to distance myself from Heidegger's concept of "objectness" as a theoretical stance of science, which maintains "a pretense — and for Heidegger that is all it is — of the ontological independence of the beings of science. In technology even this pretense vanishes, and man the technologist, [practically] disposes beings as he wills." (Alderman 1978, 46) Moreover, I prefer Rouse's reading of Kuhn on the practical nature of scientific paradigms (see my theory of science, p. 91, above).
and dance” of the BwO (Deleuze and Guattari 1987b, 150) in order to extract useful signs. The celebration and promulgation of joyous chaos is the antithesis of laboratory life.

The examination takes place in highly structured spatial arrangements. “Discipline organizes an analytical space” (Foucault 1979, 143) Here is the “art of distributions”: enclosure, partitioning, and functional sites. The disciplined use of space facilitates efficiency for the inspection and supervision of the body, ensuring that the body moves as required. The examination space, “the protected place of disciplinary monotony” (Foucault 1979, 141), is separated off from the rest of life. In the case of research science this is the controlled enclosure of the research laboratory, a place protected from outside influences, a place in which a controlled experiment can take place. In an enclosed space the exercise scientist is able to monitor everything that is happening and ensure that no movements take place that have not been planned. Likewise in the CSTF, the examination takes place in an enclosed setting (at the University of Toronto it is the fitness laboratory). The appraiser must be able to monitor every movement of the participant reader, who is therefore not permitted to leave the enclosure during the examination—if the participant-reader left the enclosure s/he might eat or drink something, or move in ways that are not part of the structure of the test: for instance, go for a run around the block because it feels good to do so. Unsupervised, spontaneous activity could undermine the test results. Kept within the enclosure of the testing facility, the participant-reader is prevented from moving in anything but the required manner.
"Disciplinary space tends to be divided into as many sections as there are bodies or elements to be distributed" (Foucault 1979, 143) The CSTF is always conducted in discreet partitioned spaces. If more than one person is being tested at a time, there are separated testing locations. This ensures that only individuals are being tested. "One must eliminate the effects of imprecise distributions, the uncontrolled disappearance of individuals, the diffuse circulation, their unusable and dangerous coagulation." (Foucault 1979, 143) The examination also requires that there be a number of functional sites, whose use is limited to their ordained function: the aerobic testing site, the hip flexion testing site, the sit-up site. Because the test requires the use of specific equipment specific functional sites for the operation of that equipment is necessary. The functionality of the various sites is determined by the measuring/monitoring needs of the equipment. The body is therefore restricted to moving according to the functional arrangement of the equipment. The participant-reader moves from functional site to functional site and inserts his/her body into the equipment of each site and moves only according to the monitoring function of the equipment. If the participant-reader moves in any other way, they are corrected and instructed to do the movement again correctly according to the function being examined. The participant-reader is given no choice as to what space s/he is going to move in. The participant-reader is expected to be completely passive, or as Foucault would say, docile. Every movement that is recorded, which is to say every movement that is deemed to have produced a meaningful sign, is the product of following the orders of the appraiser, who in turn is following the procedures of the Operations Manual. No significant movement originates with the participant; the only signs that are inscribed are
those that are emitted by the body as it comes to presence as an object. Which means that the signs that are produced at each stage of the test are signs of the body's objectivity. Success in the examination depends on complete compliance with the protocol and the correct use of functional sites.

The body is compelled to move in precise ways and within very strict structures of linear time. Foucault calls this disciplinary technique the "control of activity." The CSTF examination attempts to reproduce as much as possible the degree of control of activity that is characteristic of research science. The Operations Manual, a second order text, delineates precisely the direction and timing of the body's movements. This fact is attested to in my overview of the procedures in the above section on the natural reading. The test of aerobic fitness, for instance, requires that the participant "step to the music" on a strict schedule. The body is compelled to move precisely on a beat of 6/8 time. The tape begins: "Be prepared to step to the music. STEP- STEP - UP! STEP - STEP - DOWN! STEP - STEP - UP! STEP - STEP - DOWN! UP - 2 - 3! DOWN - 2- 3! UP - 2 - 3! DOWN - 2 -3!"134 It is imperative that the feet move in a specific sequence, right foot first. The participant-reader must stop stepping on command, "remain motionless."(Canadian Association of Sport Sciences 1987b, 11) and the appraiser-reader begins taking the pulse when the tape commands "'COUNT' and continue[s] counting the pulse until the first sound of the command word 'STOP'". (11) Foucault’s analysis of the

134 The upper case letters and exclamation marks are as printed in the Operations Manual p.11.
“temporal elaboration the act” as the instantiation of disciplinary power is apt: “A sort of anatomo-chronological schema of behaviour is defined. The act is broken down into its elements; the position of the body, limbs, articulations is [sic] defined; to each movement are assigned a direction, an aptitude, a duration, their order of succession is prescribed. Time penetrates the body and with it all the meticulous controls of power.” (Foucault 1979, 152). In the aerobic fitness test, organized time completely controls the body. The same is true of the sit-up test, in which the ticking of the metronome determines the movement of the body; and when the participant-reader can not keep pace with the metronome, the test is over.

The only signs that are emitted in the examination procedures are numbers, quantitative signs of the body’s ability to perform tasks that it has been told to perform in the manner in which it has been told to do so. The numbers are produced by instruments which read twenty-four quantities of the body’s being (stage reached in the aerobic test, pulse, blood pressure, grip strength, weight, height, skinfold measurements, girth measurements, degree of hip flexion) or by the appraiser reporting the number of repetitions of a task. The imperative that the body perform in such a way that its being can be signified by numerical systems is itself a discipline: the body’s power of expression is limited to its quantifiability in a completely inflexible, pre-established system of meaning as quantity. No qualitative data is recorded in the procedures of the examination.¹³⁵ The

¹³⁵ There is an ongoing conversation between the appraiser-reader and the participant-reader, in which the participant provides considerable qualitative verbal information, regarding preferences for different kinds of physical activity, ‘lifestyle’ habits and so on.
body's power of expression is strictly curtailed by its limitation to twenty-four numerical measurements.

The point here is that the body must be disciplined to move in extremely limited ways, under tight time restraints, in enclosed and partitioned functional spaces in order to emit limited signs that can be codified in the hermeneutics of the exercise sciences. For the body/desire to be understood by the system it is compelled to fit the procedures, instruments and signing practices of the test. This requires a "channeling" (Deleuze and Guattari 1983, 33) of the body's capacity to move, of its production of desire. The body is forced to appear only in accordance with the original, dictatorial, quantifiable, objectifying, gaze of the original "projection" (ta mathemata) of the test. The nature of that projection, I will describe in a moment. This dictatorship over the body and desire is commonplace in research laboratories, but criticized only in the non-laboratory research methodologies of qualitative, feminist-inspired social sciences. The extension of this dictatorial laboratory culture into the general population in the procedures of the CSTF

This information is utilized by the appraiser in the prescriptive elements of the test. But nothing of a qualitative nature affects the codification of the body for the production of the results that are produced by the computer and interpreted by the appraiser. I will argue in the upcoming section on interpretation that the participant-reader's qualitative contributions do not in any way effect the knowledge that is produced in the appraisal; they effect only the strategies which the appraiser will use to convince the participant-reader to accept the results and live according to the prescription.
requires a level of submission of “ordinary people” that is characteristic only of modern environments that deal with the body in the most authoritarian fashion, environments such as the military, prisons, concentration camps, high performance sport training, factory assembly lines, or hospital operating rooms. The disciplinary paradigm for dealing with the body is one in which the body submits completely and in the minutest detail to the authority of the test. The examination is a prison that compels the body to emit the signs that can emerge as a result of its imprisonment. The knowledge produced in this test is the knowledge of a being as it is rendered docile; it is not the knowledge of the Erotic freedom of the BwO, of the puissance of the moving body. This is a fascinating docility. For the body does move—in the aerobic test most participants work up a sweat—but the movement is entirely dictated by the government of the test. The body’s puissance is thus “territorialized” (Deleuze and Guattari 1987b, 154) by pouvoir in what could be called the power of docile movement. This situation exemplifies the ironic transformation of power of which Foucault speaks when he says that discipline “dissociates power from the body; on the one hand it turns it into an ‘aptitude’, a ‘capacity’, which it seeks to increase; on the other and, it reverses the course of energy, the power that might result from it, and turns it into a relation of strict subjection.” (Foucault 1979, 138)

136 It is true that most who participate in the test do so voluntarily and sign consent forms. But these forms do not inform the participant of the political nature of the test. It is a similar situation to that of high performance athletes who ostensibly have consented to their exploitation and control by coaches, scientists, and the sports establishment.
Reviewing my argument so far, the government of the body in the physical arrangement of the test is a disciplinary technique that produces the body as a resource that emits signs that can be codified. This is how the body is engaged in the research laboratory of exercise science. That disciplinary government is extended outside the research laboratory in the disciplined examination procedures of the CSTF. But these physical arrangements are only the beginning of the institution of the disciplinary regime of pouvoir in the bodies of those who undergo the test. After all, the test takes only one hour and the participant-reader is free to leave the physical constraints of the test, to move outside the dictatorial spatial and temporal arrangements of the test, to return to freedom, to move as s/he desires. But the procedures of the examination are only the first element of the institution of a more extensive disciplinary regime. Pouvoir begins to extend its grasp beyond the examination process by codifying the way in which the body/desire was provoked to come to presence in the procedures. The disciplinary power exercised at the testing site is extended into future space and time by the hermeneutic power which defines the meaning of the being of the participant reader by codifying his/her disciplined body. That codification is then used to channel desire in the future. I now turn to the codification of the body and attempt to show the meaning of the body for the exercise sciences in general and the CSTF in particular.

Just as the physical disciplining of the body in the CSTF examination extends the governmental culture of the research laboratory into the outside world, so too the codification of the body in the examination of the CSTF very closely resembles the way in which research exercise science codes bodies in the laboratory. The CSTF examination
may not be as accurate as the research laboratory in measuring techniques, and use of norms from a large population, rather than from more specific, relevant populations. It is a somewhat sloppy examination compared to the high-end fitness testing of a well-financed research laboratory. The paradigms which allow for this particular codification of the body, however, are the same; which is to say they both depend on the same paradigmatic understanding of the relationship between scientific language and the body, as well as "tacit assumptions" (Keller 1992, 27) about how the body can be conceptualized and treated. (See my discussion of paradigms, above p. 92 ff.)

The naturalistic reading of the codification process sees the examination as measuring elements of the body's physiological being (estimated VO₂ Max., flexibility, strength, and weight, height, adiposity and fat distribution, inscribing those measurements and calculating their physiological significance), and transparently representing the body in scientific language. The aerobic fitness test estimates aerobic capacity by controlling the amount of work done, monitoring the heart rate, and calculating the estimated VO₂ Max. by reference to population norms according to age and weight. The flexibility test directly

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137 For instance, the test of aerobic fitness estimates aerobic fitness by reference to the norms of Canadian society as a whole, and therefore underestimates aerobic capacity for highly fit persons. Also, sum of skinfolds is not a direct measure of adiposity. There are more accurate methods of measuring adiposity, such as hydrostatic weighing or magnetic resonance imaging, which are much more complex and expensive procedures.
measures the degree of trunk flexion. The adiposity tests estimate body fat composition by measuring several skin folds and comparing those to skinfold measurements of cadavers whose adiposity could be more accurately measured. The weight and height measurements are read as—admittedly quite inaccurate (Canadian Association of Sport Sciences 1987a, 19) — estimations of fat content based on data developed by the life insurance industry. And the strength tests directly measure grip and abdominal strength. The body is quantitatively coded by these measurements. Debates about the accuracy of the measuring procedures, and calculations on populations are not important to my analysis. For even if the procedures were able to perfectly measure these bodily parameters, the same deconstructive questions would arise. Specifically: what paradigms of the body make possible this quantitative codification? and what are their significance in the dynamics of puissance and pouvoir?

I will now argue that the examination codes the body according to an encompassing practical paradigm of exercise science which renders the body as an organic machine that is appraised exclusively according to its use-value. This paradigm directs the understanding, appreciation and therefore celebration and movement of the body away from the intrinsic meaning structure which I have argued is the logos of Eros, the truth (the freedom that lets beings be the beings they are) of puissance, and into the extrinsic meaning structure of pouvoir, the revelation of the body as a resource.

A crucial element in the codification process of the examination is the government, as it were, of the codes. It is an entirely dictatorial government—the antithesis of a participatory democracy. Every detail of the codes, the entire hermeneutic structure is set,
iron-clad, in advance. No body entering into the examination process can have any effect on the meaning structure of the codes, within the context of the CSTF.\footnote{One could reject the meaning of the codes, pay no heed to the test "results" because they are at odds with one's understanding of the body. An empirical study of the actual impact of the CSTF on participant-readers could reveal that. My point is that the CSTF text is not designed to allow participant readers any role in the production of texts, the making of meaning in the test. The text is designed to impose meaning, not to encourage the participant reader to write texts of their bodies themselves. I will turn to this as a major critique in the interpretive section, following. The only option the participant reader has is to opt out of all or part of the test. A participant who opts out is not given an opportunity to "write" an appraisal of their fitness on their own terms. Of course, they are free to do so outside the test. But interestingly enough, there is no suggestion anywhere in the CSTF procedures or counseling that the participant reader take charge of their own "appraisal."} The body is purely an object for the inscription of codes; it has no power to produce codes on its own terms, as a subject. Nothing the participant-reader says has any effect on the codification process. The participant-reader is rendered docile in the production of codes on his/her body in exactly the same way s/he is made docile in the physical ordering of his/her movements in the procedures of the test. The process of coding is a disciplinary technology in the same way that the physical procedures are. The disciplinary power of the codification process marks the beginning of the extension of pouvoir out of the testing site (both temporal and spatial) and into life beyond. In the research laboratory, the
body/subject made an object of study, is such an object only for the duration of the experiment. Any data (codings) collected are dissociated from the particular body that was tested and simply join the accumulation of data on bodies in general. In this way the codes of research science are relatively ‘theoretical’, by which I mean not aimed at the actual reproduction of particular bodies/desires. In the CSTF, on the other hand, the codes are made precisely for the purpose of reproducing particular forms of body/desire in the future. The codes are central to the interpretive and prescriptive elements of the CSTF for the production of desire of the specific body that is codified in the test. The power of the CSTF to set strict parameters for what can be codified is thus very important. Similar to the process of digital recording of music, the CSTF records only certain aspects of the body. (See discussion of recording p. 185.) In cases where the codes are fully reproduced in future life, desire will be limited to the coded content.\(^{139}\) The only body represented in the codes is the disciplined body (produced in the examining procedures) which will be the body as it is rendered in the essence of the coding paradigm, to which I now turn.

In the examination procedures the body was disciplined to move according to the needs of the machines that measure it (electro-cardiographs, sphygmomanometer, fitstat-computer programme, etc). It is subjected to the machines’ needs for measuring, made to produce signs for the machines. The body becomes an extension of the machine. Indeed, it is the body’s machine-like functioning that is measured. The concept of the body-as-

\(^{139}\) The question of the extent to which the codes actually reproduce life will be discussed in the last chapter.
machine is pervasive in the biophysical exercise sciences, as it is in most of the life-sciences (Alexander 1992; Rabinbach 1990). The body as a machine is one of the two discourses of the biopower: "its disciplining, the optimization of its capacities, the extortion of its forces, the parallel increase of its usefulness, its docility, its integration into systems of efficient and economic controls." (Foucault 1980a, 139) Dealt with paradigmatically as a machine, the body's capacities can be efficiently maximized. This is, of course, a resourcing of the body's capacity to move, its puissance. The process of coding the body makes possible its efficient resourceful exploitation—this is similar to the surveying, codification and mapping of a forest which, on the basis of that codification, is marshalled as a resource.

Now, Deleuze and Guattari speak positively of the body as a machine, the "desiring machine," which is the power of production of the BwO, which is "a process of production without reference to any exterior agency." (Deleuze and Guattari 1987b, 154). The organic body/machine is organized exteriorly. The disciplinary procedures of the CSTF are an exterior organization of the BwO. Similarly the codes of the CSTF also act upon the desiring machine, rendering it an organic machine.

To appreciate the impact of the codes, it may be helpful to recall the contrasting Erotic sense of the BwO. The puissance of the BwO, is that it resists the codes of exterior, resourcing agency. The BwO comes to presence in the logos of Eros, which Deleuze and Guattari evoke in the following: "In order to resist organ-machines, the body without organs presents its smooth, slippery, opaque, taut surface as a barrier. In order to resist linked, connected, and interrupted flows, it sets up a counterflow of amorphous,
undifferentiated fluid. In order to resist using words composed of articulated phonetic units, it utters only gasps and cries that are sheer, unarticulated blocks of sound.”

(Deleuze and Guattari 1983, 9) While not precisely represented in Deleuze and Guattari’s words—words are incommensurate with the power of Eros—the Eroticism of the BwO, becomes virtually present: “its smooth, slippery, opaque, taut surface... [its] amorphous, undifferentiated fluid... [its] gasps and cries that are sheer, unarticulated blocks of sound.”

Deleuze and Guattari quote Artaud on the organization of the body:

The body is the body
it is all by itself
and has no need of organs
the body is never an organism
organisms are the enemy of the body (Deleuze and Guattari 1983, 9)

Organized as a machine the logos of puissance is subjected to the government of exterior agency. The examination codes the body as an organic machine, by measuring its functions. This renders it in its usefulness, rather than in its Erotic freedom. Rather than being expressive and communicative, the body is organized in its functional parts.

Organizing the body along functional lines makes it possible to manipulate the body. A disorganized body is an illusive body, not easily subject to government, difficult to control—this is precisely the point of the body-without-organs. Since the science of physical fitness sets out to control the body, to change its operations so that it will function better, it organizes the body according to functional parts which can be measured, calculated, analyzed, and given programmes for improvement. This is the instrumental rationality of science, the power of science described by Rouse. (1987). Instrumental
rationality makes the body/desire "more efficient, productive, accountable, rational and
cost effective" (McKay, Gore, and Kirk 1990, 57). The examination takes the BbwO and
codes it as an organized machine which has its being first and foremost in its functional
capacity.

Functionality lies at the heart of physical fitness. The CSTF, for instance, defines physical
fitness as: "a set of attributes of functional capacity that are related to the ability to
perform physical activity. These attributes are the specific components of fitness: body
composition, aerobic fitness, muscular strength, flexibility, and muscular endurance"
(Canadian Association of Sport Sciences 1987a, 9) The World Health Organization
defined fitness as: "the ability to perform muscular work satisfactorily." (World 1968), as

The CSTF examines the body according to the five functional components of
fitness. The body is compelled to emit signs which will be codified: in the aerobic fitness
test it is made to work until the beating of the heart signifies, by rapidity of its beat, that it
has reached a submaximal capacity to do work that can be extrapolated to predict a
maximal capacity of oxygen uptake. That simple sign is then codified by a complex
formula. \( \text{VO2 Max} (\text{ml/kg}^{-1}/\text{min}^{-1}) = 42.5 + (16.6 \times \text{VO2}) - (0.12 \times W) - (0.12 \times H) - (0.24 \times A) \).\(^{140}\) Similarly, the signs emitted in the taking of body weight and height

\(^{140}\) \( \text{VO2} \) is the average oxygen cost of the last completed exercise stage, which is
calculated according to direct measurements of oxygen cost at the different stages of the
Canadian Aerobic Fitness Test, that were undertaken by Jette (Jette 1983, 114).
measurements are codified to produce the Body Mass Index which is the ratio of body weight divided by height, squared (kg/m²). Also the five skinfold measurements are calculated to indicate the degree of adiposity. The Sum of trunk skin folds is codified to indicate the distribution of fat in the trunk area. And the signs produced in the muscular strength and flexibility tests are codified so that they can be compared to gendered norms in the population.

These codes represent that value of the body according to various usefulness or wastefulness of the five components of fitness. The larger the value of the VO₂ Max for instance, the more useful is that particular physiological function deemed to be. Large values in the Sum of Five Skinfolds indicates a lot of fat proportionate to muscle, which is seen to decrease the value of the body in terms of efficiency (fat is an inefficient drain on the body's energy—a lean body is a more efficient body); so the presence of “excess” fat indicates a body that is wasting its potential efficiency, a body that is not as good a resource as it could be. Low scores in strength indicate a muscular capacity that is less than fully developed and not a good resource, and so on with the other tests of the components of fitness.

In the above process the BwO, the desiring machine, is coded quantitatively according to its functional use-values as an organism, which is a codification of the body’s value as

\[ W \] is the body weight in kilograms of the participant-reader.

\[ H \] is the participant-reader’s heart rate after the final stage of stepping in beats-per-minute.

\[ A \] is the participant-reader’s age in years.
"physical capital." (Bourdieu 1988; Shilling 1993) Determining this capital value entails discerning the discreet forms of physical capital (the components of fitness) and calculating their value. The point being to assess value and on the basis of that assessment to develop rational action programmes (through exercise, diet, etc.) which will accumulate more physical capital. The underlying hermeneutic logic is that the body can be quantitatively appraised of its use-value similarly to any other object's monetary exchange value—this is attested to in the fact that the person who conducts the CSTF is called an "appraiser," which is one who fixes a price or assigns a monetary value on things (OED). The appraiser in the CSTF, like the experimenter in research exercise science, establishes values for the body's capacity to move. These values are rendered meaningful in the logics of personal capital accumulation and resource management.

The implicit imperative here is for the individual to seek personal profit from the development of his/her body as a capital resource: extracting as much value from its resources as possible. Abstract values are assigned to resources: in the case of finance capital, value is monetary (CAN $); and in the case of physical fitness capital, value is expressed as VO2 Max (ml/kg·min⁻¹), Body Mass Index (kg/m²) Grip Strength (kg) etc. Where value can be established there is the potential for increased value. A profit motive can come into play here. The body is understood not in terms of its capacity for puissant intensity, but in terms of capital growth, the idea being that human potential is relative to quantities of capital accumulation: the less capital which the body holds, the less potential it has, and conversely, increased capital leads to increased potential. This is the salvific philosophy of consumption: the more capital one accumulates, the more one can save
oneself in the act of consumption. (Featherstone 1991, 182-7) The greater use-value one accumulates in the body in the form of physical capital, the more one is able to save one’s capacity as a functional object. Functional capacities (aerobic capacity, strength, flexibility, etc.) coded for their capital use-value, can purchase salvation. Salvation can be as profound as avoiding disease or death or be as mundane as acquiring a better game of tennis.

Salvation comes from maximizing the body’s profitability as a result of increased efficiency and power. For example, an increased capacity to metabolize fats, a high energy source, is the result of a combination of increased cardiovascular function, which results from a rational programme of aerobic exercise, increased muscle mass which results from a programme of resistance training, and decreased ratio of fat to lean body composition, which results from a combination of caloric dietary restoring and increased aerobic activity. Increased power can result from stronger muscles which allow one to do more work as a result of resistance strength training. The body’s physical capital can be increased by the efficient extraction and development of its puissance as an energy resource. Carefully marshalled as a resource, the body’s energy-reserves (its undeveloped capacity to move more efficiently, more powerfully and for a longer period of time) can be converted into increased physical capital. The codification of the body in abstract quantities such as VO₂ Max begins this important process of developing the body as a resource, appraising its current output. In the interpretation and counselling parts of the CSTF, current output (values) are compared to potential outputs and rational action plans for the development of the body as a resource are made. In the examination the body is
coded as nothing more than a technical problem of functionalities and efficiencies in the development of physical capital (See discussion of technocracy p. 72 ff.), the effective management of the body in the dynamics of resource and waste product. Nothing else appears in the examining codes. As we shall see in the next section on interpretation and counselling (prescription) no other appreciation for the body appears in the CSTF. The CSTF is directed exclusively at the development of the body as a capital resource.

The individualizing, disciplining and technological coding of the body in the examination is only the beginning of the production of pouvoir in the body of the participant reader. For in the examination process, signs, such as heart rate and body weight, are entered into a computer which codifies them. They have no bearing until they are brought back to the participant who emitted the signs that made the codification possible as codes that participant reader is encouraged to accept as revealing the truth of his/her body/desire. The true power of the codes lies in the way they inscribe the body/desire of the reader in the processes of interpretation and counseling, the codes not only reflect back on the body’s past, but also chart a course for its future. In mapping the future, such that it can be resourced for its capital value, the governmental, indeed fascist, force of pouvoir and the erasure of puissance actually begins to show.

4.3.3 INTERPRETATION AND PRESCRIPTION:
At the beginning of this analytical section of the thesis, I said that fitness-based physical education is a practical, textual discourse. I have argued that the science of physical fitness appraisal produces texts that discipline and codify the body as an
individual (physical) capital resource. This fundamental paradigm of the body, characteristic of research exercise science, is extended out of the research laboratory and into the general population in the examination procedures of the CSTF. In the process of interpretation and counseling the CSTF attempts to inscribe the discipline and codes that were produced in the examination by disciplining and codifying the future desire of the participant-reader by producing an authoritative narrative text on the body of the participant-reader. This is the primary text of the first order, the text that most directly sets out to “make” a world.

The interpretive and prescriptive elements attempt to extend the individual, technological body that was produced under pouvoir in the examination, by rendering that body meaningful (interpretation) to the participant reader and writing a script (prescription) for the future production of the same. The interpretive and prescriptive narrative charts a course for desire that has clear ideological aspects—supporting the ideological framework of modern, technological consumer capitalism — but their foundations in the productive nature of the examination aim for more than ideas, they aim for the transformation of desire such that the reader participant is made up as an individual, controlled, useful and profane desiring machine, a territorialized BwO, docile. The interpretive stage sets out to reconcile the desire of the reader-participant with the body that was produced in the examination, so that desire can be produced along similar lines for the rest of life.

The narrative inscribed here is that of a quest for personal salvation through physical capital development of the body as a resource. “Capital resource development”
gives a modern twist to a very old salvific narrative impulse. The story of St. Paul
perhaps the original inspiration for this twisted modern narrative: a sinner experiences the
light of truth and is saved from the abyss. But the salvific power derived from the science
of physical fitness is unlike the salvation of Paul, who, according to the Bible, having seen
“the light” on the road to Damascus, was saved by the “Grace of God,” an unmerited gift
that inspired him to devote himself to his fellow human beings in the development of
emergent communities that challenged dominant (Greek, Roman and Hebraic) paradigms
for the meaning of life.141 Salvation by the science of physical fitness, on the other hand,
has nothing to do with emergent communities developing counterhegemonic paradigms for
the meaning of life inspired by the freedom of anything even remotely resembling “Divine
Grace,” but is entirely dependent on the individual earning salvation for him/herself,
alone, in accordance with the dominant paradigms of modern technology. It is a story of
individual salvation by selfish technological “good works.” Here is a dark promise of
salvation by subordination to the hegemonic spirit of pouvoir, the re-sourcing of the
essence of human being in the modern, individualizing biopolitical project. Rephrasing
Luther, it is “salvation by fascism, alone.”

This narrative forms a textual discourse that seeks to coopt bodies/desire into a
governance of puissance, which is the production of fascist desire. It is a highly
manipulative and authoritarian production. The point of it is rhetorical: to convince

141 I remain agnostic, here, as to whether Paul's legacy in the development of the Church
turned out to be positive. My point is more structural: conversion that leads to social
action and counterhegemonic communities.
participant-readers to change their “value systems” and “behaviour” (Canada 1972, 124). The *Operations Manual* explicitly says that the “fundamental objective” of the CSTF is to “motivate” “apparently healthy individuals” to change their lives (Canadian Association of Sport Sciences, 1987, 2). The *Manual* reinforces this point by saying that one of the primary reasons the fitness appraisers' certification and accreditation programme (FACA) exists is “to improve the likelihood that participants who have a fitness appraisal will take appropriate action to improve their fitness.” (Canadian Association of Sport Sciences, 1987, 6). The Proceedings of the National Conference on Fitness and Health (Canada 1972) calls for a “comprehensive educational and promotional program of physical fitness and health.” The point of such a programme being to “motivate” Canadians “into changing their living habits.” The Conference Recommendations focus on lifestyle and the provision of tests, and services that would “motivate” people to change their way of life. Indeed the second highest priority (Recommendation Number Two) asks Recreation Canada to “seek the cooperation of established ‘professional behaviour modification agents’ and agencies who could provide expertise in changing the value system of Canadians, related to physical fitness.” (Canada 1972, 124) The language of this discourse is important: it calls for changes in Canadian “value systems” and “behaviour” and the CSTF was created as a motivational tool to bring

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142 This document is a third order text directly credited as the precedent for the creation of the CSTF, a document which specifically called for the establishment of a national test of physical fitness, Recommendation number 9 (Canadian Association of Sport Sciences 1987b, 3)
about this change. It does not call, in a Freirian spirit, for the building of communities that can create their own visions of health (see discussion of health promotion p. 227.) It does not call for an end to the social and economic forces that are responsible for much of ill-health. It is not a call for the promulgation of Erotic reflection and deconstruction of the biopolitical forces that are governing life and limiting the potential for human freedom. It seeks only to change values and behaviour so that more functional bodies are produced.

The test is meant to motivate people to change their lives in specific ways. It is not meant to encourage reflection and freedom in the making of human destinies. The science of physical fitness and the CSTF which appraises it begins with an understanding of the body and its proper management and seeks to motivate people to conform. This is in no way a consultive or democratic project; the CSTF does not encourage dissent; it is purely a matter of moving (motivating) people to produce their desire as an individual resource.

The narrative structure of this discourse, therefore, is one of closure, the point of the closure being to territorialize the BwO. Bakhtin (Bakhtin 1981) says that every dialogue involves a struggle of different voices, some dominant, some less dominant, which are attempting to give meaning to phenomenon. Therefore in dialogue there is a power struggle for authoritative meaning, the victor invoking the power of closure over the meaning of the vanquished. The CSTF is engaged in a dialogue with the participant-reader, attempting to coerce the participant-reader into accepting its vision of the reader’s body and the future of the participant reader’s desire. It attempts this coercion by aggressive acts of hermeneutic closure. There are several closing techniques at work, both structural and elemental. The overall structure of this salvific narrative is a progression
through three stages that lead to salvation: the *Confession* of personal sin (examination), *Conversion* in the light of an experience of The Truth (interpretation), and coding the *New Life* in accordance with The Truth (counselling/prescription). This overall structure, I will argue, is one of closure by territorializing desire. And each of the narrative elements—Confession, Conversion and the New Life—invoke closure. The narrative is drawn teleologically by an implicit promise of salvation.

I will now attempt to elucidate this narrative: first by discussing each of the three stages (Confession, Conversion, New Life); then I will examine the overall structure; and finally, in the last chapter, I will look at what turns out to be a rather dark kind of salvation.

4.3.3.1 *Confession*:
The form of confession produces an important power relation. Historically, in the Christian Catholic traditions, this has been the power of the Church to identify the nature of sin and dispense the sacrament of confession and absolution to believers so that their consciences might be cleared of their perceptions of wrongdoing. In a moralizing Christian belief system that looks for sin everywhere, and believes it impossible for lowly Man to escape the same, it is important that there be some system of reassuring the faithful that their sin is not so great, the debt so grossly accumulated over many years of

143 It is notable that the knowledge-power of the modern research laboratory is extended beyond it by such an old religious (in the sense of binding, L. *religare*) narrative structure.
sinful life, that they are inclined to give up the entire Christian enterprise and accept sin as unavoidable and unredeemable. The Sacrament of Confession serves the function of giving penitents psychic relief from the weight of their waywardness and keeping them within the belief system of the Catholic Churches. This same form was taken up by a more modern belief system: psychiatry. Here absolution comes not from God through the Church and its ministers, but from the act of speaking: the patient is encouraged to face his/her problematic (neurotic) self and with the guidance of the psychoanalyst attain a cure for his/her neurosis, the famous “talking cure.” (Deleuze and Guattari, 1983, 34 ff) Similarly, participant-readers in a physical fitness test engage in confessional forms.

Indeed the entire appraisal process is founded on information that is confessed.

The power of confession is its power to code desire (Rouse 1987, 225). Both the Christian and psychoanalytic forms of confession code desire, the latter in terms of psychic development in the dynamics of libido, id and superego, and the former in terms of Sin and Divine Redemption. Confession frames the life of penitents, patients and participant-readers of the CSTF in terms of established codes over which the reader has no control, and under which they are encouraged to define their lives and face its sin, pathology, or unfitness. The first power relation of confession is the power to define the terms by which ‘truth’ may appear. The second power of the form of confession is the power to set the terms of absolution, health and fitness. Confession is not only retrospective, it casts its gaze into the future, suggesting what a life free of sin, psychically balanced or physically fit might be. The form of confession forces penitents, patients and participant-observers to accept the authority of the confessor, psychiatrist, or certified
fitness appraiser as well as the authority of the religion, psychiatric art or exercise science that they are empowered by their credentials to dispense. The effectiveness of confession depends entirely on acceptance of the authority of the confessor and the religion or science which s/he represents. It is an authoritarian relationship.\textsuperscript{144}

The form of confession in the CSTF participates in the process of reterritorialization, that Deleuze and Guattari say is characteristic of the capitalistic tendency to borrow old forms for the recoding of desire (See p. 188, above): "Capitalism institutes or restores all sorts of residual and artificial, imaginary, or symbolic territorialities, thereby attempting, as best it can, to recode, to rechannel persons who have been defined in terms of abstract quantities." (Deleuze and Guattari 1983, 34-5)

\textsuperscript{144} Fox says this authoritarian relationship is basic to most practices of modern medicine.

He theorizes that it emanates from the repetition of cycles of oppression that originate in the nuclear family. He takes this point form Deleuze and Guattari's criticism of the fundamental familial power relations that they say are perpetuated in psychoanalytic theory "Mom, Daddy, Me" (Fox 1994, 67-90). It could also be argued that the authoritarian structure of the CSTF reflects its inheritance from the Church and psychiatry. As the psychiatrist replaced the priest as the figure of the authority in the revelation of truth, so the appraiser represents the authoritative power of truth production that is often associated with science.
The confessional precedents of the CSTF, i.e. the church and psychiatry, relied entirely on a speaking subject who has some power to determine what texts emerge in the act of confession. Of course the Church developed powerful tools to get the sinner to confess, such as the promulgation of stigmatic guilt and threats of eternal damnation, or in more extreme cases (e.g. the Inquisition), physical torture and execution. And psychiatry was able to plumb the depths of the unconscious by quite sophisticated techniques of depth analysis and hypnotism. Nevertheless, the penitential subject retained some power over what 'truths' might appear in their words, even if only by stubborn resistance to the process itself. The CSTF is much more effective in extracting confession than its predecessors. It removes subjectivity from the body, and makes it confess as a passive object. The CSTF circumvents any filtering of the 'truth' through a subject's power of speech, robbing it of voice, and goes right to the body disciplined as an object, devoid of any power of self-expression and forced to reveal itself in the codes of exercise science (estimated VO2 max, body mass index, etc).

What does the body confess? The extent of its physical capital accumulation, or more importantly, lack thereof. Going right to the disciplined and objectified body the CSTF extracts signs of a wayward life: not enough exercise, the wrong kind of exercise, unhealthy eating habits. And these are moral signs. For s/he who has more physical capital has led a better life, and s/he who has less of the same is in need of salvation. The test extracts this confession and then by attempting Conversion and a map for the New Life, charts the course for salvation. In Christian confession, absolution is immediate and unconditional, a simple act of faith. In psychoanalysis the cure is slow but accomplished
through various therapeutic techniques that are supposed to free the patient of his or her neuroses, such that s/he can leave them behind. The participant reader of physical fitness testing, on the other hand, must spend the rest of his/her life to obtain a cure, one which is at best conditional, and in the end, doomed to failure.

Extracting a confession from the body-as-object, unmediated by the body-as-subject, is a powerful form of closure. The ‘truth’ of life, the essence of desire as puissance, is forced out of the body and into a computer, and onto computer printouts. In the interpretation stage, the CSTF appraiser attempts to get the participant-observer to accept (Conversion) the truth which the body has confessed and face the consequences of his/her former way of life, the problems of his/her desire, the failure to accumulate sufficient physical capital in the body. Before analyzing this Conversion, it is important to consider two other confessional techniques that are employed by the CSTF: written and verbal.

Certainly the most powerful confessional tool is that which circumvents the power of the participant reader to control the nature of the text that emerges: the examination of the disciplined body-as-object. There, is complete closure on the subjectivity of the participant reader, a thorough territorialization through codification. The CSTF also seeks written and verbal confession. Before arriving at the appraisal the participant-reader has answered a “Lifestyle Questionnaire” (See Appendix 3) and throughout the appraisal the appraiser-reader prods the participant reader for more information about his or her way of life. The information from both of these supplements the physical examination. Because the participant-reader has the power to lie in the “lifestyle
questionnaire” and to conceptualize his or her body on his/her own terms in the verbal interactions with the appraiser-reader, these lack the objective/objectifying power of scientific knowledge. But the role of these forms of confession is not to produce alternative versions of the truth of the body; it is to give the appraiser-reader qualitative information on the participant-reader that will allow the appraiser to construct an interpretive framework that will most fully facilitate the participant’s acceptance of the truth and consequences of his/her physical confession. By knowing more about the participant-reader’s way of life the appraiser-reader can operationalize a programme for the participant-reader. Indeed, crucial information is provided in these parts of the confession, information that allows the appraiser to render the texts produced in the test palatable and useful for living the New Life.

The questions of the “lifestyle questionnaire” have clear moral overtones, in the sense of the way life should be lived. Here the confessional act is more important than the text that is produced from it. The participant-reader is exposed to moral imperatives for life and compelled to judge him/herself in relation to them. Take, for example, question six, which asks questions about behaviour, all of which contain a clear moral imperative for action. The participant-reader is asked to rate each of the following according to their importance to “gaining” a feeling of well-being (note the suggestion of acquisition/accumulation in the word “gaining.”): “Adequate rest and sleep. A good diet. Low calorie snacks between meals. Maintenance of proper weight. Participation in social and cultural activities. Control of stress. Regular physical activity such as exercise, sports or games. Using alcohol moderately or being a non-drinker. Being a non-smoker.
Adequate medical and dental care. Positive thinking/meditation.” All these suggest that they should be of great importance. Rating oneself is here meant as a unidirectional act of transformation in deference to these undeniably good “lifestyle behaviours.”

Another element of the power of confession is its capacity to control the production of desire through guilt. Traditional religious prohibitions on sexual expression, of course, are the most obvious example of this. In the CSTF, guilt is promulgated, less around the pursuance of illicit sexual pleasures, and more around “healthist” issues of sloth, self-discipline, individual responsibility (Crawford 1980, 368). The individual nature of the confession is important: this is not a general confession that allows the penitent/participant to conceptualize his/her guilt as part of the fabric of the social order. The focus is entirely on the isolated individual. This further substantiates my earlier claim that the political philosophy of the CSTF is far removed from the more socio-culturally holistic philosophy of Health Promotion (see discussion p. 286).

The nature of one’s guilt is not always obvious; guidelines are needed; one frequently needs help in identifying what one has done wrong. This is precisely the confessional goal of the CSTF: to identify the participant-reader’s failings so they can be motivated to action. That is the point of the list of behaviors in question six. And clearly the point of question nine: “What physical activities would you like to start in order to

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145 Poulton (1996) argues that the diet industry utilizes guilt about eating in order to keep people using their services.
improve your fitness and health?” which is followed by the question “What is the main reason you have not started this?”

The most open confessional form in the CSTF occurs in the verbal exchanges between the appraiser and the participant. This occurs throughout the test. From the beginning the appraiser is asking the participant questions about their lives, regarding types of exercise, eating habits, drinking and smoking habits — many of these questions are informed by the fact that the appraiser has read the Lifestyle Questionnaire — and is developing strategies for convincing the participant to produce his or her desire differently. Frequently at the University of Toronto, participant readers who confess to drinking, or other forms of “high” living are directed to undergo another form of confession, The Computerized Lifestyle Assessment which interrogates many more forms of desire than the CSTF which is directed primarily at physical activity and diet. (See description of the Computerized Lifestyle Assessment, above pp257 ff).

An important power relation between the appraiser and the appraised is developed in the confession. This is the power of the appraiser to transform a confession into the spectacle of the appearance of Truth and the concomitant imperative to action for salvation. Foucault says that the confessional form has become a precursor for the onset

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146 These individualizing moralistic themes in FBPE in general have been criticized by Crawford (1978; 1980; 1984; 1995) Bordo, (1993b) and Featherstone (1991), among others. (See literature discussion, above)
of the truth of a person. Indeed the form of secrets, giving way to truth, of mysteries being exposed, has become part of the Western cultural construction of truth as an event of revelation, of unconcealment. And so the body in the CSTF is rendered visible and forced to tell the truth, to stop hiding its lazy, fat, indulgent, undisciplined, secret life. By that confessional act alone, truth seems to happen. Foucault says: “The obligation to confess is now relayed through so many different points, is so deeply ingrained in us, that we no longer perceive it as the effect of a power that constrains us [pouvoir]; on the contrary, it seems to us that truth, lodged in our most secret nature, ‘demands’ only to surface.” (Foucault 1980a, 60).

From a Foucauldian perspective, the most important aspect of the CSTF Confession is the way it takes the body/desire of the participant and turns it into a field of visibility, open for examination, control, monitoring. Confession draws out of invisibility the secrets of desire: the love of sloth, the erotic indulgence of eating “fattening foods,” the pleasures of drinking alcohol, using drugs, smoking. Verbal and written confessions have some effect in rendering the invisible visible, but the most powerful unveiling, because it is indisputable, is the making visible of the inner physiology of the body. Making visible the body’s otherwise less than visible life makes it impossible for the participant to hide, to reconceptualize, to write an alternative narrative of desire. In many ways the participant does not need the results of the test, calculated and compared to norms, to see his his/her body—formerly an event of intimacy, secrecy, hidden, uncoded and unterritorialized desire — rendered visible in the clear light, the territorializing codes of exercise science. For the confessional act alone makes the body a public, clinical,
scientific spectacle. Fat cannot hide from the fat calipers. The lack of exercise cannot hide from the aerobic fitness test. Made so embarrassingly visible, the body is readied for change, even before the results are interpreted.

Crucial to the form of confession constituted by the CSTF is the establishment of the power of the mediator of the confession, the interpreter of the confessed data, which is the power of the Certified Fitness Appraiser. Rouse, explaining Foucault, points out:

“For it is only through this relation to an interpreter that the signs produced acquire the status of a revelation about the true nature, state, or character of their producer.” (Rouse 1987, 219) Foucault clarifies the power of the mediator of confession:

If one had to confess, this was not merely because the person to whom one confessed had the power to forgive, console and direct, but because the work of producing the truth was obliged to pass through this relationship if it was to be scientifically validated. The truth did not reside solely in the subject who, by confessing, would reveal it wholly formed. It was constituted in two stages: present but incomplete, blind to itself, in the one who spoke, it could only reach completion in the one who assimilated and recorded it. It was the latter’s function to verify this obscure truth: the revelation of the confession had to be coupled with the decipherment of what it said. (Foucault 1980a, 66).

In the process of interpretation, the CSTF appraiser deciphers the confession that was extracted from the body in the examination and establishes its power and suasion as truth. So it is to interpretation, the form of its rhetorical power to produce a truth and inspire conversion, that I will now turn.

4.3.3.2 Conversion:

Interestingly, the confession drawn out of the body is meaningless to all but cognoscenti of the science of physical fitness. Measurements which are entered into the computer are rendered meaningful in absolute physiological values in terms of indexes,
ratios, maximum aerobic capacity, degree of flexion and strength. The calculations also present the results as percentiles. In all but the anthropometry measures the percentiles indicate the degree to which the individual participant-reader’s fitness approaches perfection as found in the Canadian population according to the Canada Fitness Survey (1981) which produced a text on the fitness and lifestyles of 22,000 Canadians over 10 years of age — 100% would be the fitness of the most fit Canadians found in the survey; 50% is the average Canadian. In the case of anthropometry percentile indicates deviation from an ideal which is at 50%. It is the task of the appraiser-reader to render these numbers meaningful to the reader in a teleological sense, which is to say made meaningful such that they convince the participant-reader to change his/her way of life, to reconstruct the course of desire.

The question that lies at the heart of this attempt to “motivate” a conversion experience is why would someone believe that the numbers and explanations presented to them on the fitness profile computerized printout, describe the truth of their bodies and suggest a programme for a different way of life? This strikes me as a question of cultural anthropology: how does the particular ritual in which the actors in this narrative participate construct a myth of truth? What, in the CSTF, marks it as a ritual of truth? Why would someone going up and down two steps to the beat of goofy music for five to ten minutes, with a stranger periodically placing a stethoscope on their chest and counting at the command of a voice from the tape recorder believe that that ritual tells them something truthful and important about their body? Having a stranger squeeze one’s fat and apply sharp calipers; doing half sit-ups to the beat of a metronome; squeezing a little
machine with one hand as hard as one can; sitting on the floor and pushing a stick along a ruler is for most people an odd ritual. Given the context of the richness of life in general these actions may even appear trivial. How does the CSTF present itself such that it can turn these strange actions into important, perhaps even life-transforming, truth-producing rituals? How does the text of the CSTF present itself as a moment of truth?

To establish its power of revelation, the test employs three strategies: it credentializes itself, it reproduces the suasive strategies of research science textuality; and it grounds the scientific texts its produces in the individualizing and inescapable form of the confession.

As I pointed out in the Natural Reading of the CSTF, the test at the University of Toronto is fully credentialized. It claims the power to govern the body (in the Foucauldian sense) by describing the body’s truth by the fact that it has the imprint of a number of Governing bodies (in the more usual bureaucratic sense). There is an official gaze at work here. The logic is that trust in the institutions which credentialize the test implies trust in the legitimacy of the test. The test is conducted in an official laboratory of the University of Toronto, in the Department of Athletics and Recreation, in association with the School of Physical and Health Education, which has a disciplinary stream in exercise science. The laboratory is surrounded by other laboratories of the exercise sciences: the motor learning laboratory, the biomechanics laboratory, the lifestyle laboratory. The University of Toronto is a major research institution, and the place in which the CSTF takes place is in the midst of the research laboratories of the University division that deals with the sciences of physical fitness. The participant reader is informed
before arriving at the test that it will be conducted by a Certified Fitness Appraiser.

Predominantly displayed at the site is a certificate of accreditation from the Canadian Society for Exercise Physiology (CSEP), which makes the authority of the testing site clear, and also by association the appraiser. The Par-Q questionnaire that all participants must answer before undertaking the test is clearly marked at the bottom with the copyright of CSEP and makes it clear that the test is "supported by" the Canadian government under the ministry called "Health Canada." (See Appendix 1)

Such credentializing establishes the professional authority of the CSTF. As a professional practice the CSTF produces a closed system of knowledge about the body and health, knowledges and practices that are the proper domain of professional kinesiologists, physical education graduates, and so on. The technical coding of fitness, is a specialized, exclusive language that needs a professional class to interpret and operationalize. That professional, linguistic closure effectively excludes challenges to the paradigm from non-professionals, i.e., participant-readers. The presuppositions are "no longer subject to serious reexamination... and [are] increasingly difficult for outsiders to challenge effectively." (Whitson and MacIntosh 1990, 45) The credentials of the Certified Fitness Appraiser make them official interpreters of an exclusive scientific language. By this credentializing process the CSTF and the Certified Fitness Appraiser are enshrined as experts on the body and fitness, with the power to produce the truth of the same, and like Hermes to render these mysterious revelations meaningful. As Hughes has said of certified professionals:

Not merely do the practitioners, by virtue of gaining admission to the charmed circle of colleagues, individually exercise to do things others do not, but collectively they
presume to tell society what is good and right for the individual and society at large in some aspect of life. Indeed they set the very terms in which people may think about this aspect of life. (Hughes, quoted in Zola, as quoted in [Crawford 1980, 369]).

And Demers has said: “Professionalism can be defined as the pursuit of certain prerogatives granted under the law, notably the exclusive right to perform certain acts. It is a social organization of labour in which the producers of a service have a monopoly, a monopoly that also makes the users of the service dependent on the producers (Demers 1988 p. 163). (See the critique of professionalization in the literature review, pp. 52 ff., and regarding professionalism in health, see pp. 227 ff.)

The placement of the fitness test in this ostentatious display of elected institutional and academic authority—Government of Canada, Canadian Society for Exercise Physiology, University of Toronto and so on—signifies an intimidating power to reveal truth. What is an individual’s experience of the Erotic truth of his or her body, compared to all of that?147

147 It might be argued that most fitness tests do not take place in such impressive surroundings as the University of Toronto, so that the display of authority is not so great. But all CSTF tests do enjoy the same credentials of the test itself, the appraiser and the testing equipment. The immediate authority of the test remains the same. A parallel with the Church, which I have been suggesting is the structural model for the CSTF, may make this clear. The sacrament of confession has the same credentials whether it is dispensed in a little parish church (a local YMCA) or in a great cathedral (the University of Toronto). The spectacle of the cathedral, certainly is more
The power of the test as a ritual of truth production is borne out not only by the credentializing of professionalism and institutional authority, but also by what might be called the scientific aura of the test. The detailed, fussy, careful, scientific manner in which measurements are taken, as well as the seeming accuracy of the equipment that is used for measuring invokes the cultural authority of science. Structuralist literary theorists call this \textit{vraisemblabilisation} or naturalization, in which a text or textual practice is assimilated into ‘commonsense’ notions of reality (Bruyn 1994). Modern people have become accustomed, through the pervasiveness of technological medicine, to having their bodies analyzed by mysterious equipment that is carefully deployed by experts on their bodies. The way in which the careful use of mysterious equipment is deployed in the CSTF associates it with ‘commonsense’ notions of the ability of these machines to tell the truth of the body. The familiarity of machines measuring bodies draws attention to the “conventionality” (Bruyn 1994, 82) of the CSTF textual production and thereby gives the test an acceptable, perhaps for moderns, even traditional aura of the event of truth production. The participant-reader is surrounded by modern scientific instruments of truth. Even if the equipment is not being used its presence gives the setting the aura of the scientific production of truth—this is a place where truth happens. But of course, it is not the instruments that produce scientific truth, but scientific writing. The test’s invocation of scientific textuality is its most powerful claim to being able to produce the truth of the body. To that textuality we shall now turn.

impressive and may be more intimidating; the authority of the sacrament, nevertheless, is understood to be the same.
Just as the CSTF extends the socio-cultural power relations of the research laboratory into the general population by its individualizing, disciplinary and coding practices, so too it extends the manipulative forms that are characteristic of scientific writing from the scholarly world of journals into the everyday world of the general population. (See discussion of scientific textuality above, pp. 111ff) The textual production of research science is meant to compel other scientists who are reading the text that the authors' version of reality is correct, which is to say to convert fellow scientists to a particular version of reality and establish it as truth. As I argued in the theory of science, above, science-writing employs manipulative techniques to force agreement. I will now argue that the textual production of the CSTF also attempts conversion by use of the same manipulative techniques. But it raises the ethico-political stakes considerably. For it takes a manipulative text, passes it off as nothing but an objective representation of the 'natural' body, and uses that representation to code the body and write a script for its future desire. The CSTF attempts to convert participants to the pouvoir government of their desire, by hiding that territorializing project in the disguise of scientific objectivity and social neutrality widely accepted, in what Rouse has called the "received view," as characteristic of scientific texts.

As I have just argued, the testing rituals present themselves as having the power to reveal the truth of the body by appealing to the form of confession, their institutional credentials, and by invoking the aura of science. The ritual depends on the authority of science to reveal truth. The first four order of texts of the CSTF actively invoke the credentials of those who have written them, as part of their ploy for believability. The
Certified Fitness Appraiser and the CSTF itself are credentialized as I have indicated above. The primary second order text (the Operations Manual of the CSTF) invokes its authority on the first page by listing the scientists and Canadian Government officials, including their academic credentials and institutional affiliations, who were responsible for the third edition of the CSTF. But as I argued in the theory of science, "ethos" is not sufficient for persuasion in science. "Seeing is believing." In order to accept a claim in science one must have an empirical experience of the event in which the truth was revealed. In the case of research science, this empirical experience became textually mediated, in the form of journals, since not everyone could be at the experimental event in order to see. Because what is seen in an event is highly debatable, part of scientific truth-claiming is controlling debate so there can be agreement. Controlling debate lies at the heart of research scientific textuality. (See pp.111 ff.) With the development of scientific writing, in order to control debate, and thus ensure consensus on the nature of reality that is produced in scientific research, and thus ensure the continued credibility of science, a host of controlling techniques emerged. (See discussion of scholarly closure above, pp118 ff) But the credibility of science lies in the apparent openness of its episteme: scientific claims are credible only because people believe they have the freedom to disagree with scientific representations. The freedom to disagree, a democratic episteme, is at the core of faith in scientific texts. Where that freedom is curtailed, by less than explicitly visible structures of textual control, faith in the texts is secured under false pretenses. Scientific writing hides its textual control under the guise of simply representing Nature as she appeared in the experiment. Scientific texts, therefore, coopt consent in bad faith—
because the textual environment is so tightly controlled, the actual freedom for dissent is very small. The same controlling techniques, and thus bad faith, I will now argue, are operative in the CSTF.

Believing in the truth claims of the CSTF is structurally much the same as believing in the truth claims of research science. In both, procedures take place, results are recorded, and an interpretation of the results is given. Both produce texts in this process. Both attempt to secure the reader’s agreement on the truthfulness of the texts’ claims on the presumption that the process that produced the claims was transparent; which is to say that the results and interpretation were simple, socio-culturally unfettered representations of the ‘natural’ reality that emerged in the procedure. Yet in both cases the textual discourse is so tightly controlled, and so powerfully produced (in the Foucauldian sense), that simple and unfettered representation of ‘reality’ is impossible. Moreover, in the case of the CSTF, unfettered representation, could well be counterproductive to the aim of the whole enterprise, which is not to freely represent reality(ies), but to change values and behaviour. Both the texts of research science and the CSTF are socio-cultural discourses that attempt to bully the reader into accepting the reality constructed in the text.

Just as Nature is contestable to science (see pp 112ff), so too the nature of the body is contestable to the CSTF. Even within the exercise science paradigm the body’s nature is hotly contested, and there is an enormous agonistic literature on the way that physical exercise, or its lack, effect the body. The most obvious example of this are the two International Consensus Symposia on Physical Activity, Fitness and Health (Bouchard, Shephard, and Stephens 1992). The second conference reviewed thousands of
exercise science texts in order to deal with the many different takes on the body and exercise and reduce the degree of contestation—the very fact that there was a perceived need to produce a consensus attests to the fact of contestation within the exercise sciences.\textsuperscript{148} The imperative to achieve consensus is essential to the credibility of scientific texts. (See pp 108 ff. and 118pp ff)

Similarly, the CSTF deals with contestability about the truth of the participant-reader’s body—to that end it is structurally designed to produce non-contestable texts on the body. The participant-reader may view his or her body as fit/unfit, fat/lean, flexible/inflexible and so on. More importantly, the participant-reader may view the body

\textsuperscript{148} These conferences could be considered the International Olympics of the exercise science world, in that they try to settle on an international scale who is the top competitor. Only those who qualified for the various events were allowed to participate -- they were chosen by number of their publications; the top three to five performers in each field of exercise science (event) were invited as "experts." The biggest winners, were those who eventually published the Consensus: Claude Bouchard, Roy J. Shephard, and Thomas Stephens (Bouchard, Shephard, and Stephens 1992). This is perhaps equivalent to winning the 100m dash at the Olympics. The conference and the system for inviting "experts," as well as the publication of the Consensus document act as a form of closure on what a scientific community considers acceptable parameters for a discussion of physical fitness -- the complete exclusion of socio-cultural analyses, including feminist and anti-racist analyses, being an important case in point.
from a completely different paradigm: as sacred, inviolable, infinite, eternal, pure mystery, the temple of the Holy Spirit, the House of Being, an event of limitless Erotic expression, or some such. They may well not view the body as a resource that needs to be developed and physically capitalized. The test seeks to reduce any difference in opinion between the test results and the participant-reader's own view. It deals with this possible contest of 'truths' with the same persuasive, indeed bullying tactics, that I analyzed in the theory of science. I will follow the analytical format that I used in the theory of scientific textuality, applying it to the CSTF, showing how there are three interrelated elements to its tactics of persuasion: the use of rhetoric to compel the participant-reader to agree, a textual closure that limits the participant-reader's perception and reasoning and a concealment of the social nature of the text such that it appears as a non-social, transparent representation of the body, in short, innocent of any cultural 'interference.' (See pp 111ff)

Research science texts engage in the rhetoric of "virtual witnessing." The reader is compelled to believe the text because it describes the events of the experiment in sufficient detail that there is a sense of verisimilitude. This gives the reader the impression that s/he has seen enough to be free to give or withhold consent as to the account of what happened in the experiment. This, I argued in the theory of science, is a ruse; for in fact, the text works strategically to compel the reader to see the experiment precisely as the writer of the text saw it and conceptualized it. Now, the participant-reader of the CSTF would seem to be in a better position than the reader of a research text for witnessing and withholding or giving consent, for s/he was actually at the 'experiment', saw what happened and saw the data being inscribed, both on paper and as it was inputted to the
computer which does the calculations and prints the results. This has the rhetorical power of giving the participant-reader the feeling of being able to determine whether the test was actually recording the reality of his/her body.

To give the participant-reader an opportunity to “witness” their own assessment, s/he is presented with a printed text that presents thirty-four numbers that describe his/her body, sixteen of them are results, eight of those being absolute values, and the other eight being percentiles; the other eighteen are the measurements that produced the absolute results. Participant-readers are thus presented with the numerical measurements that were taken from their bodies and which were inputted into the computer, as well as with the results that were outputted from the computer. Participant-readers have been given the opportunity to witness the measurements being taken, inputted and the results produced. The rhetorical appeal here is that nothing has passed their gaze, except the very dull, and surely uncontroversial business of calculating the results, a task so mundane that it given to the computer. But the results are not a simple refiguring of measurements. The measurements were filtered through complex calculations, calculations which actually crystallize all the exercise science that has come to bear upon the CSTF. The calculations render the body meaningful as physical capital. A series of skinfold measurements, for instance, are purely abstract, meaningless quantities until they are transfigured as assessments of the body’s efficiency in terms of fat/lean ratios, fat distribution and so on as these reflect the body’s capacity to use its resources to produce physical energy and to efficiently avoid death—higher concentrations of fat in the abdominal region is associated with greater chance of mortality (Canadian Association of Sport Sciences 1987a, 20).
The calculations, therefore, are very important for coding and thus assessing the body as a resource.

The participant-reader is not privy to the calculations and the academic, institutional and disciplinary cultures upon which they are founded, cultures that deal with the body paradigmatically as physical capital. The calculations were done by a computer, which effectively “black boxes” the technical and socio-cultural complexities that lie behind them. Latour and Woolgar explain black-boxing as a technique that hides complexities so thoroughly that it becomes impossible for the reader to appreciate the complexities and exercise doubt: “The word black box is used by cyberneticians whenever a piece of machinery or a set of commands is too complex. In its place they draw a little black box about which they need to know nothing but its input and output.” (Latour 1987, 2-3) The only thing the CSTF participant-reader (and the appraiser-reader, for that matter) need to be concerned about is input and output; the calculations and the entire field of science upon which they are based, and the political and cultural priorities that developed that science, are unimportant. “That is, no matter how controversial their history, how complex their inner workings, how large the commercial, [institutional] or academic networks that hold them in place, only their input and output count.” (Latour 1987, 3) In that black box the participant-reader’s puissance (albeit poorly rendered in the disciplinary techniques of its measurement) is fully translated into pouvoir, its value as physical capital. And the participant-reader did not see it happen. In fact, because it was done by a computer, it is regarded as a simple, mundane and technical process, not worthy of questioning. The essence of human being as puissance is reworked as pouvoir in the
form of physical capital values of fitness, and it is rhetorically passed off as mere matter of mechanical calculation! This crucial process is black boxed in the computer, rendered insignificant. The transfiguration of human essence as pouvoir, slips past in the rhetoric of mere technicality. A brilliant rhetorical maneuver, really.

For any participant reader to unpack this black box is virtually impossible. There is nothing in the computer printouts to explain what happened in the black box, what sources were used in the creation of the computer programme, what is the historical development of the science that lay behind it, let alone the philosophy of being, life, the body and so on. The appraiser-readers use the computer programme, but have no way of tracing the path of calculations through the computer, on the behalf of a dubious participant-reader. For both readers, it is an hermetically sealed black-box. In fact only a historian of science and technology would be able to unpack this black box; because there is no textual reference trail to follow, unpacking the box would mean conducting interviews with those who engineered the box, going through their papers and trying to reconstruct the process. This is not something that anyone doing the CSTF would do. But the rhetoric of virtual witnessing does not require that one do that sort of investigation anyway. The contents of the black box are presented as nothing more than mere technical details of calculation and therefore acceptable as virtually witnessed.

Moreover, the computer black box is impenetrable. The reader accepts the results by faith in the merely technical nature of the box. But since the box actually accomplishes a powerful transformation of human essence, as I have just suggested, it is a misled and, as I will argue later, dangerous leap of faith.
The CSTF is not always conducted with the aid of a computer. The calculations can be done manually with the aid of charts that are supplied in the CSTF Operations Manual, and appraisers are taught how to do the calculations manually. The seal on this black box is not as tight as that of the computers. There are some general references provided in a table of references, although only one of them (Jetté et al. 1976) refers directly to any specific aspect of the CSTF. Which is not to say that there is no connection between the CSTF and the scientific literature upon which it is supposed to be based — a historical study could reconstruct the process by which the texts of exercise science became operationalized through the expert committees that designed the CSTF. The point in this argument about the virtual witnessing rhetoric of CSTF in the process of converting participant-readers is that there is no need to account for the process of calculation in the CSTF. The accountability can be black boxed in a general lack of referencing by virtue of the fact that it is rhetorically understood to be merely a technical matter, in the same way it is in the computerized application. However, as a technical matter it matters a great deal to the scientists who have been involved in the design of the test, and there has been much controversy in that community over the measuring and calculating techniques and there is an entire subspecialty in exercise science on the science of physical fitness testing (Bouchard, Shephard, and Stephens 1992).\textsuperscript{149} But in the rhetoric

\textsuperscript{149} Although it should be noted that this scientific literature on fitness testing takes no account of the socio-cultural issues of power, science and the body that I am developing here. There is nothing in any part of that scientific subspecialty that is in any way critical of its fundamental resourceful paradigm of the body.
of the test, it is merely a technical matter and controversies have been black boxed so as not to interfere with the point of the test, which is to give participants a conversion experience. Moreover, the crucial issue here is not questions of accuracy in calculating physical fitness; it is the question of the coding of the body as physical capital under the government of pouvoir. That issue is entirely black-boxed by the calculating process. This allows the participant-reader to virtually witness the coding of their essence as physical capital, without actually seeing it, and without even being aware of it as an issue.

A summary of the rhetoric of the CSTF so far: The first rhetorical point of the test is the credentialized authority (*ethos*) of the appraiser and the test. Imitating the rhetoric of scientific textuality the CSTF also uses the rhetoric of virtual witnessing. A participant-reader can without too much effort reject the authority of those who claim it—many do this in regard to the claims of the biomedical model on its monopoly on forms of health care and choose alternative forms. It is more difficult, however, to reject the coy rhetoric of the virtual witnessing that takes place in the presentation of the technical measurements and calculations. The presence of the numbers says to the participant-reader: “you may not believe me, the fitness appraiser, and the authority that I represent. So here are the numbers that allow you to ‘see for yourself.’” This, of course, is the rhetoric of the natural view of the body, a view that black boxes the most important controversies about the nature of the body in the dynamics of puissance and pouvoir, reducing the potentially penetrating phenomenon of “seeing” the body as it is socially and culturally constructed to merely recognizing the codes of pouvoir in the assessment of physical capital. All of this is hidden in the deceit of mere technical representation.
The rhetoric of the CSTF is essentially a rhetoric of closure, disguised as an open episteme: see for yourself. In this regard it follows the structural closure that Bazerman has shown is fundamental to the writing of scientific texts (See pp118ff): virtual witnessing, the structural and logical subordination of all accounts to a central claim or series of claims, and the exclusion of other ways of thinking (Bazerman 1988, p. 126). I have already spoken of the rhetoric of closure in virtual witnessing. The CSTF subordinates all accounts of physical fitness to the five components of fitness: body composition, aerobic fitness, muscular strength, flexibility, and muscular endurance. The entire test, all claims about the fitness of the body, and every part of the exercise prescription are structured around these five components, and assessment of the physical capital value and potential for capital development. Social and psychological issues, which are addressed in the counselling aspect of the CSTF are subordinate to the five components—they are treated as aids or hindrances to the resourcing of physical capital. This is structurally the case, as the test collects data only around its central claim about fitness as having five biophysical components. It is logically the case as all other aspects of human life are seen to be ancillary, although either helpful or detrimental, to the central biophysical construction of the body/desire as a physical capital resource.

The pursuit of pleasure, for instance, is conceptualized as useful, yet clearly secondary, to developing the body's resources: the appraiser tries to determine those activities the participant-reader finds pleasurable that will contribute to the components of fitness the test has deemed as being in need of improvement. Pleasure has no intrinsic value, only as an aid to physical capital development.
The CSTF excludes alternative accounts of the body/desire. As I argued above, the body of the CSTF is produced under a disciplinary regime as an individual and a resource and the reality recorded in the process was highly selective, looking only for signs that fit the paradigmatic (pouvoir) codes of the test. Information that does not fit the codes is not recorded. Most importantly, information that could undermine the codes is left out. Indeed nothing of the body’s puissance, its Erotic reality, the power of the BwO to deterritorialize its territorializaton is recorded. As Deleuze and Guattari point out—this recording of data is like the recording of a (digital) record that records only what the record company wants.

Take for example the fat that was recorded by the skinfold tests. The test measures for adiposity in order to determine how functional the body/fat ratio is in accordance with population norms — determined by cadaver studies—as an epidemiological-based predictor of potential morbidity. The test does not record that the fatty “love handles” (skinfold measurement at the iliac crest) could be much cherished by the participant-reader’s lover as a site of Erotic play, and that just the night before they were intensely engaged in such play, dramatically deepening both the participant-reader’s appreciation for Erotic meaning of being and profound connectedness to another person. The love handle may have been for one glorious moment a site for the deconstruction of individual difference and transgression of territorializing norms of human sexual behaviour. Nor does the test record the possibility that the participant-reader may fondly appreciate the fatty “love-handles” not only as a sign of increasing age, but as the embodiment of his/her acceptance, or perhaps even appreciation for the feeling of growing
older, bodily, which is to say in the logos of Eros. This is not an insignificant point: for the test does not record anything that could challenge its resourceful paradigm of the body. Indeed it hides any questions of its disciplinary, individualizing, territorializing, resourcing paradigm. There is nothing in the structure of the test or in any part of its textual production that says: This is one narrative of the body among many possible narratives, many of which you could write yourself, and some of which might completely undermine the presuppositions and priorities of this test. To believe what is inscribed in this narrative you need to weigh the issues of the nature of your body and your deepest sense of life, its meaning, and your own modalities of desire. Only by appreciating these controversies are you in a position to accept that you have witnessed a faithful record of your body in this test.

On the contrary, the test avoids such controversies entirely. By not engaging controversies about the meaning of the body, the test engages in a rhetoric of omission. Leaving confounding issues out of the textual production puts rhetorical pressure on the participant-reader to believe that s/he has seen a faithful recording.

Part of the black-boxing rhetoric is not saying anything about the nature of the knowledge of the body that is being offered. For instance when one signs up for a physical fitness assessment, one is given the impression that there is nothing contentious about the knowledge one will gain; certainly there is nothing to suggest that the test and the knowledge it produces are political. People are promised simple facts about their bodies. For example the DAR Guide for Spring and Summer 1995 advertises its fitness test and consultation as follows: "Are you just starting your fitness program or are you
curious about your fitness level? You can learn more about your current fitness level with a fitness test. Your aerobic fitness, muscular strength and endurance, flexibility and body composition.” Here is the promise of a completely uncontroversial revelation of truth of the body.

There is more to this than the rhetorical power of leaving out controversial issues. In the print-out the intrinsic meaning of the body is appropriated by the extrinsic meaning structure of resourcefulness. In this process of inscription there is a symbolic undoing of the meaning power of puissance and the insinuation of the meaning power of pouvoir. The body is here treated with the grandeur of having a text written about it, but this is far from a valorization. Foucault says: “The turning of real lives into writing is no longer a procedure of heroicization; it functions as a procedure of objectification and subjection.” (Foucault 1979, 192) This occurs in what Bourdieu has called “symbolic violence,” which he says “manages to impose meanings and to impose them as legitimate by concealing the power relations which are the basis of its force” (Bourdieu and Passeron 1990 p 4). The CSTF commits this violence by concealing not only the power (pouvoir) that is at work in the production of the body itself -- a power that is resident both in the specifics of the test and as the organizing principle of the body in modernity—but also by hiding its own rhetorical formation of a salvific narrative text, that extracts a confession from the body, refigures its essence and attempts to write its future.

Bazerman points out that an important part of the control of knowledge production is the inclusion or exclusion of discourse, the determination of what constitutes legitimate discourse within a scientific community. This happens paradigmatically—only
those who share a particular paradigm are included in the particular scientific discourse. Shapin and Schaffer also discuss this, pointing out that the Royal Society was restricted to like-minded people who were willing to agree on the parameters of the debate. Similarly, the CSTF is produced in an exclusionary fashion: the only discourses that contribute to the creation and maintenance of the CSTF are those that share the paradigm of the body I described above. Alternative paradigms exist only as shadow texts to the first four orders of texts. This exclusion is manifest in the complete absence from the first four orders of texts of any of the critical literature or perspectives I have been discussing in this thesis.

In reviewing the references for the CSTF, I found no evidence of the philosophical, ideological and political critiques of physical fitness and the science of physical fitness that I examined in my literature review. The addition of the Interpretation and Counselling Manual to the CSTF in 1987 could seen as an attempt to broaden the perspective of the test beyond the merely physiological by including behavioural perspectives. But none of the behavioural references in the Interpretation and Counselling Manual make any reference to the critical literature I have cited. The Canadian Society for Exercise Physiology was originally a multi-disciplinary learned society—it was when the CSTF 3rd edition was published—yet the only scholarly discourse that forms part of its scholarly background, as evidenced by references and the acknowledgements of contributors, is exercise science, narrowly defined in the biophysical sense, as well as a modest contribution from uncritical behavioural psychology. Given that the third edition of the test was designed in the mid 1980s and much of the critique that I mentioned has been published from the mid 1980s to the present, it could be argued that the science of
physical fitness since then has taken these critiques into account. I looked at all the references in *Proceedings* of the Second International Consensus Symposium on Physical Activity, Fitness and Health (Bouchard, Shephard, and Stephens 1992) and found no reference to this literature. The National Association for Physical Education in Higher Education publishes a well-known physical education journal, *Quest*, which publishes multidisciplinary research on physical education, much of it critical—I published an article on technology and the objectification of the body in physical education in the journal (Pronger 1995b). Every year the American Academy of Kinesiology and Physical Education publishes the most important proceedings of their annual conference in *Quest*, volume 47, no. 3 was devoted to *The Role of Physical Activity in Fitness and Health*, and none of the articles refer to the critical literature I have reviewed. That literature exists entirely in the shadow of biophysical science of physical fitness, and the Canadian Society for Exercise Physiology’s test of physical fitness, the CSTF. The relegation of these critiques to the fifth order of texts, minimizes dissent and makes it possible for there to be a scientific consensus on physical fitness that does not take into account the power that science exercises through the body.

Crucial to the power of the CSTF to accomplish symbolic violence is the establishment of authorial voice. Of course, one technique for creating a domineering voice is to simply completely silence the reader. This is what most books and flyers on health and fitness do. The reader has no power to affect the text, and must simply receive or reject its message. The CSTF uses a much more manipulative technique than that. It extracts confessions from the participant-reader, so that the reader is led to believe that
the s/he has in an important way written the text him/herself, with his/her own body. The
truth that appears in the test is the truth of the participant, “told” by him/her. Here, then,
is the appearance of the participant as one who participates in the authorship of the text on
his/her body. In actuality, however, authorship is entirely by the CSTF: It disciplined the
body to appear on its own terms, coded the body according to its own paradigm, and
black boxed the process of translation of essences. As puissance, the participant-reader
has been entirely negated, symbolically erased from the text of the CSTF. The CSTF
produces a text of pure pouvoir. This is the truth the participant reader is bid to accept in
the process of conversion. The supreme authorial power lies in hiding it all, so the
participant is lead to believe s/he has just seen him/herself. The point of this violence is
the hegemonization of the dominant cultural way of dealing with the body and desire,
which is to appropriate it, terrorize it, make it useful, by coding, channelling and damping
up the flows of desire. The tragedy is that this territorializing of the body is so familiar to
us, in so many walks of life, that we barely it notice it happening in something as
seemingly helpful as a fitness test.

The CSTF pretends to simply tell the truth of a body and suggest action. When in
fact it engages in a complex, manipulative textual production that makes the body confess,
refigures that confession in the codes of individualistic physical capital production, and
prescribes a new life of subjected desire. To which I shall now turn. The appraiser-reader
translates the appraisal results, as quantitative assessments of physical capital, into
meaningful action in terms of plans for a new life. This translation process, is called
counselling by the Interpretation and Counseling Manual.
4.3.3.3 The New Life

The examination/confession is a technique of power that produces the body under the government of pouvoir as an individual, resourceful object that emits signs of itself as such. The interpretation/conversion renders that resourceful objectivity meaningful in the abstract values of physical capital. The counseling/New Life stage of the test gives the abstract capital values practical meaning by pre-scribing a disciplined way of life, which is a production of desire geared to increasing capital value. The telos of this productive process is the purchase of salvation, which I will discuss in the conclusion. In this section I will examine the techniques used by the CSTF to prescribe the New Life.

The central theme in my analysis of the CSTF has dealt with its productive power, the power of the CSTF to bring the body to presence under pouvoir. This, I have argued, is an extension of the culture of pouvoir which is operative in the research laboratories of exercise science, out and into everyday life. I have also argued that the paradigms of the body/desire that are at work in exercise science reproduce the dominant culture of the body in modernity: the body brought to presence as a resource. The counseling element of the CSTF writes a script for the future development of the body as a capital resource. It sets out to accomplish this task by extending the exercise science paradigm of the body into the day to day life of the participant. Since the operative paradigm of the body of exercise science crystallizes a wider cultural disposition towards the body, indeed the dominant modern disposition toward being itself, the CSTF is not a creative invention. In
this respect there is no "aura" to the prescription of the CSTF, as Benjamin (1935) would say. It is a more or less mechanical reproduction of a paradigm of the body, a form of power, that is already circulating in modern culture. But it is not a simple reprint of a picture that already exists. It is a reproduction of pouvoir that attempts to achieve an ever greater "resolution" of its power (Foucault 1980b, 151-2) by inscribing a precise narrative for the production of future desire in particular bodies. Pouvoir achieves greater resolution by pre-scribing a "lifestyle" dedicated to physical capital development. (See discussion of "resolution," p. 281, above). There is an interesting cultural replay here. A broad cultural discourse of the body (pouvoir) which 'originally' is haphazardly circulating in modern capitalist culture, is reproduced in a highly controlled fashion in the research laboratory, reproduced again in the examination procedures of the CSTF, and then replayed (back) in the "lifestyle" prescriptions of the CSTF, giving the 'original' discourse of pouvoir greater "resolution" in the wider culture.

Of course, day to day life cannot be produced with precisely the same control as that which is exercised in the laboratory. In the research laboratory and the CSTF there are scientists or appraisers, procedures and equipment, inscription devices and concrete texts produced, all of which control and record every movement of the body so that it is

150 There is little variation in prescriptions for different participants. Any differences are merely differences of emphasis, for example, more emphasis on strength than on flexibility. The capital resource paradigm is the same for everyone. Indeed, the prescription aims at getting everyone to live the same kind of life, to produce desire along the same lines!
produced as resourcefully as possible. Power, there, is still operative externally. The body is marshaled as an object by an external subject (exercise scientist/appraiser). The trick of counseling is to extend the control that marshals the body as a capital resource in the CSTF into day to day life of individual, ostensibly self-determining, human subjects over whom there is little if any external control in terms of resourceful fitness. It does that by writing a narrative of the New Life which it calls a "lifestyle." In the examination/confession the power of pouvoir is momentary -- the body is free to do as it wishes once it has performed its tasks. Counseling attempts to "tight-couple" (Rouse 1987, 230) that moment of pouvoir by extending it beyond the limited spatio-temporal confines of the CSTF in the form of an "active lifestyle."

In "Science and Reflection" Heidegger speaks of a way of life that is geared not to dwelling upon and beholding the essence of being, a way which I have characterized as Erotic. He calls this other way of life the bios praktikos, "the way of life that is dedicated to action and productivity." (Heidegger 1953, 165). The essence of lifestyle for the CSTF is to bring to presence human being by actions that focus upon and increase its productivity as physical capital. Counseling translates into action the abstract values of physical capital that the participant was forced to accept as the truth of his or her body as part of the rhetoric of conversion. For instance the "Infostat" says the following about the Sum of Skinfolds values:

The sum of skinfolds is the total of five skinfold measures in millimeters. As body fat increases, so does the deposit of fat underneath the skin's [sic] surface. Reducing caloric intake through proper dieting and/or increasing caloric expenditure by increasing physical activity will reduce this measure over time. This so called 'negative caloric balance' is necessary if fat content of the body is to be reduced. To preserve lean body tissue, exercise should be part of almost every
weight reduction program. If weight reduction is indicated, a gradual reduction is recommended of about a pound to a pound and a half per week. A pound of fat is approximately 3500 Calories. (See Appendix 4)

This is a way of life that compels the body to move as an individual functional object that can increase its value. The New Life is a practical, functional, productive lifestyle, the bios praktikos. Counseling produces texts that are scripts for the embodiment of the bios praktikos. In this process the participant is counseled on how to read his/her body as a practical text and project, and how to discipline it accordingly.

The overwhelming rhetorical ambition of the CSTF prescription is to convince the reader to reproduce his/her body as a text in the future. But this is not just any old text: it must be reproduced along specific narrative lines of capital development. This is not just a matter of re-presentation. Here there is an appeal not just to interpret the body textually, as though there were many other equally important, valuable, or authentic interpretations. It is a matter of embarking on a textual presentation of the body such that the body comes to be a living narrative of capital accumulation. This is the embodiment of scientific texts. It is a textual strategy for the production of the Bio-power.

This prescriptive writing of a "lifestyle" is a textual attempt to "make people up" by charting a disciplinary course for desire. The main technique involved here is panopticism (Foucault 1979, 195-230). Panopticism is a disciplinary technology that attempts to determine the essence of the body in the fundamental dynamics of puissance and pouvoir, scripting and monitoring how the body moves, how desire should be. In the following, I will briefly describe Foucault's analysis of modern power as panoptic. I will then describe the panoptics of the CSTF.
Through much of his work, Foucault has argued that modern coercive power is diffuse. No longer dependent on the concentrated great spectacles of power — such as public executions — modern power is exercised everywhere. The population cooperates extensively in the exercise of this power. In *Discipline and Punish* Foucault analyzes power as discipline which operates on people’s bodies by making them docile, training them and overseeing them in a system he calls panoptics. The architectural archetype for this power was Jeremy Bentham’s panopticon, which was a design for a prison which gave the prisoners the impression that they could be always be observed, but unable to detect at which times they were being observed. The disciplinary logic here was that they had to behave as if they were being watched all the time, even if they were not. He meant that the prisoners observed themselves on behalf of the prison. There was little need for jailers, since the prisoners themselves performed that function.

The panoptic form is not just architectural. It has become a social structure that has architectural manifestations, such as the prison, but which extends to many parts of life; it is a concept of control by surveillance in everyday life. It is a concept about surveillance by viewing, seeing, being aware of the constant possibility of being seen, and therefore disciplining oneself according to such seeing. It is a very cost efficient system, that needs little in the way of a police force. Foucault says "there is no need for arms, physical violence, material constraints. Just a gaze. An inspecting gaze, a gaze which each individual under its weight will end by interiorising to the point that he is his own overseer, each individual thus exercising this surveillance over, and against himself." (Foucault 1980b, 155).
That is the quest of CSTF counselling, to get the participant-reader to interiorize the same physical capital appraising gaze that s/he experienced in the examination, to come to watch over his/her life at all times ensuring that it is always unfolding in the accumulation of physical capital. The participant-reader is counselled on how to watch over his/her body, and to write its future by observing its physical capital accumulations.

The body becomes visible to the participant-reader as capital. Foucault says:

he who is subjected to a field of visibility, and who knows it, assumes responsibility for the constraints of power; he makes them play spontaneously upon himself; he inscribes in himself the power relation in which he simultaneously plays both roles; he become the principle of his own subjection. By this very fact, the external power may throw off its physical weight; it tends to the non-corporal; and, the more it approaches this limit, the more constant, profound and permanent are its effects: it is a perpetual victory that avoids any physical confrontation and which is always decided in advance."(Foucault 1979, 202-3)

When power is effectively internalized, there is no confrontation with an other who is forcing one to do their bidding. Revolt becomes difficult because the oppressor can't be seen. For this reason, panoptics brings a very low political cost to the "regime."

Mark Taylor (1990, 31ff) says that the logic or reason of the panopticon is that of a deadline. In the spatial configurations of prisons, these deadlines are the physical boundaries that prisoners cross only at the risk of being shot. Temporally, deadlines are time limits, such as the time by which a debt must be paid or an assignment, such as a doctoral dissertation, must be submitted. Crossing a deadline can have serious consequences. Those who are aware of their deadlines and fearful of the consequences of not "making" them will organize their lives, their desires, their work in such a way that the deadline is not crossed. Like the panoptic jailer, the deadline operates in its own
absence. "The deadline is a THRESHOLD -- an irreducible threshold that is never present as such. To cross the threshold is to run the risk of being shot -- shot dead." (Taylor 1990, 31) Deadlines lurk in the presence of their absence as the threshold that must be avoided.

Prescriptive narratives, such as that of the CSTF work with the logic of deadlines, thresholds which desire should not cross. The counselling of the CSTF produces texts about thresholds that institute panoptic logic for desire. There are a number of thresholds that the CSTF narrative tries to institute. The most deadly among them is the threat of early death that might come from failing to produce enough physical capital to waylay the inevitable. Not as deadly, but certainly a threshold one is encouraged not to cross, is the onset of disease, that comes from poor physical capital accumulation. Both death and disease are made present by their absence, thus threatening the participant. These deadlines are called "health risks." "Health risks" become the absent panoptic jailer that keeps desire in check. The narrative line here is that health risk is the road not to be taken. The road thus to be taken is one of accumulating physical capital by increasing exercise, for increased cardiovascular function, and perfecting body composition. With the absent deadline of health risk looming, the participant is given a text that prescribes a discipline for the production of desire: by diet, exercise and monitoring.

The health risk deadline perpetually threatens that its absence will become present if desire does not continue to unfold according to the prescription. For instance, when a participant's appraisal shows that there is no health risk for a particular component, say, body composition, they are told: "You are in no health risk with this score. It is
important that your body composition not be allowed to shift toward being overfat as you age. A program of exercise and proper diet should be maintained." (See appendix 4)\textsuperscript{151}

Another panoptic structure in this narrative of the New Life involves normality. The imperative to be normal creates a very strange panoptic structure: it is a policing of desire that in some respects calls upon the participant-reader to maintain or return to a certain normality or status quo, and on the other hand to strive for excellence and leave behind the mediocrity of the normal. Hacking has described the historical development of these two ideas of normality in the work of Durkheim and Galton:

On the one hand there is the thought that the normal is what is right, so that talk of the normal is a splendid way of preserving or returning to the status quo. That's 'Durkheim'. On the other hand is the idea that the normal is only average, and so is something to be improved upon. That's 'Galton'. Durkheim called deviation from the norm pathology, while Galton saw excellence at one extreme of the Normal distribution.... The tension in these aspects of the normal will not dissolve just by noting that there are two ideas, one of preservation, one of amelioration. The former carries within it fondness for origins, youthful good health, an ideal condition to which we should be restored. The latter lusts after teleology, of ends that we may choose for the perfection of ourselves or of our race.(Hacking 1990, 168-9)

The CSTF employs both these senses of normality to police the desire of the participant. Regarding body composition, the participant is encouraged to restore the ideal ratio of fat and lean by striving through exercise and diet for the 50th percentile. With the other parameters of fitness (aerobics, strength, flexibility and endurance) the participant is located in a distribution of the Canadian population. Here the imperative is to strive towards ranks of excellence. Foucault says that "discipline is an art of rank, a technique

\textsuperscript{151} There is a monetary capital parallel to this discourse on physical capital accumulation:

"You may have money now, but you better save for emergencies and your old age."
for the transformation of arrangements. It individualizes bodies by a location that does
not give them a fixed position, but distributes them and circulates them in a network of
relations." (Foucault 1979, 146) The percentiles of the CSTF serve this important
disciplinary function: No matter where one is in the distribution one can always strive to
be better, to improve one's rank. Those who are sub-normal should at least strive to be
normal; those who are normal should strive to be excellent; and those who are excellent
should strive to be even better. Hence someone who scores highly is "congratulated on
your progress." And are then told how to further their score, to achieve even greater
physical capital. Both senses of normality are panoptic structures that are deployed to get
the participant to produce his/her desire more 'perfectly.' (See Appendix 4)

Even if at the moment of the test, one is in perfect condition, the 50th percentile
for body composition and the 100th percentile for the other parameters, one cannot rest.
For age itself is a "health risk" that one must work against by exercise and diet. Careful
discipline will help even perfect people. Foucault says: "For the disciplined man, as for
the true believer, no detail is unimportant, but not so much for the meaning that it conceals
within it as for the hold it provides for the power that wishes to seize it." (Foucault 1979,
140) Moreover, "there is not a single moment of life from which one cannot extract
forces, providing one knows how to differentiate it and combine it with others." (Foucault
1979, 165) And indeed, the CSTF counselling offers not only panoptic ways (deadlines,
normality) for the participant-reader to think of him or herself in order to marshall the
body's physical capital, it also offers monitoring practices to aid in the production of the
same.
Pariticipant-readers are told to monitor their exercise according to the FITT principle: the frequency, intensity, time and type of the exercise. (See John Jogalong's "Action Plan Worksheet" in Appendix 10) (See also discussion p. 255 above) The FITT principle is the core of the prescription, specifying when, with what intensity, for what duration and how puissance is to be marshalled in the service of capital accumulation. It is a disciplinary control of activity in the Foucauldian sense. The first aspect of this is establishing a time table, (Foucault 1979, 149-51), which is the frequency of the prescribed exercise. The point being: "Time measured and paid must also be a time without impurities or defects; a time of good quality, throughout which the body is constantly applied to its exercise. Precision and application are, with regularity, the fundamental virtues of disciplinary time." (Foucault 1979, 151) The body's time is also segmented into larger temporal configurations for the maximizing use of time over time, as it were: the Action Plan Worksheet inscribes this as the "time frame" the number of weeks or months allotted to fulfilling goals. The point here is to extract the body's resources over the long term, which because the training effect is cumulative, is necessary if any meaningful physical capital is to be accumulated. Intensity, type and time of the exercise constitute what Foucault calls the "temporal elaboration of the act." Within the exercise regimen, the body's time must not be permitted to break out on its own, to be inefficient. The ITT of the FITT principle ensures that the maximal resources are developed. The ITT is calculated to ensure that just the right amount of work is performed. Intensity here is rational matter. It is not prescribed as a deterritorializing plateau, as Deleuze and Guattari speak of the liberating power of (Erotic) intensities
(Deleuze and Guattari 1987b, 149-66). The intensity must not be so great that it might undermine the (territorializing) capital project -- for instance, someone running very fast for four minutes may experience profound Erotic intensity, but if they are completely tired by that activity so that they can not run longer and achieve the training effect, their energy, their puissance, their time has been wasted. The ITT maximizes the body’s resourcefulness.

Foucault says that this sort of discipline:

poses the principle of a theoretical ever-growing use of time: exhaustion rather than use; it is a question of extracting, from time, ever more available moments and, from each moment, ever more useful forces. This means that one must seek to intensify the use of the slightest moment, as if time, in its very fragmentation, were inexhaustible or as if, at least by an ever more detailed internal arrangement, one could tend towards an ideal point at which one maintained maximum speed and maximum efficiency. (Foucault 1979, 154)

The participant is instructed to monitor his/her FITT by using clocks and palpating their pulse to make sure that the heart is beating at the most resourceful pace. (In aerobics classes, this is a formal part of the structure). The appraiser teaches the participant how to palpate the pulse so that s/he can monitor the production of puissance as pouvoir correctly.

The participant also monitors the accumulation of capital by agreeing with the appraiser on "success indicators." For John Jogalong those are inscribed as: completion of a 10 km run, reduction of weight to desired level, and improvement of trunk flexion. Success indicators are easily accessible appraisals of the participant’s success in adhering to the disciplines of the New Life, and serve as informal indicators of physical capital accumulation. To encourage continued monitoring the participant is asked to schedule another CSTF appraisal. The CSTF at the DAR encourages participant-readers to return
for a retest (the initial text is $35; the retest is $30). This gives encouragement to participants to make sure they maintain their discipline — indeed as Foucault points out part of the control of an activity is the proper organization of the geneses, i.e. correct pedagogical sequencing, one of the elements of which is the punctuation of segments with regular examinations. (Foucault 1979, 158) The retest is such a punctuation meant to keep the resourceful discipline of puissance on course.

The participant is also counselled to use confession as a continued disciplinary technique. For example; recording and charting body weight on a weekly basis, keeping a diary on what, when, where, why, with whom and how one eats food, and keeping a diary of physical activities performed. The CSTF Interpretation and Counselling Manual even includes a "Self-Contract" to be signed by the appraiser and the participant as a pseudo legal document to enforce the disciplinary regime on the participant.

Summary of the deconstructive reading of the CSTF.

In contrast to the naturalistic reading of the CSTF, a deconstructive reading shows that the CSTF is not a politically neutral representation of the body's natural "fitness" and suggestions for enhancing the same. The science of physical fitness and the CSTF are practical textual discourses that produce the power of pouvoir in the body. The overall structure of the CSTF is a narrative of salvation through confession (examination), conversion (interpretation) and the New Life (counselling/prescription). In the confession

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152 Commercial diaries that help one keep track of these things are readily available. Runners' World magazine publishes one every year.
the body is disciplined to move as an individual resource that emits signs of itself only as such. In the conversion, those signs are translated into codes of physical capital value and the participant-reader is subjected to a variety of authoritarian and manipulative techniques that attempt to get him/her to accept the results of the test as a revelation of the truth of his or her body as a capital resource. The text of the New Life develops disciplinary strategies for the production of desire as a capital resource. The overall structure here is the resourcing of puissance as pouvoir.

There is an important relationship between the CSTF, exercise science and the modern government of the body. The science of physical fitness gives greater resolution to the wider discourse of the body as pouvoir in the research laboratory. The CSTF is a textual extension of that highly resolved power out of the laboratory and into the wider population via a forcefully productive narrative for salvation. In the next, concluding, chapter, I will consider the nature of this salvation, and alternative forms of physical education.
5.1 Critique

The CSTF and the exercise science of which it is an extension are technological enterprises. They are modes of revealing the body, of bringing it to presence as a resource. The point of this resourcing of the body is to make it ever more productive, and efficiently functional so that it is more fully useful. Developing the use-value of puissance as pouvoir is the point of this technology. The wonder, the ecstasy, the intrinsic value of puissance is entirely irrelevant. The power of the "pre-personal field" of essential connectedness is replaced with the pouvoir of individualism. There is but one imperative: to increase the physical capital value of the individual body by developing physical fitness. The New Life scripts the instrumental rationale for maximizing the body's capital potential. Accumulated physical capital purchases salvation in various forms. In the following, I will briefly describe the forms of salvation that physical capital development is supposed to purchase — this will draw substantially on the literature I reviewed in the first chapter. My point here is not so much to embellish those themes, which have been well developed by others, but to illustrate how the exercise technology of the CSTF and exercise science serve larger socio-cultural discourses that use the body as a resource. Keep in mind that the genius of this technology is its ability to capture the wild, spontaneous, Erotic power of the BwO, by territorializing the same in the process of confession, conversion and the disciplines of the New Life. Granted there are many other
ways of making the body available to social discourse — the CSTF and exercise science, however, are among the most scientific.

The scientific capital resourcing of puissance is instrumental to many of the socio-cultural projects that the critical literature of FBPE has addressed. Foremost among these, perhaps, is individualism. I have shown that the capital resource development of the CSTF, deals exclusively with the production of the body as an individual capital resource. The individualism of physical fitness, especially in work-place fitness programmes (which often revolve around fitness testing as a main 'motivational tool') encourages employees to develop their bodies as more productive capital resources, by increased productivity, lower absenteeism and more placid dispositions (Shephard 1986a; Shephard 1986b). By transferring "responsibility" for health from the state to the individual it saves the welfare state from having to care for its citizens. (Stein 1982). "Saving" the welfare state money has been a major impetus for the dominant lifestyle improvement strategies of Health Promotion (See discussion pp 195 ff). In many of those lifestyle campaigns "individuals" are pressed to take responsibility for their health. My analysis shows that in the science of physical fitness, individuals taking responsibility for their own health means developing their bodies as personal physical capital.

The salvific narrative of the CSTF is that salvation is a completely individual enterprise. This reproduces an ideology of bourgeois individualism that pervades modern consumer capitalist culture. As my literature review shows there are a number of forms of salvation that are supposed to accrue from physical fitness — all of which are configured by the various intersections of class, gender, race, and ethnicity. Salvation is best
understood here in terms of the perils it seeks to avoid. The following is just a summary of the various discourses of the body that I have described more fully in my literature review.

By accumulating physical capital in the slender, taut body, one is saved from the judgement of peers as lazy, unproductive, undisciplined, self-indulgent, emotionally, unstable and so on. (Bordo 1990; Crawford 1984; Featherstone 1991) Men can save themselves from the ignominy of femininity by building their masculine physical capital in large muscles. (Bordo 1993b; Connell 1987; Connell 1990; Whitson 1990; Whitson 1994). Women can save themselves from the sexist imperative that they remain weak by becoming strong (Bartky 1988; Bordo 1993b; Cole 1993; Lloyd 1996; MacNeill 1994; Markula 1995; Martin 1989; Wolf 1990), or conversely can embody a patriarchal culture's distaste for a woman's body by exercising to disappear — this is the twisted physical capital logic of anorexia described by Bordo (Bordo 1993b, 139-64). By engaging in the consuming cultures of physical fitness, one is saved from the dissatisfaction of not consuming; salvation here is the meaning to be found in the act of consumption itself: "I consume, therefore I am." One is saved from the dissatisfaction with self that is fostered by consumer culture, particularly through advertising images, by working on one's body (Featherstone 1991). One is promised salvation from loneliness, and sexual inadequacy by building the physical capital of the sexy "fit" body. Physical capital development promises to save one from an early death, from sickness and from the ravages of old age. The imperative to be young and to buy youth through fitness is omnipresent. Indeed, looking one's age is a sign of a failure to accumulate youthful physical capital. The
science of physical fitness (especially as it is manifest in the CSTF) is a technology that marshalls the body as a capital resource for the purchase of these salvific ends.

I am not arguing here that physical fitness cannot deliver many of the salvific promises listed above. It can. In some cases it does. The problem, I suggest, is that this form of salvation transforms desire as a positive Erotic life-force, the essence of the non-limitive BwO, territorializing it in the logic of individual lack. The impetus to move (i.e. the being of desire) comes not from what the body is, but from what it is not. The salvific quest here is to embody fantasy, to come to presence as what one is not: beautiful, productive, masculine, feminine, forever young, healthy, fully alive. In short, it promises to save one from oneself. It promises to purchase the fantasy of being what one is not and not becoming what one inevitably will become. The salvation narrative of the CSTF feeds on fantasy.

This fantasy of purchasing what one does not have is the heart of the desire to accumulate physical or any other kind of capital. This fantasy is the very engine of consumer capitalism: dissatisfaction with what is present and an unrequitable longing for what is absent. The basis of consumer desire is lack: the empty presence of desiring absence. Puissance is its opposite: it is the Erotic, fecund intensity of presence, an intensity that exists in the absence of lack. (See discussion p. 195, above) The meaning of the being of personal capital accumulation, on the other hand, is unrequitable desire. For where desire is full (as it is in the fecund intensity of puissant Eroticism) there is no need to move in the mode of accumulation. Movement that does not need to accumulate anything is, at least in that respect, free; whereas movement that needs to accumulate is
bound to the project. The movements prescribed in the CSTF, I have shown, are bound, not free. The economics of consumer capitalism, requires the ironic desire to lack. The imperative to physical capital accumulation, which is the essence of movement in exercise science, reproduces the structure of desire (as unrequitable lack) in consumer capitalism. Desire, in the science of physical fitness is always unrequitable because it is always produced in the fear of its panoptic deadlines -- health risks. This as it were, lackful desire is consumated, ironically enough, only when the threshold of death itself is crossed. In death, I suspect, there are no health risks, at least not as conceived by the science of physical fitness.

The enticement to accumulate physical capital for the purchase of bodily fantasy territorializes the puissant body with the pouvoir of lack. The capitalist imperative is always to be richer, no matter how rich or poor you are. The magnet of capital accumulation through physical fitness is the power of lack, of absence, of the nihilistic purchase of life.

I am not saying that there is anything wrong with living a long time, free of disease, and irresistibly attractive. What is wrong is desire brought to presence, territorialized by pouvoir, negating puissance, by constructing desire as lack. This, I believe, adds to Heidegger's warning about the danger of modern technology, wherein he says that it does not attend to beings coming to presence from themselves, and instead marshalls them as mere resources for other uses (Gestell). In the logic of individual capital accumulation, the body/desire comes to presence by the negation of the fecundity of its presence. Salvation through physical (fitness) capital accumulation is a technology
that brings desire to presence by the draw of its own negation. The nasty irony of finding salvation in capital accumulation, is that one is saved by the loss of the fullness of presence, by the seduction of lack. The "healing power," the source of salvation in this strange narrative turns out to be nihilism, the negation of the fullness of presence in desire. The CSTF, and the science of physical fitness, prescribe this nihilism under the code words "healthy lifestyle" which from a Heideggerian perspective can be understood as the bios praktikos.

The word "lifestyle" was originally used by Alfred Adler to denote structures of the personality that govern reactions and behaviour (OED). For Adler this governing structure was established in the first four of five years of life. For exercise science, lifestyle is also a governing structure, but not one that is patterned on early childhood development, a kind of predestination that comes from childhood. The "Healthy Lifestyle" of exercise science is a panoptic government of life, a relentless project of confession (monitoring fitness) and resolution to live the New Life (writing and following prescriptions for exercise and controlling desire). Unlike the predestination of Adler's concept of life governed by lifestyle, for exercise science, lifestyle is produced in an ongoing project of discipline, panopticism and denial that extends that paradigm of the body from the rarified confines of the research laboratory into every moment of everyday life. A Healthy Lifestyle is a "boundary project" (Haraway 1985), that channels desire

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13 Keep in mind that the CSTF says that the "deadlines" of "health risk" never go away and that one must always accumulate physical capital to avoid crossing the line.
(Deleuze and Guattari 1987b, 33) in the production of pouvoir. The healthy lifestyle is a text through which the body is supposed to come to presence. For a healthy lifestyle, desire follows guidelines for eating, sleeping, exercising, drinking, lovemaking, working...

Indeed, there is no part of life, no detail too small (Foucault 1979, 140), that cannot be bounded by the disciplinary gaze of lifestyle management.

The term healthy lifestyle is pregnant with morality:

The inflection and doggedness with which "health" is promoted and disease prevented gives the whole show away. Substitute perdition for disease, and salvation for health (or "wellness") and one lays bare the old morality play, here replayed in the idiom of medicine. We are admonished and instructed to restore our bodies and spirits to health through vigorous exercise (running and jogging, for instance), through various abstinences, meditation, and the like. If we adhere to this self-discipline, we will purge our bodies and minds of those poisons that make us ill. We will thereby become clean, healthy — saved. (Stein 1982, 169)

Lifestyle is an individual consumer choice with powerful moral implications. One chooses to be healthy or unhealthy, moral or immoral, normal or deviant. The imperative is to choose the right lifestyle, channel desire to avoid the abyss of deviance.

The notion of deviancy is extended from the sick person to the potentially sick person, from manifest illness to what is considered unhealthy behavior. We all become deviants in our everyday lives — when we light up a cigarette, when we consume eggs at breakfast, and when we are unable to express fully our emotions. Persons who act in such a way as to predispose themselves to sickness are now considered actually to be sick. Like the sick role, the potential-sick role mandates a moral duty: to correct unhealthy habits. Conversely, it condemns illness as an individual moral failing. (Crawford 1980, 380)

The individualist focus of lifestyle withdraws the body from the puissance of the essential connectedness of the prepersonal, of finding salvation in the profoundly connected puissance of desire, and into the pouvoir of the controlled, self-disciplined territory of
bourgeois individual physical capital accumulation. Producing this individuality is constructed as a moral duty.

The clarion of "healthy lifestyle" is to pursue a way of life that is devoted to the practicalities of capital accumulation, a *bios praktikos*. I will close my concluding critique by commenting on the problems of the *bios praktikos* as the way of life for the CSTF, exercise science, and, more generally, physical education that is dominated by the exercise sciences. I will then briefly suggest alternatives.

My definition of the *bios praktikos* for physical education is: a way of revealing the body by dealing with it exclusively as a practical matter of developing physical capital resources. This way completely obscures the dynamics of puissance and pouvoir, passing off the territorializing power of pouvoir as nothing more than a natural account of the body. The *bios praktikos*, hides the operations of power both in science and the modern technological making of day to day life. (In the specific case of the CSTF, I have shown it accomplishes this hiding through acts of considerable symbolic violence.)

The transformative power of scientific technology is its power to make worlds, according to the paradigms of science (Rouse 1987, 211). The CSTF was designed to transform human life, to produce a *made* world from an epidemiological point of view —

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154 Howard Stein says: "the fitness-wellness-health ethos is further part of the anti-intellectual (or pseudo-intellectual) attitude that substitutes insight with action" (Stein 1982, 169).
one of the primary motivations of Health Promotion and since 1974, one of the policies of the Canadian Government. But it is also the making of individual, indeed, individualized worlds that are subject to authoritative, resourceful discourses on the body, discourses of which the participants are not made aware and to which they are not invited to contribute, except by virtue of their docile embodiment of the discourses — the participant undergoing the CSTF has no say in the writing of the narrative of their desire. They provide a certain kind of data (and in highly restricted forms) that is then organized according to external discourse. But the rhetorical hope, of course, is that these discourses will become internalized such that the individual understands him or herself along the narrative lines that are being imposed such that they will come to embody the narrative, thus internalizing the discourse. Thus plugged into the discourse, new worlds are made. The participant is supposed to embody this desire, without reflection.

Where exercise science is the dominant episteme of physical education, as it is entirely in the CSTF, reflections on the body's puissance are done considerable violence. The *bios praktikos* becomes common sense, or what Bourdieu has called a "habitus," a habitual "system of schemes of perception, thought, appreciation and action" (Bourdieu & Passeron, 1990, p. 35) about the body's being. This habitus, of course, circulates throughout modern capitalist culture, especially in the upper and middle classes, and even more especially for men. The *bios praktikos* of physical education reproduces a habitus that is already in circulation. Thoughtful reflection on the body, critical awareness of the way it is marshalled by technology, is displaced by the common sense of the *bios praktikos*. Failure to reflect on the dynamics of puissance and pouvoir, to appreciate the
territoralization of puissance by pouvoir, amounts to a failure to see the body's power as puissance, to appreciate its potential for freedom, its non-individualist constitution in the fecundity of its prepersonal field (the non-limiteive BwO). This failure amounts to living in the shadow of the essence of technology, rather than in the light of the Erotic essence of the body as moving being: free, infinite. By continuing to live in such a shadow, without reflecting on the light that is withheld by it, we fail to fulfill our most fundamental responsibilities as beings who have the capacity to care for the way we and our fellow beings come to presence in our puissant essence. (See p. 147, above.) It is a way of life for the pure resourcing of the body. And it plays to the dynamics of resource and waste product as well. Physical education of the bios praktikos attends only to the body's resourcefulness, casting off its puissant Eroticism as unimportant, a waste product. In fact, where the bios praktikos is most fully pursued, where pouvoir is totally active, puissance is entirely used up as physical capital, the body is completely subjected to the government of pouvoir. Such a body would be a fascist body, pursuing its own complete subjection.

The fascist body comes to presence where the body is entirely subjected to the power of pouvoir. The more purely a physical educational enterprise is focussed on the bios praktikos (as it is in the CSTF) the more it tends to body fascism, which is the body subjected entirely to the resourceful embodiment of capitalist desire. (See discussion pp 190ff, above) Implementing Hocquenghem, I will close my critique by saying that through the bios praktikos of physical education, capitalism permeates our bodies, forcing its roots of death deep into our smaller crevices. It takes over our organs, robs us of our vital functions, mutilates our pleasures,
harnesses all our "life" productivity under its own paralyzing administration. It turns each of us into a cripple, cut off from his own body [puissance] a stranger to his own desires. The forces of capitalist occupation continually refine their system of aggression, provoked, extortion so as to use it along with a massive reinforcement of social terror (individual guilt) to repress exclude and neutralize all those practices of our will that don't reproduce those forms of domination. And so this thousand-year-old regime of unhappy gratification, sacrifice, resignation, codified masochism, and death perpetuates itself. Here reigns castration, reducing the "subject" to a guilt-ridden, neurotic, industrious being..." (Hocquenghem 1995)

5.2 Future Possibilities

I will now suggest some principles for an alternative to the technologized, scientified form of physical education that I have been addressing in this thesis. This is only a sketch, since developing alternatives is an enormous research project in itself, and well beyond the scope of this thesis. My suggestions for alternatives should be read as suggestions for future directions of research. The science of physical fitness, being a science of capital accumulation, is a technology of the body that turns its puissant essence into lack. I will argue that a better vision of physical education would not see the imperative to physical activity as coming from the lack of physical capital but from increased appreciation of the intensity of the body, and the puissance that makes it delight in physical activity.

The analytical focus of my thesis has been the CSTF. The point was to conduct an in depth analysis of a fully credentialized text of the science of FBPE that is operative in applied adult physical education. Alternatives should respond not only to the dominance of the bios praktikos in physical education but also to the tendencies toward fascism that
Deleuze and Guattari, Foucault, and I think implicitly Heidegger have detected in modern culture in general.

Physical Education is a mode of revealing human beings, bodily. I have shown how the science of physical fitness, specifically fitness testing, is a technological mode of revealing. The more successful this mode is in revealing humans as capital resources, the more it tends towards body fascism. Indeed, the more the science of physical fitness is operationalized in the writing of texts for day to day life, the more it engages in the controlling, exclusionary tactics that are paradigmatic in science writing. The science of physical fitness territorializes the BwO in the research laboratory and extends that pouvoir into day to day life with a manipulative salvation narrative. This narrative is made meaningful in the larger socio-cultural context of the dynamics of puissance and pouvoir in modern life. It is crucial to keep in mind that the science of physical fitness draws on established, operative paradigms of the body, which treat it as a capital resource and draw on disciplinary culture in order to do so. That discursive tendency in modern culture is the dangerous nihilistic project of Gestell described by Heidegger, the biopolitical project described by Foucault, and the territorialization described by Deleuze and Guattari, all of which describe the tendency towards fascism that is characteristic of modern life.

The form of desire produced in the CSTF is consumerist lack, longing for fulfillment. In my theory of the body I invoked Foucault on fascism, "the fascism that causes us to love power, to desire the very thing that dominates and exploits us."

(Foucault 1983a, xiii). My argument has been that the consumerist resourcing of the body
is a form of domination and exploitation. This is a form of desire that "silences the productive machines of the libido" (Seem 1983), which I have called the power of Erotic coming to presence. This is the desire to be fulfilled by subjection; to come to presence in accordance with the codes and disciplines of capital resource development. The form of Confession, Conversion and New Life of the CSTF sets out to produce the desire and technical capacity to become physical capital. It is the desire to negate the puissant freedom of the body in the service of capital. This is the development of desire that seeks its own complete subjection, fascism. In this fascist culture there is no need of police, jackboots, or concentration camps. Fascist desire subjugates itself.

Alternatives for physical education, therefore, should pursue anti-fascist modes of education. An anti-fascist alternative to the science of physical fitness will require the development of pedagogies of physical education that promote resistance to the territorializing of the body through deconstructive physical practices. Whereas the science of physical fitness hides the dynamics of puissance and pouvoir in the service of inscribing pouvoir in individual bodies, an alternative would attempt to give people the power to reveal these fascist dynamics in their own lives and in the life of their communities and reconstruct those dynamics in ways that are more beneficial. What will be needed is a Freirian alternative to the imperial gaze of physical education professionals inscribing pouvoir in the bodies of their "clients."
I have spoken of the science of physical fitness as a *bios praktikos*. Heidegger says that the Ancient Greeks contrasted that practical way of being with another way "the way of the beholder, the one who looks upon the pure shining-forth of that which presences," a way of life that he calls the *bios theoretikos*. This is the way of reflection, of dwelling upon the essence of that which appears. I have argued that in modern culture our essences appear in the dynamics of puissance and pouvoir. (While I have analyzed pouvoir as it is manifest in the technology of physical capital resource development, there is considerable future research potential in reflecting upon these dynamics as they come to presence in other discourse such as race, gender, language, class and their myriad intersections.) A *bios theoretikos* of physical education would dwell upon the play of puissance and pouvoir in desire.

Whereas the *bios praktikos* uses up puissance and avoids reflection on power, a *bios theoretikos*, dwelling on our essence in technology, could engage both puissance and pouvoir in their interrelations. A *bios theoretikos* could resurrect the power of Eros to reinstate the wholeness of puissance in the practice of being healthy. In the science of physical fitness, I have argued, the logos of puissance is erased by the practical power of pouvoir. An alternative physical education should allow the logos of our being, the positive promise of desire, to find freedom and connectedness. Deleuze and Guattari call this deterritorializing the BwO. They suggest that this can happen in the experience of puissant plateaus of intensity (See pp 162ff above) which break through pouvoir and leave an after-image of their dynamism. (Massumi 1992, 7) that can be reactivated in other activities. In other words, an alternative physical education could educate people in Erotic
intensities that give them the power to reflect on the dynamics of puissance and pouvoir and then do something about their future construction. This of course would be a matter of composing narratives for the productions of desire which are inspired by the freedom of puissance, rather than disciplined by the government of pouvoir.

And this need not, indeed could not, be an individualistic enterprise — for if puissance is the surfacing of the prepersonal field, the deterritorialized BwO, the fundamental connectedness of human being which is territorialized by the pouvoir government of individualism, then the "after-image" should well be one of profound connectedness, not isolation. An alternative physical education health practice could deconstruct individualism by eroticizing our connections. This is not the destruction of difference. Far from it! It is the destruction of distance which fascist desire insinuates in difference. What I am sketching, all too briefly here, is the power of Eros to deconstruct nihilism. Which means that physical education could be an education in reflective, deconstructive Eroticism.

Whereas the heartbeat of consumer capitalist (bios praktikos)FBPE is longing and lack, the pulse of Erotic physical education would be the fecund fullness, the joy, the intrinsic dance of the moving body. In this scenario the body is compelled to move (to be healthy/hale) not out of fear and longing for what it is not, but in celebration for what it is. Here is physical activity that takes place not because of the body's panoptic deadlines, but because of its Erotic lifelines, as it were. Future research in physical education needs to explore the art of moving, of finding intensities, that are freeing, careful, communal. Here there could be an important shift of focus: rather than the research science of physical
education educating Eros on how it should move/ be/produce, Eros can educate the art and science of physical education.

Traditionally, the emphasis has been on physical education, rather than physical education, in which "education" is aligned with pouvoir and "physical" is aligned with puissance. The imperative has been to get control over puissance by educating it in the ways of pouvoir — that is what the science of FBPE sets out to do. I am suggesting research that seeks a reversal of that so that it becomes physical education: the puissant, Erotic body educates pouvoir, the practices by which we construct a resourceful government of the body. This is a subversive practice in which the dominance of pouvoir is undermined by the power of puissance, so that it is the freedom of desire that educates. Here is the imperative for puissance to make political space for Erotic freedom, rather than pouvoir to organize Erotic space for fascist governance. The future of physical education would continue to work with the dynamics of puissance and pouvoir, but pouvoir could become the servant of puissance, rather than puissance the servant of pouvoir.

It might be feared that promoting the Erotic arts of puissance could be the undoing of the person and social order and lead to social chaos. But turning to puissance is not necessarily depraved chaos. Reflective, deconstructive Eroticism would be a careful attention to the subjection of desire under pouvoir and a reconstruction of discipline, perhaps even in the religious sense, as a fulfilment of our being, rather than a negation of the same. Recalling Deleuze and Guattari on "the art of dosages:" "You don't do it with a sledgehammer, you use a very fine file. You invent self destructions that
have nothing to do with the death drive." (Deleuze and Guattari 1987b, 160) Indeed, the hoped for world of physical education to which I am referring is the opposite of the death drive, whose nihilism is more characteristic of the science of physical fitness than it is of the education I am suggesting. This would be physical education not as imposed/inscribed by experts, with nasty authoritarian rhetoric, but as created in the reflective erotic practices of people. Eros enters here as an intense deconstructive practice that gives freedom in the moment and hope for the reconstruction of realities in the future.

What we need to begin to create through the art and science of physical education is a society and culture dedicated to fulfilling the promise of life, a power of salvation which is at hand, which is a BwO that fosters a social and cultural life that serves the body, rather than bodies that serve an exploitive socio-cultural economic order.
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PAR-Q is designed to help you help yourself. Many health benefits are associated with regular exercise, and the completion of PAR-Q is a sensible first step to take if you are planning to increase the amount of physical activity in your life.

For most people physical activity should not pose any problem or hazard. PAR-Q has been designed to identify the small number of adults for whom physical activity might be inappropriate or those who should have medical advice concerning the type of activity most suitable for their needs.

Common sense is your best guide in answering these few questions. Please read the questions carefully and check the box beside YES or NO opposite the question if it applies to you.

YES NO

1. Has your doctor ever said you have heart trouble?

2. Do you frequently have pains in your heart and chest?

3. Do you often feel faint or have spells of severe dizziness?

4. Has a doctor ever said your blood pressure was too high?

5. Has your doctor ever told you that you have a bone or joint problem such as arthritis that has been aggravated by exercise, or might be made worse with exercise?

6. Is there a good physical reason not mentioned here why you should not follow an activity program even if you wanted to?

7. Are you over age 65 and not accustomed to vigorous exercise?

If you have not recently done so, consult with your personal physician by telephone or in person BEFORE increasing your physical activity and/or taking a fitness appraisal. Tell your physician what questions you answered YES to on PAR-Q or present your PAR-Q copy.

After medical evaluation, seek advice from your physician as to your suitability for:
- unrestricted physical activity starting off easily and progressing gradually;
- restricted or supervised activity to meet your specific needs, at least on an initial basis. Check in your community for special programs or services.

If you answered PAR-Q accurately, you have reasonable assurance of your present suitability for:
- A GRADUATED EXERCISE PROGRAM - gradual increase in proper exercise promotes good fitness development while minimizing eliminating discomfort;
- A FITNESS APPRAISAL - the Canadian Standardized Test of Fitness (CSTF).

If you have a temporary minor illness, such as a common cold.
noh

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PERSONAL DATA QUESTIONNAIRE

PERSONAL

Name _______________________________ (firstname) _______________________________ (surname)

Address _______________________________ (no.) _______________________________ (street) _______________________________ (apt. no.)

City/Town _______________________________ Province _______ Postal Code _______

Resident Phone No. ( ) __________ area code number Work Phone No. ( ) __________ area code number

Birthday ____________ Age ___ Gender ___
day mth yr

Marital Status: Married ___ Single ___ Divorced ___ Separated ___ Other ___

Family Doctor:

Name _______________________________ (firstname) _______________________________ (surname)

Address _______________________________ (no.) _______________________________ (street) _______________________________ (suite no.)

City/Town _______________________________ Province _______ Postal Code _______

Phone No. ( ) __________ area code number
FITNESS ASSESSMENT BACKGROUND

1. Please circle the appropriate membership classification:
   Student _____ Staff _____ Faculty _____ Community _____ Non-Member _____

2. Have you ever had a fitness assessment before? yes _____ no _____
   If yes, where and when did you have it done?

3. How did you find out about the Fitness Testing here at the Department of Athletics and Recreation?

4. Have you had any negative experiences with respect to your physical activity and/or exercise involvement? yes _____ no _____
   If yes, please explain:

STRENGTH TRAINING BACKGROUND

For those involved in a strength training consultations please complete this section.

5. Are you lifting weights now? Yes _____ No _____

6. Have you worked with weights before? Yes _____ No _____

7. How many times a week do you workout? _____

8. How long does it take you to workout? _____

9. What goals do you wish to accomplish through strength training? Please describe: _____

PHYSICAL ACTIVITY

10. How would you describe your present fitness level?
    excellent _____ good _____ fair _____ poor _____
11. How often do you take part in physical activity?

- 5 - 7 times/week _______ monthly _______
- 3 - 4 times/week _______ occasionally ______
- 1 - 2 times/week _______ never ______

If your participation in physical activity is minimal (monthly, occasionally or never), what are the reasons?

- lack of interest _______
- ill health _______
- injury _______
- lack of facilities _______
- lack of time _______
- other ____________

**OCCUPATION**

Position ____________________________

12. With respect to physical activity, how would you classify your work?

- very active ______
- reasonably active ______
- light ______
- sedentary ______

13. Is your job associated with mental stress?

- always ______
- frequently ______
- occasionally ______
- seldom ______
- never ______

**SMOKING**

14. Do you smoke? yes ______ no ______ occasionally ______

If you are a daily smoker, specify the average amount you smoke per day.

- cigarettes ______
- cigars ______
- pipes ______

15. If you are an ex-smoker, how long ago did you quit? ______ months ______ years

**NUTRITION**

16. Do you select the recommended number of servings of foods from the 4 food groups daily? eg. 2 - 4 servings from 'Milk or Milk Products', 2 - 3 servings from 'Meat and Alternatives', 5 - 12 servings from 'Grain Products', 5 - 10 servings from 'Fruits and Vegetables'.

- always ______
- frequently ______
- occasionally ______
- seldom ______
- never ______

17. Do you eat regular meals? eg. 2 or 3 meals consistently every day?

- always ______
- frequently ______
- occasionally ______
- seldom ______
- never ______
18. Do you salt your food?
always ___ frequently ___ occasionally ___ seldom ___ never ___

19. Do you try to select foods containing polyunsaturated fats? i.e. liquid vegetable oils, fish, poultry rather than foods high in saturated fats i.e. meat, butter, cheese, cream, whole milk, chocolate?
always ___ frequently ___ occasionally ___ seldom ___ never ___

20. Do you frequently eat foods or beverages high in sugar content? e.g. sweet desserts such as cakes, cookies, pastries, coke, fruit drinks
daily ___ 2-3x/week ___ weekly ___ monthly ___ never ___

21. Do you drink alcohol? yes ___ no ___ occasionally ___
If your response to the above question was yes, specify the number of drinks per week.
Liquor (one drink = 1.5 ounces or one shot) ___
Beer (one drink = 12 ounces or one bottle) ___
Wine (one drink = 5 ounces or one glass) ___

22. Do you drink coffee and/or tea? yes ___ no ___ occasionally ___
If your response to the above question was yes, specify the total number of cups per day.
coffee ___ tea ___

**GENERAL HEALTH**

23. How would you describe your present state of health?
excellent ___ good ___ fair ___ poor ___

24. Have you suffered any major injuries or illnesses?
yes ___ no ___
If your response to the above question was yes:
How long ago? ___ months ___ years
Nature of illness or injury ____________________________
Present limitations ____________________________
25. Are you pregnant or do you suspect you might be?  yes ___  no ___

26. Have you undergone any major operations or surgery?
   yes ___  no ___
   If your response to the above question was yes:
   How long ago? ___ months  ___ years
   Nature of operation or surgery ________________________________
   Present limitations _________________________________________

27. Do you have any back problems?
   yes ___  no ___
   If your response to the above question was yes:
   Have you seen a physician about it?  yes ___  no ___
   Have you had x-rays taken of the area concerned?  yes ___  no ___
   Present limitations _________________________________________

28. Do you take any prescription or non-prescription medication on a regular basis or with high frequency?
   yes ___  no ___
   If your response to the above question was yes, specify:
   Pharmaceutical name _________________________________________
   Frequency (per day or week) _________  Dosage (gm) _______

The information collected here will remain confidential.

Thank you for your time.
I, the undersigned, do hereby acknowledge:

- my consent to perform a fitness test consisting of stepping on double 20.3 cm steps at speeds appropriate for my age and gender, with a recording of an electrocardiographic tracing, measurements of standing height, weight, girths and skinfolds and tests of grip strength, push-ups, trunk forward flexion and sit-ups, the results of which will assist in determining the type and amount of physical activity most appropriate for my level of fitness;

- that even though an electrocardiographic tracing may have been taken during the tests, this is not designed to rule out the presence or absence of heart disease. I understand the staff administering the tests are trained in the administration of the tests only and are not able to make a diagnosis concerning the absence or presence of heart disease or any other medical condition;

- that, if over the age of 35 years, the exercise test results are forwarded to a Cardiologist in conjunction with the policy developed by the American College of Sports Medicine;

- that there is a brief lifestyle questionnaire attached. Although the questionnaire is confidential, filling out each question is not compulsory;

- my understanding that the heart rate and blood pressure will be measured prior to and at the completion of the test;

- my consent to the tests conducted by an appraiser who has been trained to administer the Canadian Standardized test of Fitness. I understand that the interpretation of results is limited to providing a comparison with percentile-based norms and information on various aspects of fitness;

- my understanding that there are potential risks; i.e., episodes of transient light-headedness, fainting, abnormal blood pressure, chest discomfort, leg cramps and nausea and extremely rarely, heart attacks and that I assume willfully those risks;

- my obligation to immediately inform the appraiser of any pain, discomfort, fatigue or any other symptoms that I may suffer during and immediately after the testing;

- my understanding that I may stop or delay any further testing if I so desire and that the testing may be terminated by the appraiser upon observation of any symptoms of distress or abnormal response;

- my understanding that I may ask any questions or request further explanation or information about the procedures at any time before, during and after the testing;

- that I have read, understood, and completed the Physical Activity Readiness Questionnaire (Reference: PAR-Q validation Report, British Columbia Ministry of Health, 1978) and the answers to all the questions were negative:

In agreeing to these tests, I accept all responsibility and waive any legal recourse against the University of Toronto and members of its staff from any and all claims resulting from personal injuries sustained or death resulting from the tests. This waiver shall be binding upon my heirs and my personal representatives. I further hereby release and save harmless The Governing Council of the University of Toronto, its employees, officers and agents from any and all liability incurred by them with respect to my participation in this activity.

I consent to the use of information obtained from these tests by the University of Toronto and the Province of Ontario.

SIGNATURE
DATE

(If under 18, parent or guardian must sign)

Witness:

SIGNATURE
DATE
Literally, 'measurement of the human body' these measures reflect the body stature and composition at rest. Values will increase and decrease with changes in nutritional and fitness status, which occur over time.

**Body Mass Index (B.M.I.)**

This is a calculation of your weight as it is distributed on your frame and is made using your height and weight data. Body Mass Index increases as weight increases provided your height remains constant from either increase in fat or lean body weight. Conversely, a loss in either fat or lean body mass will reduce the B.M.I.

Your score of 19.10 is at the 78 percentile. Your body weight and height are in proportion, This presents no health risk to you.

**Waist to Hip Ratio (W.H.R.)**

The Waist to Hip ratio is a calculation of the comparison of your waist and hip girths as measured with the anthropometric tape. As the waist measurement approaches that of the hip the W.H.R. becomes closer to a 1:1 ratio. Decreasing the circumference of the waist or increasing the circumference of the hips will reduce the W.H.R.

Your score of 0.80 is at the 15 percentile. Your waist and hips are approximately the same size. A body fat test will help to determine whether this high ratio may be because of overfatness and thus be a health risk to you.

**Sum of Skinfolds (S.O.S.)**

The sum of skinfolds is the total of the five skinfold measures in millimetres. As body fat increases, so does the deposit of fat underneath the skin's surface. Reducing caloric intake through proper dieting and/or increasing caloric expenditure by increasing physical activity will reduce this measure over time. This so called 'negative caloric balance' is necessary if fat content of the body is to be reduced. To reserve lean body tissue, exercise should be a part of almost every weight reduction program.

If weight reduction is indicated, a gradual reduction is recommended of about a pound to a pound and a half per week. A pound of fat is approximately 3500 Calories.
Your score of 81.5 is at the 16 percentile. Your score indicates a health risk and a program of diet and exercise is recommended for you.

**Sum of Trunk Skinfolds (S.O.T.S.)**

This is the calculation of the two trunk skinfolds measured in millimetres as taken with the skinfold calliper. The trunk skinfolds are significant because it is known that excess amounts of fat accumulated in these areas are often associated with disorders of carbohydrate and fat metabolism and therefore are considered important when assessing health risk. Reducing total body fat through a well designed program of exercise and diet will help reduce these measures.

Your score of 33.6 is at the 19 percentile. Reducing your SOTS score and health risk will depend on reducing total body fat by both diet and exercise.

**AEROBIC POWER**

Aerobic Power is defined as the ability of your body to distribute and utilize oxygen at maximal levels of exercise. If your body can distribute and use oxygen efficiently, you are able to work at higher levels of exercise stress for longer periods of time with less fatigue. Because the heart, lungs and vascular systems deliver the oxygen to the working muscles, they too adapt as you become more aerobically fit. There is evidence to suggest that aerobically fit individuals are at less risk for the development of heart and vascular related diseases. A high aerobic power is therefore desirable for athletic performance as well as general physical fitness and health. Aerobic Power is predicted by measuring your heart rate responses to a standard workload during exercise such as cycling or walking on a treadmill. From these measured heart rate responses either VO2 max in mL/Kg/min (the maximal amount of oxygen you are able to utilize) or PWC (the maximal work capacity at a given heart rate) are calculated. A higher VO2 max or PWC score indicates greater Aerobic Power.

Your VO2(C.A.F.T) of 33 mL/Kg/min is at the 30 percentile. Your aerobic power is very low and your heart rate is too high at relatively low workloads. You should begin a regular and progressive aerobic exercise program to improve your score. Start by selecting an activity you enjoy doing which uses large muscle groups repetitively such as walking, jogging, cycling or swimming and gradually reach an intensity which challenges your breathing. You should be able to talk comfortably while exercising. Don't start too quickly and if you experience discomfort in the chest, arms or legs, slow your pace. For the
first two weeks exercise for twenty minutes three times per week. Each week thereafter add ten to fifteen minutes of exercise per workout until you have achieved continuous exercise for forty minutes or more. Once this has been achieved you are now conditioned for most other types of activity you may wish to try.

FLEXIBILITY

This term refers to the range of motion around a joint or series of joints and is dependent upon the bone structure, and soft tissue which surrounds the joints. Flexibility is joint specific; that is all our joints exhibit specific flexibility patterns which are usually related to the amount of use each is subjected to each day. That is why athletes tend to have very predictable flexibility patterns.

Flexibility is required for optimal body function. If joints have optimal ranges of motion, they are free to move without restriction, are efficient, and are injured less often. Flexibility of the low back and pelvic area is particularly important to help prevent back problems.

FORWARD FLEXION

Your score of 28.0 is at the 25 percentile and is rated as below average. A general flexibility program stretching the major muscle groups and joints is indicated to avoid overstretch injuries prior to exercise and injuries to the back. Start by warming the muscles with five to seven minutes of aerobic activity and proceed with slow, controlled stretches held for twenty to thirty seconds with three repetitions. Do not bounce while stretching. These ballistic type stretches actually do more harm than good so avoid them.

MUSCULAR STRENGTH & MUSCULAR ENDURANCE

These two qualities have some similarities but some important differences as well. Muscular Strength refers to the amount of force a muscle can exert in a single maximal voluntary contraction. Muscular endurance is the muscles' ability to repeat forceful contractions until fatigue prohibits further contractions. Neither of these qualities can be trained to the exclusion of the other. As you train for strength, you improve endurance. Likewise, as you train muscular endurance, strength will improve. Each however can be predominantly trained by selecting an appropriate training regimen.

MUSCULAR STRENGTH

Grip Strength
This measure, taken by way of a handgrip dynamometer and measured in kilograms of force determines the force which can be developed by each of the two hands. When these two measures are repeated and the best of each hand's efforts combined, the maximal force of the two are compared to norms. Grip strength is considered the by many professionals to be the best single measure of total body strength, but it is possible that any individual may excel in this measure and still have muscular weakness in other muscle groups. Grip strength by itself is however important as we use our hands for most of our fitness and occupationally related activities.

Your score of 55 kg is at the 25 percentile and is rated as below average. This suggests that you have low general strength. You should start a general strength program. This program should involve major muscle groups and be done two to three times per week for the first three to four weeks. The program should include low resistance (60-75% of maximal lift capability) and higher repetitions (15-20). Two sets per muscle group are adequate for the first three to four weeks. This program will ease you gradually into strength training and avoid injury. At the end of three weeks you will be able to increase the resistance and the number of sets.

MUSCULAR ENDURANCE

Partial Curl-Up

This timed test using the a trunk curl-up action stresses the abdominal muscles. These muscles are important fixators of the trunk and help keep the back and hips in proper alignment. If the abdominals become weakened through disuse, they lose the ability to keep the trunk fixed in position and mechanical back problems often occur with time. Athletes who rely on the trunk to be fixed in order that sport performance can be efficiently and effectively maintained, require strong abdominals also. A variety of abdominal exercises are available to exercise these important muscles and they should be exercised using proper technique and in proper order. You can consult written information on the subject or ask a qualified instructor.

Your score of 35 Reps is at the 66 percentile and is considered above average. You have good abdominal endurance and you should continue with the activities you are now doing in order to maintain this level of postural health. An abdominal routine which involves advanced movements and techniques will help improve your abdominal endurance. These can be done as a regular part of your fitness program.
<table>
<thead>
<tr>
<th>TEST DATE</th>
<th>TEST</th>
<th>RESULTS</th>
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#### Girth Measurements
01/11/95  WHR  0.80

#### Five Site Skinfold
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01/11/95  SOTS  33.60

### Aerobic Tests
#### C.A.F.T.
01/11/95  CAFT HR. FINAL  174.00
01/11/95  VO2 MAX  33.00

### Flexibility Tests
#### Forward Flexion
01/11/95  FORWARD FLEXION  28.00

### Strength Tests
#### Grip Strength
01/11/95  GRIP STRENGTH  55.00

#### Partial Curl-Up
01/11/95  PARTIAL CURL-UP  35.00

### Comments:

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(416) 978-3437
## Anthropometry Tests

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**COMMENTS:**
Lifestyle Needs:

I feel it is important to me to

- like the people I'm with.
- be in a group.
- be independent.
- get to know other people well.
- have the other people like me.
- be physically active.
- use my imagination.
- create something.
- find the activity challenging.
- feel safe and secure.
- try something new and different.
- be myself.
- use my talents.
- improve myself and my skills.
- accomplish something.
- relax.
- spend time with my family.

Activity Preferences

- release energy.
- have common interests with other people.
- be able to contribute something to a group.
- meet many new people.
- be a leader.
- feel confident.
- learn something.
- be in pleasant, attractive surroundings.
- be alone.
- have a structured activity.
- be able to do things at the last minute.
- follow rules.
- be praised.
- have fun and enjoy myself.
- release frustration.
- take a risk.

Instructions: Once you have checked the lifestyle needs that are important to you, list the three most important and identify which activities would most probably satisfy those needs.

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Determining the Aerobic Walk-Jog Prescription
(from results of Canadian Aerobic Fitness Test)

Name of Participant

Date ______________________________

1. Factor A
Select Factor A from participant’s NEAREST BODY WEIGHT (see below)

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Factor A ____________________________

2. Factor B
Determine Factor B from participant’s NEAREST HEIGHT AND PREDICTED VO2 MAX.

Factor B ____________________________

3. Factor C
SUBTRACT Factor B from Factor A to get TIME (in minutes) TO COVER 1 mile OR
1.6 km

Factor C ____________________________

4. Determine DISTANCE TO COVER IN 15 MINUTES by locating Factor C from table
below.

WALK-JOG _____________ kms
DISTANCE _____________ miles
in 15 mins.

NOTE: This walk-jog prescription is a conservative estimate intended for beginners. See Chapter 5 of this manual for other methods of
determining appropriate “intensity of physical activity”, including HEART RATE MONITORING, THE TALK TEST and
PERCEIVED EXERTION. These may be used in conjunction with the aerobic walk-jog prescription as a “validity check”.

There are also activities other than walking or jogging which may have greater appeal for the participant. The appraiser should
take special care to adapt the aerobic prescription to meet the needs and interests of the participant.

**Factor B**

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**Walk-Jog** 33 30 27 25 23 21 19 18 17 16 15 14 13 12 10 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

**Distance** 33 30 27 25 23 21 20 19 18 17 16 15 14 13 12 10 9 8 7 6 5 4 3 2 1 0

NOTE: This walk-jog prescription is a conservative estimate intended for beginners. See Chapter 5 of this manual for other methods of
determining appropriate “intensity of physical activity”, including HEART RATE MONITORING, THE TALK TEST and
PERCEIVED EXERTION. These may be used in conjunction with the aerobic walk-jog prescription as a “validity check”.

There are also activities other than walking or jogging which may have greater appeal for the participant. The appraiser should
take special care to adapt the aerobic prescription to meet the needs and interests of the participant.
1. Indicate the physical activities in which you have participated over the last month during your leisure time.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Duration</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking for Exercise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jogging/Running</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gardening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Exercises</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ice Skating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Country Skiing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tennis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golf</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Popular Dance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseball/Softball</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpine Skiing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ice Hockey</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise Classes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racquetball</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others – Please specify:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Lifestyle Questionnaire

2. How long have you been doing some physical activity in your leisure time at least once a week?

<table>
<thead>
<tr>
<th>Option</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don't do an activity each week</td>
<td>For less than 3 months</td>
</tr>
<tr>
<td>From 1 year to just under 3 years</td>
<td>From 3 months to just under 6 months</td>
</tr>
<tr>
<td>From 5 months to just under 1 year</td>
<td></td>
</tr>
</tbody>
</table>

3. If you want to participate more in physical activities than you do now, why aren't you able to? (Check at most 3 reasons.)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don't want to participate more</td>
<td>Lack of time because of other leisure activities</td>
</tr>
<tr>
<td>Ill health</td>
<td>Requires too much self-discipline</td>
</tr>
<tr>
<td>Injury or handicap</td>
<td>Costs too much</td>
</tr>
<tr>
<td>Lack of energy</td>
<td>Lack the necessary skills</td>
</tr>
<tr>
<td>Lack of time because of work (school)</td>
<td>Available facilities are inadequate</td>
</tr>
<tr>
<td></td>
<td>No leaders available</td>
</tr>
</tbody>
</table>

4. If you wanted to participate more in physical activities, which of the following would increase the amount of physical activity you do? (Check at most 3.)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing</td>
<td>Organized sports available</td>
</tr>
<tr>
<td>Better or closer facilities</td>
<td>Organized fitness classes available</td>
</tr>
<tr>
<td>Different facilities</td>
<td>Fitness test with personal activity program available</td>
</tr>
<tr>
<td>Less expensive facilities</td>
<td>People with whom to participate</td>
</tr>
<tr>
<td>More information on the benefits</td>
<td>Common interest of family</td>
</tr>
<tr>
<td>of doing physical activity</td>
<td>Better health</td>
</tr>
<tr>
<td>Employer or union sponsored activities</td>
<td>Common interest of friends</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

5. Here is a list of reasons why some people do physical activities during their leisure time. How important is each of these to you?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Very important</th>
<th>Of some importance</th>
<th>Of little importance</th>
<th>Of no importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>To feel better mentally and physically</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To be with other people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For pleasure, fun or excitement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To control weight or to look better</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To move better or to improve flexibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a challenge to my abilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To relax or reduce stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To learn new things</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because of fitness specialist's advice for improving health in general</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because of doctor's orders for therapy or rehabilitation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. How important are each of the following to you in gaining a feeling of well-being?

<table>
<thead>
<tr>
<th>Option</th>
<th>Very important</th>
<th>Of some importance</th>
<th>Of little importance</th>
<th>Of no importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate rest and sleep</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A good diet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low calorie snacks between meals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance of proper weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in social and cultural activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control of stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular physical activity such as exercise, sports or games</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using alcohol moderately or being a non-drinker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being a non-smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate medical and dental care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive thinking/meditation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Comparing yourself to others of your own age and sex, would you say you are . . . .
   - [ ] More fit
   - [ ] Less fit
   - [ ] As fit

8. In the past year, what physical activities have you stopped doing?  
   (Do not include those stopped due to a change in the season.)
   - [ ] None or Activity ____________________________________________
     Why did you stop doing this activity?
     Activity ____________________________________________
     Why did you stop doing this activity?

9. What physical activities would you like to start in order to improve your fitness and health?
   - [ ] None or Activity ____________________________________________
     What is the main reason you have not yet started this?
     Activity ____________________________________________
     What is the main reason you have not yet started this?
     Activity ____________________________________________
     What is the main reason you have not yet started this?

10. With whom do you usually do your physical activities in your leisure time?
    - [ ] No-one
    - [ ] Friends
    - [ ] Immediate family or relatives
    - [ ] Co-workers
    - [ ] Classmates at school
    - [ ] Others
Lifestyle Questionnaire

11. At what time do you usually do your physical activities? (Indicate more than one if you usually do activities more than once a day.)
   - In the morning
   - At lunchtime
   - In the afternoon
   - At no special time

12. (A) How would you describe your state of emotional well-being?
   - Very good
   - Poor
   - Good
   - Very Poor
   - Adequate

   (B) How do you think this might affect your physical activity/fitness goals?
   - Aid
   - Hinder
   - No effect

   Please explain ________________________________

13. What do you usually eat for breakfast? (Usually means at least four days a week.) Check all that apply.
   - I don't eat breakfast
   - Bread, danish, or donut
   - Fruit or fruit juice
   - Yogurt
   - Eggs
   - Granola
   - At least 6 ounces of milk
   - Tea or coffee
   - Bacon or other meat or fish or poultry
   - Other Cereals
   - Cheese

14. In the last year, have you been eating...
   - Sweet food and candies
     - More
     - Less
     - Same amount as before
   - Fruit and vegetables
     - More
     - Less
     - Same amount as before
   - Fats and fried foods
     - More
     - Less
     - Same amount as before
   - Salt and salty food
     - More
     - Less
     - Same amount as before
   - Meals on a regular basis
     - More
     - Less
     - Same amount as before
   - The same amount of food or calories
     - No, more
     - No, less
     - Same amount as before

5. (A) About how many hours of sleep do you usually get each day?
   - Six hours or less
   - Eight
   - Ten
   - Seven
   - Nine
   - Eleven hours or more

5. (B) Do you think you are getting enough sleep?
   - Always
   - Usually
   - Seldom
   - Never
Lifestyle Questionnaire

16. (A) About how often do you usually drink alcohol?

☐ More than once a day  ☐ 1 to 3 times a week  ☐ Less than once a month

☐ 4 to 7 times a week  ☐ 1 to 3 times a month  ☐ I don’t drink alcohol – Go to question 17

(B) About how many drinks do you usually have at a time?

Where one drink is:
• one pint of beer – 12 ounces
• one small glass of wine
• one shot of liquor or spirits
i.e., 1–1 ½ ounces with or without mix

☐ One  ☐ Six or Seven

☐ Two or three  ☐ Eight or more

☐ Four or five

17. Which of the following best describes your experience with tobacco. Check all that apply.

☐ I haven’t smoked  ☐ I currently smoke:

☐ cigarettes occasionally  ☐ I stopped smoking:

☐ less than ½ pack of cigarettes daily  ☐ cigarettes recently

☐ about a pack of cigarettes daily  ☐ cigarettes over a year ago

☐ two or more packs of cigarettes daily  ☐ a pipe, cigars or cigarillos recently

☐ a pipe, cigar or cigarillo occasionally  ☐ a pipe, cigars or cigarillos over a year ago

☐ a pipe, cigar or cigarillo daily

18. In general, how would you describe your state of health?

☐ Very good

☐ Good

☐ Average

☐ Poor

☐ Very Poor
Record the Resting Systolic and Diastolic fourth-phase (D4) to the nearest two mmHg in the appropriate space on the CSTF Data Sheet.

- In the event that the Resting Systolic Blood Pressure is 150 mmHg or more and/or the Resting Diastolic Blood Pressure is 100 mmHg or more, wait an additional five minutes. Have participant sit quietly and take the readings again.
- A PARTICIPANT SHOULD NOT BE PERMITTED TO TAKE THE AEROBIC AND MUSCULAR STRENGTH AND ENDURANCE TESTS IF:
  a) the resting systolic blood pressure measurement is 150 mmHg or more after two readings;
  b) the resting diastolic blood pressure is 100 mmHg or more after two readings;
  c) the individual is receiving medication for high blood pressure.

If any of the above conditions exist, explain briefly that the blood pressure reading is not within the range for which the test was designed (see Appendix E – Blood Pressure Messages Flow Chart for potential interpretation).

4.2.5 Lifestyle Questionnaire (optional)

The lifestyle questionnaire may assist the appraiser in assessing participant attitudes toward, and interests in, physical activity. This can be very helpful in determining appropriate subsequent results interpretation, counselling and exercise prescription. For further information on how the appraiser may make best use of the participant’s responses in the lifestyle questionnaire, see the CSTF Interpretation and Counselling Manual.

4.3 Anthropometric Measurements

4.3.1 Standing Height

Equipment: Metric wall tape, masking tape, set square, wooden board.

Procedure

Position the tape vertically against a wall. Ensure that it is perfectly straight and even with the floor. If the floor is carpeted, place a half-inch wooden board on the floor against the wall and measure from the top of the board with participant standing on it.

4.3.2 Body Weight

Equipment: Spring or beam scale, wooden board.

Procedure

Ensure the scale is on a flat surface. If the floor is carpeted, use a half-inch wooden board under the scale. The participant must be without foot-wear and in light clothing (shorts and t-shirt or blouse for women).

Record the weight in “kg” to the nearest 0.1 kg.: e.g. 06 7 2

4.3.3 Girth Measurements

Equipment: K-E Anthropomorphic tape or equivalent.

Procedure

The participant stands erect in a relaxed manner, arms hanging loosely at the sides. The appraiser holds the tape between the thumbs and index fingers with the second fingers stabilizing and leveling the tape. A cross handed technique is used to bring the zero line of the tape in line with the measuring aspect of the tape.

Ensure the tape is properly located in the horizontal plane in accordance with the instructions and illustrations listed below.

Apply tension to the tape sufficient to maintain its position but not to cause indentation of the skin surface.

All measurements are recorded to the nearest 0.1 cm.: e.g. 09 8 7 cm.

The participant, without footwear, stands erect, arms hanging by the sides, feet together, the heels and back in contact with the wall. The participant is then instructed to look straight ahead, stand as tall as possible and take a deep breath while the measurement is taken.

The set square is placed on the head, depressing the hair to make firm contact and a mark is made at the level of the lower border of the square on the wall. Check to ensure that the participant’s heels remain in contact with the floor. The distance from the floor to the pencil mark is recorded to the nearest 0.5 cm.: e.g. 17 6 5

a) Chest Girth

Have the participant raise both arms and pass the tape around the chest positioned at the level of the mesosternale (approximately at the mid level of the sternum, midway between the axilla and the horizontal nipple line). Ensure the tape is perfectly horizontal. The participant lowers both arms so that they hang relaxed. The reading is taken at the end of a normal expiration.
b) Waist (Abdomen) Girth

The participant stands erect. The appraiser uses a cross-nanded technique to position the tape horizontally at the level of noticeable waist narrowing. The tape is then placed in the recording position and the measurement is made at the end of a normal expiration. In some participants, an indeterminate waist can be approximated by taking the girth at the estimated lateral level of the twelfth or lower floating rib.

c) Hip (Gluteal) Girth

The participant stands erect with feet together. The tape is positioned around the hips at the level of the symphysis pubis and the greatest gluteal protruberance.

d) Right Thigh Girth

The participant stands erect, feet slightly apart. The tape is positioned around the right thigh to a level one centimeter below the gluteal line.

4.3.4 Skinfold Measurements

See section 5.2 - BODY WEIGHT, ADIPOSITY AND FAT DISTRIBUTION (regarding use of the skinfold measurements)

Equipment: Harpenden or Lange Calipers.

Do one complete round of all the skinfold measurements before repeating the procedure to obtain a second skinfold measurement for each site. All measurements are taken only on the right side of the body.

General Procedure

During skinfold measurements, it is essential that the participant relax the underlying musculature as much as possible. When the site of the skinfold has been determined, a fold of skin plus the underlying fat is grasped between the thumb and forefinger with the back of the hand facing the appraiser. Keeping the jaws of the calipers always at right angles to the body surface, the contact faces of the calipers are placed one centimeter below the point where the skinfold is raised. While maintaining the pressure of the fingers on the skinfold, the trigger of the calipers is fully released and the measurement is taken. The measurement is noted when the indicator stabilizes which is approximately two seconds after the full pressure of the caliper jaws is applied to the skinfold. The reading is recorded to the nearest 0.2 millimeters. e.g., 16.8 mm

Complete the first set of skinfold measurements for all sites. Then, repeat the procedure to obtain a second set of measurements for each skinfold site. Record the mean of the two measures unless the difference between the first and second measure of that particular skinfold site is found to be greater than 0.4 mm. If so, take a third measure of that skinfold site and choose from among the three values, the two measures which most closely match each other in value. Determine the mean of those two measures. Should the three measures be equidistant, e.g., 18.6 19.2 19.8 determine the mean of all three values.

It should be noted that the accuracy of skinfold measurements depends on:
- precise identification of the site of the skinfold;
- forming the skinfold prior to the application of the caliper jaws;
- the standardization of the alignment of the skinfold crest;
- maintenance of the pressure by the fingers on the skinfold when the measurement is taken;
- complete release of the caliper jaws.
a) Triceps Skinfold
The participant stands with the arms relaxed by the sides. The triceps skinfold is taken on the back of the right arm at the point midway between the tip of the acromion (right shoulder) and the tip of the olecranon (right elbow). The midpoint is determined by placing the fifth finger of the left hand on the tip of the acromion (right shoulder), the fifth finger of the right hand on the tip of the olecranon (right elbow) and then the thumbs are placed together to determine the mid-point.

b) Biceps Skinfold
The biceps skinfold is measured on the right extended upper arm over the biceps at the same level as the mid-arm point for the triceps. The skinfold is then raised at the mid-arm point, so the fold runs vertically along the midline of the front of the arm.

c) Subscapular Skinfold
The participant stands with the shoulders relaxed and the arms by the sides. The skinfold is raised so it can be measured on a diagonal line coming from the vertebral border of the scapula to a point 1 cm. beneath the inferior angle. The skinfold runs downward and outward at an angle of approximately 45 degrees to the spine.

d) Iliac Crest Skinfold
The participant stands in a normal erect position. Have the participant raise the right arm to the side so that it ishorizontal and place the right hand on the right shoulder. If the participant is unable to place hand on shoulder, keep the horizontal arm extended. The skinfold is then measured three centimetres above the crest of the ilium at the midline of the body so that the fold runs forward and slightly downward.

e) Medial Calf Skinfold
Have the participant place the unweighted (relaxed) right foot flat on a step so that the knee is at 90°. The skinfold is raised on the inside of the right calf just above the level of the maximum calf girth so that the fold runs vertically along the midline.
Goals and Action Steps:

Goal #1
To complete a 10 Km. run

Action Steps
1. Three month running plan (attached) See prescription for physical activity below
2. Register for run
3. 

Time Frame: 12 weeks

Goal #2
To lose some fat-weight

Action Steps
1. Achieve negative energy balance of 500 Kcal/day by increasing physical activity and reducing evening snacks
2. Monitor body weight (use Body Weight Record Chart)
3. 

Time Frame: Begin immediately and monitor over the 12 weeks

Goal #3
To improve flexibility

Action Steps
Stretching technique and study specific stretching program for Running and Squash (attached)
Incorporate 5-10 min stretch routine before and after Run and Squash.

Time Frame: Immediate

Prescription for Physical Activity

<table>
<thead>
<tr>
<th>Frequency</th>
<th>5x/week</th>
<th>3x week</th>
<th>2x/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensity</td>
<td>6 min./km. pace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>2x5-10 min.</td>
<td>25 min. to start</td>
<td>45 min.</td>
</tr>
<tr>
<td>Type</td>
<td>Stretching</td>
<td>Running</td>
<td>Squash</td>
</tr>
</tbody>
</table>

Comments:
Warm up and cool down with Running and Squash.
Progress gradually as per attached chart

Success Indicators
1. Completion of 10 km. run
2. Reduce weight to more desirable level
3. Improve trunk flexion score to average level
4. 
5. 

Date for next appraisal: July 10, 1987