THE METAPHYSICAL ROOTS OF PHYSICAL INACTIVITY AND OBESITY IN LATE-CAPITALISM

Toward a Better Understanding of Major Health Problems through the Application of Process Philosophy

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ABSTRACT

The aim of this thesis is to comprehend the nature of an emergent major public health problem in Western developed societies; the increase in levels of physical inactivity and obesity. The position taken is that this problem is related to the defective ways of thinking underpinning the current period of late-capitalism. Supporting this position is a complex, philosophical argument that links multiple disciplines and levels of understanding within the human spatio-temporal domain. It is argued that such linking is only possible from a broader metaphysical perspective that examines underlying assumptions related to concepts of primary existence.

The framework for this examination is an ongoing dialectic between two competing metaphysical traditions of thought, mechanistic materialism and process thought. Process metaphysics is put forward as a secular basis for re-integrating the human spatio-temporal domain left fragmented and nihilistic from centuries of dominance of the defective tradition of mechanistic materialism. It is this fragmentation and nihilism that has created the conditions for the problem of physical inactivity and obesity to emerge. This emergence is understood to be an aspect of the decaying process of a hegemonic culture that values extremes and is devoid of the ability to imagine alternatives.

Drawing on the process tradition, and in particular the writings of contemporary philosophers coupled with less commonly studied older works, a more imaginative and encompassing definition of health, as compared with that enabled by the mechanistic materialist world-view, is conceived and developed. This is then contrasted with the way health is considered by those seeking to address public health issues. Through this approach, the key to the emergence and development of the physical inactivity and obesity problem is revealed in the beliefs and practices of those deemed to have the legitimacy to address it. It is suggested that this problem will not be adequately understood or addressed unless there is a major cultural change from one based in mechanistic materialism to one that is process based.
ACKNOWLEDGEMENTS

This work is an eddy in a stream of discovery. It began with my ignorant frustration, developed over two decades working in the Fitness Industry, with my Industry’s ineffectiveness in stemming the tide of physical inactivity. It pauses briefly here with a relatively more enlightened and informed reflection on the nature of my frustration, the scope of which I could not possibly have imagined in the beginning. My enlightenment I can attribute mostly to all those staff and fellow students who have made my university experience so fruitful.

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DECLARATION

I declare that this thesis:

i. contains no material which has been accepted for the award to the candidate of any other degree or diploma, except where reference is made in the text of the thesis;

ii. to the best of my knowledge, contains no material previously published or written by another person, except where due reference is made in the text of the thesis; and

iii. where the work is based on joint research or publications, discloses the relative contributions of the respective workers or authors.

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INTRODUCTION

The aim of this thesis is to understand from a philosophical perspective, both the emergence and development of a major public health problem and the defective ways in which it is being addressed. It is argued that to understand the nature of this problem, it is necessary to examine the metaphysical assumptions underlying the ways in which it is being addressed, both in the public and private spheres. These deep assumptions, underpinning the methods for addressing the problem, are the key to understanding the emergence of the problem. First though, what is this problem? Since the 1970’s, the incidence of disease related to lack of physical activity has grown. According to the World Health Organization, the world has witnessed a significant increase in non-communicable diseases over this period such as cardiovascular disease, cancer, diabetes and chronic respiratory diseases, that it relates ‘…closely to respective changes in lifestyles mainly in tobacco use, physical inactivity and unhealthy diet.’¹ This has grown to become what the World Health Organization regards as a global epidemic that now accounts for 60 percent of all deaths and 43 percent of the global burden of disease. They predict that this will rise by 2020 to 73 percent of all deaths and 60 percent of the global burden of disease.² They further advise that:

Overall physical inactivity is estimated to cause 1.9 million deaths globally. Physical inactivity causes globally, about 10-16% of cases each of breast cancer, colon and rectal cancers and diabetes mellitus, and about 22% of ischaemic heart disease…A combination of improper diet, insufficient physical activity and tobacco use are estimated to be the cause of up to 80% of premature coronary heart disease…At the same time the level of overweight and obesity is rapidly growing worldwide, in developed and developing countries also among young people…While lack of food is a major issue in some segments

of society, data show that caloric excess, unbalanced diet, physical inactivity, obesity and the chronic diseases that they spawn are equally dangerous. The affected population with obesity has increased with epidemic proportions, with more than one billion adults worldwide overweight and at least 300 million clinically obese.¹

Perhaps the most obvious correlation is that between the growing epidemic of obesity and declining participation in physical activity as at its most simplistic level, obesity is a problem of energy imbalance, or energy intake exceeding energy expenditure. There appears to be clear evidence that levels of obesity are growing. A recent study in Australia by the Australian Institute of Health and Welfare brought together self-reported as well as measured height and weight and waist circumference data over the period 1980 to 2001. Their findings were that in this period the proportion of obese men aged between 25 to 64 years increased from 9 to 17 percent of the total population, and for women, 8 to 20 percent. This trend is predicted to keep rising. However, as alarming as this trend seems, it placed Australia 4 percentage points behind the USA and UK.⁴ Trends in physical activity participation are not as clear. This probably reflects the complexity involved in measuring physical activity. According to Australia’s Health 2000:

The development of an appropriate tool to measure the physical activity among populations is a challenging task. Physical activity (any bodily movement produced by skeletal muscles that results in energy expenditure) for health benefit comprises several components (e.g. intensity, frequency, duration) that can be carried out in different settings (e.g. leisure time, occupational, transport). Measurement is further complicated because there are several dimensions of physical activity related to health such as energy expenditure, aerobic intensity, strength and flexibility.⁵

Despite these difficulties, the World Health Organization estimates that at least 60 percent of the world’s population fails to do 30 minutes of moderate exercise, such as walking, per

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day. In the USA, approximately 40 percent of Americans over age 18 are reported as failing to do any leisure time activity at all with a further 32 percent doing moderate activity. In Australia, figures from 1997 for those aged between 18 to 75 years showed that approximately 34 percent do no physical activity and another 50 percent do moderate levels of activity. Interestingly, these figures do not appear to have changed since 1990 in the dramatic way that obesity figures have. What seems to be developing is a situation where there is less incidental physical activity and therefore less overall calorie expenditure combined with an increasing calorie intake. As McElroy argues, the modern technological world has removed a great deal of motion from human daily routines. Whereas 94 percent of the energy for production was generated by humans, or animals, one hundred years ago, today less than 50 percent of people in the West are engaged in physical activity associated with work. This has created a need for greater leisure-time physical activity. However, McElroy points out that in fact inactive leisure pursuits are becoming more important, such as television and computer related activities. One can argue, therefore, that even those reported as doing moderate physical activity are relatively more sedentary and consume more calories than previous generations.

Addressing the Problem

Acknowledging that there is a problem based on the figures quoted, how is it being addressed? Physical inactivity and obesity is now regarded as a major public health problem that is challenging researchers in several disciplines to find solutions, particularly

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10 This argument is supported by Norton and Dollman in their summary of trends contributing toward a statistical increased calorie intake and reduced calorie expenditure among children in Western developed countries over the past thirty years. Kevin Norton and Jim Dollman, ‘Decreasing physical activity levels? Beyond reasonable doubt!’: *Sport Health*, Vol. 21, Issue 2, (Sports Medicine Australia, Dickson, 2003), pp.10-12.
in response to the growing economic costs and demands on nation’s health systems. Simply put, researchers in the field of Public Health are endeavouring to find the causes for why people are moving less and consuming more in order to devise strategies to get them to move more and consume less. What will be argued is that the addressing of public health issues is constrained by an established hierarchy, or pecking order. This is a consequence of the narrow way in which health is defined in late-capitalist Western culture. Health issues are primarily defined as medical issues, or conditions, to be addressed by medical professionals supported and legitimated by biomedical science. The common strategy in the field of Public Health, therefore, is to disseminate scientifically proven information through various media and to refer individuals primarily to medical professionals for help, who can then refer individuals to other professionals if necessary. In this strategy, complex research findings are turned into simplistic publicity campaigns warning people of the dangers of sedentary living. Scientists and medical experts are portrayed as the only legitimate source of knowledge. The implied dependency of this relationship is masked by a primary emphasis on individual responsibility and secondly, on circumscribing it as a medical problem. On the periphery, are various parasitic commercial industries seeking to profit from this problem and seeking legitimacy from the biomedical field. One of these industries, the Fitness Industry, will be revealed in this thesis as being disproportionately influential in this problem.

What needs to be understood, therefore, is that physical inactivity/obesity is being addressed within narrow parameters. While there are other disciplines involved in Public Health research, such as psychology, sociology and economics, these are subsumed by biomedical science. Physical inactivity/obesity is, therefore, primarily seen as a biomedical issue and secondly as a psycho-social issue. However, this does not appear to match the priorities identified by major Public Health bodies, such as The World Health Organization or The Australian Institute of Health and Welfare. There appears to be a consensus, at least between these two bodies, that the causes of these trends are highly complex in nature, primarily concerning the interrelationships between individuals and the structures within which they live. For example, The Australian Institute of Health and Welfare, in agreement with The World Health Organization, states that:
Apart from genetic factors, which are not modifiable, other influences on weight are social, economic and cultural factors and the nature of the physical environment. These tend to affect weight through their interaction with dietary behaviours and patterns of physical activity. The large-scale environmental and cultural changes inherent in the modernization of society – particularly in the latter half of the 20th century – are considered to be the driving forces behind the global epidemic of obesity.\textsuperscript{11}

The implication here is that this is primarily a problem stemming from a number of major structural changes that have changed the relationship between people, food and physical activity. The picture that emerges is one of social, economic and cultural developments in which technology has been central in reducing the level of incidental physical activity in daily life. These developments include changes in transport modes, work and leisure practices and the development of food technologies that have on one hand made more calories conveniently available and on the other removed the physical activity of individual food gathering and preparation. \textit{The World Health Organization} acknowledges the complex nature of the problem and the need for a global, multi-faceted and multi-institutional preventative approach. They argue that the ’…evidence is overwhelming that prevention is possible when sustained actions are directed both at individuals and families, as well as the broader social, economic and cultural determinants of NCD’s.’\textsuperscript{12}

They further argue that:

\begin{itemize}
  \item Population-based collective actions, involving various stakeholders, including public and private sector groups and NGO's.
\end{itemize}

\textsuperscript{11} Australian Institute of Health and Welfare, ‘A growing problem’, p. 3.
These should involve multiple sectors – especially health, sport, education, transport and culture and recreation ministries, as well as urban planners and local governments/municipalities.

- They should be culturally relevant and partnership based.
- They should promote physical activity in all life settings.
- They should make use of major sport, health and cultural events.\(^\text{13}\)

What *The World Health Organization* is prescribing is anything but a predominately biomedical approach to a medical condition. Its approach for achieving increases in physical activity levels and decreasing obesity combines both individual and group behaviour change coupled with the creation of environments conducive to such change. However, as compelling as this argument for a complementary, multi-level approach to change appears, there seems to be little evidence that such change is occurring, or is likely to occur. In fact, as *The World Health Organization* and *The Australian Institute of Health and Welfare* speculate, it seems more likely that current trends will escalate.\(^\text{14}\)

What will be argued in this thesis is that both the current situation and projected future escalation has much to do with a general resistance to change, particularly the significant structural change advocated by *The World Health Organization*. Structural issues have been and are largely ignored in favour of strategies aimed at individual behaviour change and medical treatment. In other words, the responsibility for change is left to individuals and treatment left to medical professionals. It is evident in the work of those, such as McElroy, for example, that there has been little serious effort made, both in research and in public policy-making, to bring about major and meaningful structural change to counter this problem. Priority is in fact given to those disciplines that pose little or no challenge to existing structures but are instrumental in trying to integrate individuals within the status quo. What will be argued, is that it is this reluctance to change social structures in which people are becoming less active and obese that is at the heart of the problem. Of particular concern is the lack of culture change at its deepest levels; levels where culture is not merely

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\(^\text{13}\) World Health Organization, ‘Fact Sheet – Physical Activity’, pp. 3-4.
a determining component of a societal structure, but what shapes the determinants of societies. It is to culture in this sense, that reveals the drivers of the drivers, that one must turn for deeper understanding.\textsuperscript{15}

\textbf{The Problem of Change}

A deeper understanding reveals that the central issue in this thesis is that of change. The relationship between people, physical activity and consumption has changed such that levels of physical activity that can balance consumption and maintain less than obese body weights are no longer the norm. One can argue, in fact, that it is obese people who have successfully changed to conform to what Western society now requires, extreme consumption. If this were the case, then there would appear to be no problem. The call for change though relates to certain cultural standards of what a normal human being should look like and how they should live, standards of leanness and athleticism that are regularly projected within the popular media. But these standards do not appear to be consistent with what is being produced by Western society. It would appear that a significant mismatch has emerged between the ideal and the real; between the world as it is and the world as it should be. Clearly the answer lies within The World Health Organization prescription for significant change at many levels, from major institutions, to communities, to individuals. If there is a will to create a world in which individuals are more physically active and consume less, then all levels of human interaction must consistently reinforce this as the norm. This however is a call for change of a magnitude that is bound to meet significant resistance. What needs to be understood therefore in relation to change, is also the nature of resistance.

For example, there is the issue of epistemological legitimacy. Concepts of what constitutes authentic knowing, emerge and become embodied in cultures, largely determining activity

\textsuperscript{15} This deep view of culture is similar to but should be distinguished from what Harrison argues is a renewed focus on ‘…the role of cultural values and attitudes as facilitators of, or obstacles to, progress,’ an encouraging development but one that is relatively superficial. Lawrence E. Harrison, \textit{Why Culture Matters: Culture Matters: How Values Shape Human Progress}, ed. Lawrence E. Harrison and Samuel P. Huntington, (Basic Books, New York, 2000), p. xxi.
within them. This is not a problem until a particular epistemic strategy, as Restivo terms it, resists change to the point of closure. Drawing on Restivo, epistemology can be understood metaphorically as a swinging pendulum that oscillates between periods of openness and closure, rationality and irrationality, wholism and atomism, mysticism and science, and other such extremes. Particular epistemic strategies, or ways of knowing the world, emerge to dominate for a period before running into epistemological dead ends. They then ossify to become closed traditions, or as Boulding argues in relation to mechanistic science, ‘…a church, concerned mainly with transmitting the treasures of its knowledge unimpaired from one generation to the next.’ Epistemological dead ends lead to breakdowns in rationality. This then creates the conditions for stimulating new forms of inquiry that see new epistemological strategies emerge. According to this view, Western development has been underpinned by a cycle of dominance since the Enlightenment of the epistemic strategy of mechanistic materialist science. Mechanistic materialist science has become orthodox science, a closed tradition whose limits are becoming increasingly apparent.

What is argued in this thesis is that despite these apparent limits, mechanistic materialist science continues to dominate effectively forming a wall of resistance. Mechanistic materialist science, the history and nature of which will be examined in this thesis, has emerged and developed since the Renaissance and has come to define the parameters of legitimate knowledge in the West. Its methodology, based in physics and mathematics, has become the foundation for all of the major sciences, whether physical or human. This has developed to the point where all problems confronting Western societies now enter what can be understood metaphorically as a mechanistic science production line. In this technical rationality, problems are fed in, hypotheses developed, experiments designed and data collected that then informs the decisions of various policy-makers looking for clear and accurate results. Within this hegemony there is a hierarchy of disciplines determined

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18 Ibid: Ch. 6.
by ability to most accurately represent reality. The physical sciences occupy the top levels of this hierarchy with human and social sciences down the bottom due to the problematic nature of their object of study. The overarching goal of this hegemony, and the secret of its success, is the accurate prediction and control of natural processes. It is this hierarchical structure that largely determines the dominance of biomedical science over human and social sciences within the field of Public Health.

The problem with production lines though is that being based on the logic of the machine, they are inherently unreflexive. As mechanisms, they are oblivious to questions of value. This is not a problem unless such mechanisms come to be regarded as primary and autonomous of the people who create and maintain them to the point where questions about the relative merits of such systems themselves and the quality of the data being churned out, become redundant. They then become roadblocks to the emergence of new ways of understanding. The view defended in this thesis is that this is now the situation in late-capitalist Western culture. Mechanistic materialist science and its machine logic dominates, while those challenging its validity are effectively marginalized. This is why the need for a deep philosophical perspective is proposed and will be defended. The argument will be made that the problem of physical inactivity/obesity has already been fed into the mechanistic science, knowledge production line and that this happens as a matter of routine, obviating the need for any philosophical debate. The consequences of this will be made apparent by revealing the fragmented, contradictory and generally ineffective nature of the approaches being put forward by isolated, competing disciplines. What will be shown is that what is gained from the production line is information and power, but what is lost, is understanding, wisdom and openness.

**The Role of Philosophy**

Crucially, what has been lost in the production line is the relationship between growing physical inactivity/obesity and the history of philosophical inquiry. It will be argued that questions regarding the nature of change, resistance and standards of normal human behaviour, in relation to physical inactivity/obesity, go beyond the scope of the mechanistic
materialist scientific research being applied. Research in the Public Health field is generally constrained by an epistemic strategy that focuses on achieving predictive certainty within narrow and tightly controlled domains. Ironically, an example of the limited scope of this methodology is the statistical data quoted at the beginning of this chapter. Such scientific approaches can only reveal decontextualized fragments of highly abstract information. These give little insight into the nature of deeper underlying world-views that will be argued both underpin the drivers of the problems of physical inactivity and obesity as well as block meaningful progress toward addressing them.

Mechanistic materialist science’s prescription for being physically active and reducing energy consumption stems from its technical rationality. Data churned out by the production line is in the form of quantities and linear cause and effect relationships. For example, physical activity can measurably cause you to live longer, have less disease, have more fun, have less fatigue, have more strength and endurance and have less body-fat. One does not need to reflect but to calculate the costs and benefits. Based on such a calculation, a rational person will choose to be active. Any action outside the bounds of this formula is deemed irrational. According to this logic, a large percentage of the world’s population is deemed irrational. More broadly though and of more concern, so are those who offer criticisms and alternative views. Mechanistic materialist science now not only defines reality but its logic is widely believed to represent reality, a position affirmed within the socio-political milieu in which it exists. A consequence of this is that ontological issues are no longer seen as relevant. The nature of existence is now the domain of science rather than philosophy. Without philosophy though, no assessment of science’s relationship to reality can be made.

Therefore, physical inactivity/obesity and the methods being used to address it must be primarily addressed as philosophical issues. They are issues that concern all three interrelated areas of philosophy; metaphysics, epistemology and axiology. The issue of physical inactivity/obesity is understood in this thesis as primarily one that draws together the most contentious issues in the history of philosophy; issues such as the nature of reality, embodiment, freedom, rationality, truth and morality. Of particular emphasis in this thesis
will be metaphysics, or what Aristotle termed, ‘first philosophy’, the science ‘…which
investigates being as being and the attributes which belong to this in virtue of its own
nature.’\textsuperscript{19} Here the work of philosophers in the process tradition becomes important, for
there is an implicit recognition therein that the ‘being’ of which Aristotle speaks is not
analogous to permanence, as the mechanistic materialist tradition would have us believe,
but rather to change. This tradition has two commonly recognized main streams, one
largely reliant upon the French philosopher Henri Bergson and the other upon the Anglo
American philosopher A. N. Whitehead.\textsuperscript{20} The former is noted for its reliance on a broad-
sweeping qualitative appeal to the senses for an understanding of the processual nature of
experience. The latter by contrast is noted for its technical complexity and unique
nomenclature to articulate the process of change in minute detail.\textsuperscript{21} Although such detail
allows the Whiteheadian tradition domain over a wide range of issues, from physics to
education, its detail and nomenclature make it problematic.

This is where the work of Arran Gare becomes significant.\textsuperscript{22} Gare’s thesis is that
metaphysics has been marginalized by the epistemological dominance of mechanistic
materialist science. The problem this has created is that arguments over problems in
Western culture all contain implicit rather than explicit assumptions about the nature of
reality. Therefore, these assumptions remain unexamined. But it is from such deep
assumptions that one can gain greater understanding, particularly of issues such as change,
resistance and human norms. It is also from where more powerful arguments can be
generated as concepts of primary existence have less alternatives. This is why, from a
metaphysical perspective, one can better evaluate epistemic strategies.

Gare’s approach is one that is inclusive of multiple levels of understanding, including a

\textsuperscript{20} This is suggested by Rescher in, N. Rescher, \textit{Process Philosophy: A Survey of Basic Issues}, (University of
Pittsburgh, Pittsburgh, 2000).
\textsuperscript{21} As is particularly evident in Whitehead’s most recognized work, Alfred North Whitehead, \textit{Process and
1979).
\textsuperscript{22} This thesis draws heavily on the work of Gare, particularly from his book, Arran Gare, \textit{Nihilism Inc.: 
deep metaphysical understanding. Gare argues that deep metaphysical perspectives are not only a necessary complement to a fuller understanding but are an inextricable aspect of human conceptual schemes. One needs to be able to continually situate small-scale events within broader and deeper contexts to make sense of them. This requires an understanding of the universe as being constituted by multiple spatio-temporal levels of different scales and rates. This hierarchical understanding of the structure of the universe reveals the nature of the relationship between different spatio-temporal levels. Metaphysical world-views can be understood as bigger and slower levels of understanding compared to epistemological or axiological issues. In other words, knowledge and values change more rapidly than metaphysical world-views. Epistemic strategies can emerge and dissipate many times within a consistent metaphysical world-view. Therefore, if one examines deep metaphysical currents of thought, one can find common consistent patterns over long periods of time. Whether these patterns can remain coherent though is the important issue Gare confronts.

Gare identifies a consistent metaphysical pattern underpinning many of the dominant cultures throughout human history. His arguments are within the context of the environmental crisis now confronting humanity. He sees the deterioration in global ecosystems as being related to this pattern, one that he argues is a deficient metaphysical world-orientation that legitimates and gives justification to human domination and control of nature. This world-orientation can be seen to continually reproduce itself within many evolving forms of social organization and epistemic strategies. As he argues:

The roots of these deficiencies...lie in metaphysical notions that originated in Ancient Greece, were developed in medieval Europe, incorporated into mechanistic materialist science, assumed by economic theory and institutionalized in capitalist society. With the development of capitalism and the elaboration of mechanistic materialism into evolutionary theory, Social Darwinism and information theory, these notions have come to inform almost all the practices of those people who now dominate the world. They underlie the concepts in terms of which people define themselves, their relationships to each other, to society and to nature. They provide the basis on which people make their decisions about how to live and what to do. In this way they largely have come to constitute the existing
social order so that people are enmeshed in a framework of defective concepts which defines their reality and limits their comprehension... It is not only that these concepts have blinded people to the intrinsic value and fragility of their world... By disorienting them and frustrating their potentialities, they have also engendered aggression, nihilistic violence and destructive social dynamics which exceeds the comprehension of most people. Environmental problems reveal the deep-rooted nature of these deficient metaphysical notions.\textsuperscript{23}

Gare’s position follows the great systematic philosophers such as Plato, Aristotle, Kant, Hegel and Marx, who developed systems of thought that were coherent across all three areas of philosophy. His position is one that is in opposition to what he reveals to be a current trend toward postmodernist superficiality and relativism, particularly in the social sciences. These positions reject in an ironically unified way, the validity of totalizing perspectives or unified grand narratives. It is such positions, he argues, that are subverting both the critique of dominant world orientations and the formulation of new ones.\textsuperscript{24}

Alternatively, Gare’s dialectical approach in his historical analysis reveals continuities in metaphysical concepts that can be conceived as metaphysical traditions of thought. He identifies the metaphysical tradition of thought underpinning dominant cultures as mechanistic materialism. This is an orientation ‘...according to which the world itself is devoid of meaning, life is just a struggle for survival and for power in which the destruction of the weak is inevitable, knowledge is simply a means to control the world, and the only real values in life are survival, pleasurable stimuli and entertaining distractions.’\textsuperscript{25}

The dominance, continuity and defectiveness of this tradition is best revealed in comparison to alternative traditions. Gare identifies what he regards as a superior and more coherent tradition within the history of process metaphysics. In this tradition:

…the world is understood as a process of creative becoming continually generating emergent processes. Humanity itself is then represented and explained as a complex of

\textsuperscript{23} Ibid: p. 3.
\textsuperscript{24} Gare describes the emergence of post-modernism as a ‘neurotic adaptation to mechanistic materialism’. He uses as an example Jean-Francois Lyotard’s rejection of grand narratives in favour of heteromorphous language games. Ibid: pp. 159-163.
\textsuperscript{25} Ibid: p. 2.
emergent processes, thereby resolving the most important problems in the philosophy of
mind and philosophical anthropology; the relationship between mind and body,
consciousness and the world, thought and action, freedom and determination, and the
individual and society.  

For Gare, process metaphysics today is the continuation of a long tradition of alternative
thought that now underpins the relational-wholistic scientific epistemic strategy that has
emerged to challenge the roadblock of mechanistic materialist science. It is a view of
reality, thought and consciousness that has gained support since the emergence of relativity
and quantum theory in the early part of the twentieth century. Whereas mechanistic
materialism begins with a universe that is material, static and fragmented, process
metaphysics begins with a universe that is an active, undivided whole. From this, primary
reality is understood as relational process from which structure emerges as constraints on
activity. Each emerging structure co-creates and exists within its particular spatio-temporal
domain. This then provides a very different perspective on the nature of change and
resistance, one that sees change as primary and resistance, or constraint, as secondary
processes necessary for creating order. Human beings, in this conception, are semi-
autonomous processes co-creating trajectories, constrained by larger and slower processes,
while themselves constraining smaller and faster processes. From this metaphysical basis,
problem solving will be seen to be ontologically multi-level requiring complementary
contributions from diverse disciplines.

Gare’s process metaphysics is designed to create more order within the process tradition.
The view of a constantly changing reality has profoundly challenged humanity’s obsession
to establish fixed foundations for knowledge as well as notions of absolute and objective
truth. The consequent confusion has underpinned the emergence of an over-reaction in the
form of post-modernism and generated chaos in ethical debates. There is also the problem
of closed concepts involving absolutism within the process tradition itself and the retreat to
the security of ancient closed traditions. It is the absence of a unified process perspective
though that has allowed the defective mechanistic materialist world-view to dominate. It

26 Ibid: p. 4.
has also reduced dissenting scientists to making weak epistemological arguments with no basis in well-articulated alternative concepts of reality. The need for a well-articulated process metaphysics and unified process tradition is to ensure that in an ever-changing world, world-views themselves constantly change to make sense of newly emerging strategies. This is an emancipatory strategy designed to address the pathologies of closure. The role of metaphysics in this project is not just to reveal underlying world-views after they have emerged, but to continually create metaphysical frameworks to ensure a continuity of open inquiry.

In summary, history, according to Gare, has been and is dominated by materialism, which has become since the scientific revolution, mechanistic materialism. Mechanistic materialism is an orientation that has dominated human development by giving legitimacy to those seeking power and control to use whatever means necessary to achieve and maintain it. It is an orientation that has effectively destroyed belief in its transcendence, leading to a self-destructive nihilism in Western culture. What will be argued in this thesis, in agreement with Gare, is that human activity in late-capitalism is underpinned by a dominant and ossified world orientation, being mechanistic materialism. It is this world orientation that underpins the dominant epistemic strategy of mechanistic materialist science. For much of history, materialism has been opposed by an equally defective idealism that cannot account for the nature of structure. What has emerged in modern times to transcend both is process philosophy, a world-view that will be shown to provide a more coherent understanding of the nature of reality and in so doing challenge the validity of the mechanistic materialist and idealist world-view. The argument will be made that the growing public health problem of physical inactivity/obesity reveals the deep-rooted dominant nature of the deficient metaphysical notions stemming from mechanistic materialism. One can equate human attitudes to nature with attitudes to health and well-being. Therefore, Gare’s approach to environmental problems will be applied to this public health problem with the argument being that meaningful structural change will only be made possible by first adopting an alternative, process metaphysical perspective.
A Relevant Paradox

From a process perspective, the physical inactivity/obesity problem reveals an interesting paradox, one that does not appear to have been recognized by Public Health researchers. In the 1970’s an industry emerged to provide services to assist people to perform regular physical activity as well as promote active lifestyles. This industry, originating in the USA, has developed over the past thirty years to become a global phenomenon known as the Fitness Industry. Its services include advice on and assistance with exercise, nutrition and motivation from mostly professionally trained and accredited instructors as well as access to various facilities including weight and aerobic training equipment, aquatic, relaxation and various other programmed recreation activities. Generally these services are provided for a fee, either by commercial or not-for-profit organizations, within a specially designed facility, or club, however there are also individual professionals or businesses that provide services in home or outdoor settings. According to an American Fitness Industry representative body, The International Health, Racquet and Sportsclub Association, (IHRSA), the Industry, at least in the US, has grown significantly since the early 1980’s, when the collection of statistics began. The number of Health Clubs, or Fitness Centres, has grown from 6,211 in 1982 to 20,204 in the year 2003. Health Club memberships grew from 17.3 million in 1987 to 36.3 million in 2003. In 2003, total Industry revenues in the US are $13.1 billion. Globally, IHRSA estimates there to be approximately 32,000 clubs including 1,400 in Australia. While Australia’s Industry is relatively small and lacks statistical data, similar growth patterns to the USA have been observed.

Over the same period in which obesity and other conditions related to physical inactivity have grown, therefore, the Fitness Industry has also grown. While this growth in the Industry may appear irrelevant in proportion to the size of the global public health problem, the argument in this thesis is that there is a correlation between the two that provides an important key to the nature of the problem. This key can be found in the nature of the

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relationships between people and their worlds within late-capitalism. In late-capitalism, problems create parasitic industries. For example, the increase in obesity has created a massive diet industry that profits from people’s weight and eating problems. Similarly, the Fitness Industry has emerged to profit from growing physical inactivity.28 What develops therefore, are relationships of dependency and the pathologies related to such relationships. Whereas physical inactivity has been narrowed to a medical issue, less work-related physical activity has seen the domain of physical activity narrowed to that of a leisure pursuit, or lifestyle choice. Reduced to a leisure pursuit, physical activity now competes with other leisure activities for people’s attention. In late-capitalism, physical activity has become a leisure commodity. The Fitness Industry can be understood as having emerged as part of the leisure industry that seeks to influence and profit from leisure-time pursuits through the marketing of leisure commodities. This has had a profound effect in re-defining what physical activity is. It is now largely something to be purchased from someone in the Fitness Industry. This then places physical activity almost exclusively within the domain of those who can afford it. From this perspective, data showing that lower socio-economic groups participate in relatively less physical activity comes as no surprise.29

What will be argued, therefore, is that the Fitness Industry, like mechanistic materialist based Public Health research, presents solutions to the physical inactivity problem that are implicated in its cause. The success of the Industry relies on commodification of physical activity and increased specialization in order to make people dependent on their service. At the same time, the Industry is dependent on there being a physical inactivity problem. This ultimately has the effect of alienating people from physical activity. There is therefore a

28 In this thesis, the term Fitness Industry will be understood to include the Diet Industry. Both engage in similar practices only with differing emphases.
29 USA figures reveal that those earning less than $25,000 per year make up only 10 percent of fitness club membership, International Health, Racquet and Sportsclub Association, ‘Club Membership by Annual Household Income’: Industry Statistics, (IHRSA 2003), http://csdemo12.citysoft.com/IHRSA/viewPage.cfm?pageId=808, (2 September 2003), p. 1. Also, Data 2010 figures reveal that white, college educated, urban Americans have significantly higher levels of participation in physical activity than poorer ethnic groups. Centre for Disease Control, ‘Physical Activity and Fitness’, pp.1-9.
danger in the fact that the Industry is growing and seeking greater influence. The commercial imperative of the Industry within the logic of capitalism requires it to continually increase its market share. The Industry therefore takes an aggressive attitude toward market domination including taking over or subverting areas where physical activity is performed beyond its control. In this regard the Fitness Industry is becoming an important player in the move in late-capitalism toward increased privatization of government and community services. It increases its own market share though at the expense of other areas by limiting the domain of physical activity to its own services, therefore becoming implicit in excluding many from physical activity. It further excludes many through the nature of its services that are usually developed without member input and designed to improve ‘throughput’ rather than provide meaningful experience and education. Ultimately, the Fitness Industry, particularly the dominant commercial or for-profit sector, exists to benefit its owners, leaving the health and fitness of the community as a secondary concern. The Fitness Industry can therefore be understood to be a subversive influence against the recommendations of The World Health Organization for improving global physical activity and obesity levels, particularly where they relate to structural change.

**Important Links**

What is being presented here is a complex argument. The Fitness Industry, as a way of addressing physical inactivity/obesity, is like current Public Health strategies, bad for health. It has emerged and grows from within the very conditions that are alienating people.

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31 This is evident in recent efforts by the for-profit segment of the Industry to subvert the activities of not-for-profit organizations such as the YMCA that generally provide a more affordable service to lower socio-economic groups. Court action is being taken by for-profit organizations to remove tax exemptions to not-for-profit organizations and establish a level playing field. Reid R. Frazier: ‘Health club’s lawsuit says YMCA shouldn’t be tax-exempt’, *Pittsburgh Live*, (Tribune Review, Trib North, March 9, 2003), <http://www.pittsburghlive.com/x/tribune-review/tribnorth/news/s_122539.html>, (2 September 2003) p. 1.

32 A study by the Evatt Research Centre details much of this increase in privatization in Australia including the privatization of council recreation centres. Evatt Research Centre, *Breach of Contract: Privatization and the Management of Australian Local Government*, (Pluto Press, Leichhardt, NSW, 1990), Ch. 5.4.
from incidental physical activity. What this thesis attempts to reveal is the nature of these conditions and possible alternatives. This will be in the form of a hermeneutic study and a dialectical approach aimed at revealing and establishing several important links. Firstly, the case must be made linking Public Health research and the emergence and development of the Fitness Industry to mechanistic materialism. In Chapter One, this link is revealed in the relationship between the Fitness Industry, the dominant way in which health is defined, and capitalism. Underpinning these links are the issues of control and inequality, that have been identified as key determinants of health. Both the capitalist model of political economy and the biomedical model of health continue traditions in which a few control the activities of many, including dissent. In late-capitalism, this is revealed in the relationship between labour and capital within the Neoliberal ideological framework that now dominates capitalist relations, whereas in biomedical health, this is revealed in the hierarchical relationship between scientists, practitioners and patients. Underpinning this is the mechanistic materialist view of the world as primarily composed of discrete, autonomous fragments of matter. A short history of this metaphysical tradition will also be given.

In Chapter Two, a brief history of the emergence and development of the Fitness Industry will be given linking it to the continuing development of capitalism under Neoliberalism and the biomedical model, as well as the developing physical inactivity/obesity problem. Some of the business practices of the Industry will be revealed as being detrimental to the healthy development of human beings. In Chapter Three, the dialectical nature of this thesis will be revealed by way of an introduction to the history and nature of an alternative process tradition of thought. This chapter will focus particularly on explicating Gare’s process metaphysical categories and arguing their potential for resolving some problems in process thought. The argument will be made that the process tradition itself must unite against mechanistic materialism and that Gare’s concepts provide the starting point towards such a unification. In Chapter Four, process metaphysics will be shown, in comparison to mechanistic materialism, to give coherence to many new theories in science, particularly in the area of complexity theory and hierarchy theory, that challenge the most basic tenets of mechanistic materialism. Towards the end of this chapter, this understanding of process
metaphysics will be applied to developing a new concept and definition of health. It is this process definition of health, based on the quality of relationships and the notion of mean intentionality, that will provide a stark contrast to the understanding of health within mechanistic materialism, as well as revealing the unhealthy nature of Public Health research, the Fitness Industry and the culture from which it emerged.

Chapter Five explores the epistemological implications of process metaphysics. What will be argued is that the growing dominance of mechanistic and reductionist science legitimated by Logical Empiricism is associated with its power to define what is true and valid knowledge. This process has seen other ways of knowing the world become increasingly devalued, including metaphysics. In contrast, a process epistemology will be seen to be primarily dialectical. It embraces different types and levels of knowing as being complementary to the goal of better understanding and acknowledges the role of largely unconscious direct perception. The importance of this chapter is that it provides a basis for understanding in Chapters Six, Seven and Eight, why there is an increasing reliance by the Public Health field and the Fitness Industry on mechanistic science to legitimate its activities. In these three chapters, the main services of the Fitness Industry and the practices of their delivery will be individually analyzed, these being exercise activity, nutrition advice and psycho-social motivation. Each of these services has co-developed with and is informed by a particular field of science, these being exercise science, nutritional science and particular areas of psychology and sociology, that are also within the field of Public Health. These will be analyzed in relation to problematic dichotomies arising in each area that in turn reveal what are argued to be the two main ideological links between the Fitness Industry and mechanistic materialism; Neoliberalism and Logical Empiricism. The influence and destructiveness of these two ideologies will be revealed in contrast to the ideas of those identified as process thinkers within these fields.

In concluding this thesis, three scenarios of possible futures of physical activity will be put forward. These will be based on the scenarios for life in Australia in the year 2050,
suggested by Cocks. In particular, two of Cocks’s scenarios will be used; his ‘economic growth’ scenario of continuing Neoliberal domination, will be used as a model of a world created within the mechanistic materialist framework, and the ‘post-materialist’ scenario, emphasizing an ecological approach, will be used as a model of a world created within a process framework. The argument will be made that in an ‘economic growth’ future, which will be similar to what the world has experienced in the past twenty years, problems of inactivity and obesity will continue to grow along with the commercial Fitness Industry. Alternatively, within a ‘post-materialist’ scenario, a process concept of health can be embraced that will pave the way for a more active future for all. In this healthy scenario, the Fitness Industry as well as much of Public Health research, will be seen to become increasingly redundant.

ONE

THE MECHANISTIC MATERIALIST TRADITION
AND HEALTH

To begin, several links must be made tying the physical inactivity and obesity problem to the metaphysical tradition of mechanistic materialism. In this thesis the emphasis in this task will be on the relationship between the field of Public Health and the Fitness Industry. As was discussed briefly in the Introduction, the emergence and development of these fields is best understood through being linked to the emergence and development of metaphysical systems of thought throughout human history. The purpose of this chapter is, therefore, to explore the notion that the underlying assumptions and visible practices of these fields, in late-capitalism, produce and re-produce the metaphysical tradition of thought of mechanistic materialism. The argument will be made, particularly in relation to labour relations, that mechanistic materialism underpins the development of late-capitalism itself as well as the dominant definitions of health that are currently being debated within the critical discourse of Public Health. An examination of this discourse will reveal a link between the metaphysical assumptions underpinning both the development of late-capitalism, Public Health and the Fitness Industry.

The relationship between those areas of Public Health addressing physical inactivity/obesity and the Fitness Industry is largely unacknowledged and little understood. This is a consequence of both areas being largely territorial and unreflexive. Both assume their validity to be beyond question due to their relationship to mechanistic materialist science and also, as will be argued, to their relationship to the values inherent in capitalism. In the Fitness industry, little or no critical discourse has emerged to question its underlying assumptions and practices. This thesis is therefore a step towards initiating the development of such a discourse. Within the broader field of Public Health, however, a
critical discourse does exist at the margin, one that the Fitness Industry is relevant to but which does not appear to have been acknowledged on either side. Public Health critique, for example, refers to the role of Health Promotion in encouraging individuals to include exercise in a healthy lifestyle, but rarely refers specifically to the role or influence of the Fitness Industry. Even uncritical literature in the Public Health discourse that pertains specifically to physical activity, fails to mention the role of the Fitness Industry, despite the suggestion in the Introduction that the commercial Fitness Industry has the potential to become more and more the major provider of physical activity related services. On the other hand, the Fitness Industry sees itself as being largely self-contained and therefore removed from critical issues in the Public Health domain. It is important therefore to establish a relationship between the Fitness Industry and the critical discourse within Public Health and in so doing, establish a relationship between the current concerns of Public Health critique and the emergence and development of the Industry. One of the major concerns of Public Health critique is the way in which health is defined.

### Current Definitions of Health

A common thread running through Public Health literature, be it biomedically, sociologically, psychologically or ecologically based, is the need for an adequate definition of health. In fact, Baum sees definitions as central to the Public Health discourse in that: ‘Critical perspectives on health are those that seek to explain the purposes that are achieved through particular means of defining health.’\(^1\) Baum gives an excellent historical overview of the evolution of health definitions. She argues that health has become dominated by what she terms a ‘clockwork’ biomedical perspective, a perspective that will be explored in some detail in this chapter. According to Baum:

> Health is defined as the body operating efficiently like a machine. Any breakdowns in the body system mean that it is not healthy. The isolation, labelling and systematic classification of specific diseases by Linnaeus in the eighteenth century was an important

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part of the development of the clockwork model, later consolidated by an increasingly sophisticated understanding of the specific causes of disease.²

This biomedical perspective relates to orthodox medical science and its theories and practices that are highly visible in hospitals, clinics and medically endorsed public health programs throughout the world. Cooper, Stevensen and Hale view this biomedical perspective as monological. They argue that it is generally represented as ‘…a singular entity, bounded within a larger framework of ‘scientific knowledge’ and sharing a common understanding of both ‘the body’ and the therapeutic techniques available to support and maintain the health of that body.’³ For Fox, the biomedical model defines health in terms of its opposite, or the absence of disease, which effectively excludes any definition beyond the power and control of the model. Fox also argues that all definitions have a politics associated with them; ‘…all try to persuade us to a particular perspective on the person who is healthy or ill.’⁴ Hence, Baum points to political economy perspectives that define the biomedical model in terms of its socializing and integrating role in capitalist culture, and postmodern perspectives on the biomedical model’s exclusion of the ill as not fulfilling their obligations as citizens.⁵

Generally, the Public Health critical discourse can be characterized as being critical of the biomedical model for being mechanistic, deterministic and ignorant of social, psychological and spiritual aspects of health. In highlighting the limitations of the biomedical model, Baum points to the parallel existence of other, broader perspectives on health coming from traditional midwives, indigenous forms of healing, natural therapies and Chinese medicine, that have, she argues, ‘…consistently been the poor relation of the clockwork model.’⁶ Also marginalized by the biomedical model have been lay perspectives on health. While medical science has grown to become more

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² Ibid, p.4.
⁶ Ibid, p. 4.
complex and specialized, distancing the general public from an understanding of its machinations, it defines health in a simplistic way that excludes the polyphony of lay dimensions of subjective experience of health and illness. Baum lists some of these definitions which include health as vitality, lifestyle, fitness, social relationships, psychosocial well-being, functionality, self-control or freedom from control, moral correctness, Godliness, or other supernatural perspectives.7

Growing awareness of the limitations of the biomedical model led to efforts to construct broader definitions of health. The initial effort, and the impetus for further definitions, is generally accepted to be the definition laid down by The World Health Organization in 1946. They defined health as “…a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”8 This definition appears at the beginning of much Public Health literature and underpins either critiques of the prevailing biomedical model or efforts to introduce alternative models. The addition of the notion of mental and social well-being to physical well-being, has led to a greater involvement of psychology and sociology in the health discourse, culminating in the current favoured model in the Public Health discourse, the biopsychosocial model.

The term biopsychosocial model is generally traced to George Engel.9 Bloom points to Engel’s work in interdisciplinary collaborative settings, as the inspiration for his recognition that other disciplines are required to account for behavioural problems in health that cannot be accounted for biologically. Bloom describes the biopsychosocial model as a systems approach where socio-cultural and biological levels of analysis merge:

The model hypothesizes, first, that in order to understand a particular person’s illness and how to treat it, it is imperative to consider the interaction of biological, psychological, and social factors. In addition, the biopsychosocial model hypothesizes that treatments will interact with each other as well as with the person in the environment. With these

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7 Ibid, pp. 7-8.
8 Quoted in Australian Institute of Health and Welfare, Australia’s Health 2000, p. 2.
9 Both Bernard Bloom, Health Psychology: A Psychosocial Perspective, (Prentice Hall, New Jersey, 1988) and Cooper, Stevenson and Hale: Integrating Perspectives on Health, refer to Engel as the most noteworthy advocate of the model he termed the biopsychosocial model.
interactions in mind, it is possible to develop a multidimensional treatment regimen for a particular person-in-the-environment that can be more effective than any unidimensional treatment program….Second, today’s systems approach to the understanding of health and illness distinguishes among three domains of inquiry – factors related to (1) the predisposition to becoming ill, (2) the precipitation of illness in persons already pre-disposed, and (3) the perpetuation of a disorder in persons already ill.10

These notions of interdisciplinary collaboration and systems approaches are important ones in this thesis and their presence in the biopsychosocial model are seen as indicating a more enlightened approach. The biopsychosocial model has its critics though, even outside of the biomedical area. Cooper, Stevenson and Hale for example, point to the problem of the value-laden nature of models of both types and the problem of practically integrating all three aspects of the biopsychosocial model. In regard to values for example, they point to the influential, conservative sociologist, Talcott Parsons, who was in favour of a more integrated approach but the values underlying his functionalist approach served to perpetuate the biomedical hegemony.11 This hegemony represented values of activism, worldliness and instrumentalism. Cooper, Stevenson and Hale argue that:

Respectively, these values can be seen to be reflected in medicine’s powerful need to act on the environment rather than to adjust to that environment. Hence we find a situation where the aim of medical treatment is to cure, with little if any attempt being made to facilitate patients in managing their conditions within the context of everyday life. Similarly, there is an explicit preference for secular explanation and response to illness, with little acknowledgement of the role played by religious/spiritual aspects of patient’s experiences. Finally, medical science is based on an instrumentalism which requires that the practitioner must be seen to be doing something, anything, if her or his credibility and position is to be maintained.12

11 Cooper, Stevenson and Hale, Integrating Perspectives on Health, p. 7.
In regard to integration, Cooper, Stevenson and Hale point to changes in nursing and social work. Nursing developed its own professional framework from the mid part of the twentieth century that ‘…felt compelled to eschew all things medical.’ Within this development nursing has been prepared to explore psycho-sociological aspects as well as engage in philosophical inquiry. Traditional structures of power and status though have succeeded in keeping nursing’s research contribution on the margin and its practice entrenched within the biomedical model. Social work on the other hand has become more firmly rooted in the social sciences and has therefore moved away from integration with the biomedical model. The problem with the biopsychosocial model then, according to Cooper, Stevenson and Hale, is whether the integration implied by the model is practically possible and whether the simple adding on of psycho and social amounts to anything fundamentally different. Cooper, Stevenson and Hale’s solution to this problem requires underpinning the biopsychosocial model with a new metaphysical notion of ‘holism’. This notion will be returned to later as one supporting the argument in this thesis.

Baum, describes a further, important development in the evolution of health definitions as the shift in emphasis from the health of the individual, to the health of a place. The example she gives is of *The World Health Organization’s Healthy Cities Project*. Here, the collective structures of communities form the crucial determinants of a population’s health status, broadening definitions even further to include collective entities and the socio-political structures that help form and maintain them. Baum, lists the World Health Organization’s qualities of a Healthy City, which importantly focus on processes as much as physical features:

A city should strive to provide:

1. a clean, safe, physical environment of high quality (including housing quality)
2. an ecosystem that is stable now and sustainable in the long term
3. a strong, mutually supportive and non-exploitative community

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4. a higher degree of participation and control by the public over the decisions affecting their lives, health and well-being
5. the meeting of basic needs (food, water, shelter, income, safety and work) for all the city’s people
6. access to a wide variety of experiences and resources, with the chance for a wide variety of contacts, interactions and communication
7. a diverse, vital and innovative city economy
8. the encouragement of connectedness with the past, with the cultural and biological heritage of city dwellers and with other groups and individuals
9. a form that is compatible with and enhances the preceding characteristics
10. an optimum level of appropriate public health and sick care services accessible to all
11. high health status (high levels of positive health and low levels of disease).  

Both this and The World Health Organization’s definition from 1946 can be characterized as prescriptive rather than descriptive as they suggest what ought to be, rather than what is. It is in striving to create a world full of cities as prescribed by The World Health Organization, that this thesis aspires. For now though, the question needs to be asked, what relevance does this discussion of health definitions have for the relationship between Public Health, the Fitness Industry and metaphysics? The emergence and development of both fields cannot be understood without first situating them, as well as definitions of health, within metaphysical currents of thought. Therefore, metaphysics will now be addressed.

**Metaphysical Systems and the Public Health Discourse**

One can clearly see in the evolution of health definitions, the attempt to move away from narrow, reductionist and mechanistic definitions to what Cooper, Stevenson and Hale refer to as holistic definitions. Definitions that reflect ‘…the emergent complexity and multiplicity of understandings of health and illness through the inclusion of biological and

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physical inactivity and obesity in late–capitalism

The question is, however, under what conditions can these definitions be truly holistic, find acceptance and influence the development of The World Health Organization prescriptions? As has been pointed out, most critical literature in the discourse of Public Health, including work as recent as Baums, takes the form of a critique of the dominance of the biomedical model, together with arguments generally in favour of the biopsychosocial model. More radically, arguments from Marxists such as Doyal call for major structural change or quasi-radical arguments from postmodernists such as Fox, call for micro-change.17 What critique there is in the physical activity area of the Public Health discourse, relates to the urgent need for more holistic approaches.18 What can be concluded from the similarity of these arguments spanning over thirty years, is that in that time, little appears to have changed. The critique in Public Health has failed to replace what Cooper, Stevenson and Hale call, ‘the biomedical hegemony of knowledge’.

What is lacking in the arguments of those promoting a holistic or otherwise radical alternative to the biomedical model is an explicit and well-articulated alternative metaphysical system; a system that is at least potentially as powerful and influential on human development as that underpinning the biomedical model. What can be discerned in the arguments of the social scientists engaged in the critical discourse of Public Health is an implied alternative metaphysics, which pokes and prods the status quo, but which stops short at the prospect of a unified perspective. Without a unified perspective, the prospect of the emergence of healthy cities, as prescribed by The World Health Organization, is inconceivable. It is in this regard that the work of Arran Gare and Frederick Ferré becomes important in their articulation of a process tradition of thought, one with the potential to become a unifying metaphysical grand narrative.19 What Gare in particular convincingly reveals in his historical analysis, is the emergence and continued existence of parallel metaphysical traditions of thought engaged in a continuous dialectic, in which one has

16 Cooper, Stevenson and Hale, Integrating Perspectives on Health, p. 2.
18 For arguments for a more holistic approach to studies of physical activity, see James Curtis and Storm Russell, Physical Activity in Human Experience: Interdisciplinary Perspectives, (Human Kinetics, USA, 1997).
19 Gare: Nihilism Inc., particularly Ch. 12 and 13, and Frederick Ferré, Knowing and Value: Toward a Constructive Postmodern Epistemology, (SUNY Press, Albany, 1998).
become dominant. This next section will focus specifically on the history of the dominant tradition, the current manifestation of which Gare refers to as mechanistic materialism, and the continuities of this historical tradition manifested in the beliefs and actions of the current dominant cultures.

**The Origins of Mechanistic Materialism**

While mechanistic materialism only crystallized in the seventeenth century with the emergence of the scientific revolution, Gare traces its roots to the basic assumptions underpinning the philosophy of Plato and his influences, Pythagoras and Parmenides, who formulated notions of human immortality and the existence of an eternal, immutable realm of perfect Forms. For Plato:

> The sensible world was seen to be knowable omni-temporally only insofar as it is participating in the forms. Philosophers were defined by Plato as those with a constant passion for any knowledge that will reveal to them something of that reality which endures forever and is not always passing into and out of existence.²⁰

In this passage one can see perhaps the defining characteristics of mechanistic materialism in its embryonic stage, that is, the obsession with a static level of reality which is knowable and unchanging. This knowing, as was argued by Parmenides, must be entirely independent of experience and based on pure reason, ‘…the necessary requirements of thought itself.’²¹ Also with Parmenides, we see the beginning of the static logic of mechanistic materialism that implies that knowledge must be about what is, ‘being’, and that change implies ‘non-being’, which is unthinkable. However, as Ferré argues, it was Plato who was the decisive personality in establishing philosophy’s rules of knowing.²² In his Socratic dialogues, he formulated a conservative metaphysics that sought to preserve the status quo of traditions of high Greek culture by devaluing bodily experience and sense perception in favour of a transcendent, immutable realm of Forms; knowledge of which

²⁰ Gare, op. cit., p. 77.
²¹ Ferré, *Knowing and Value*, p. 25.
could only be achieved through pure thought. Such pure thought was only the province of the dedicated philosopher.

Gare further traces these influences of Plato in the development of intellectual movements such as Aristotelianism, Stoicism, Epicureanism, and Scepticism, each of which adds an element to the whole of mechanistic materialism. While Aristotle is generally seen as being opposed to Plato through his rejection of Plato’s transcendental tendencies and has come to represent opposing traditions throughout the Middle Ages, he still exalted the immutable over the mutable which he held to be ‘...the repository of the grossest dregs of the universe.’ Ferré supports this view in tracing the epistemologies that emerged from these Ancient Greek metaphysical systems. In opposition to Parmenides, Aristotle places high value on perception and experience as the ground of our knowledge. However, particular knowledge is not as highly valued as universal knowledge, as Plato would have argued, giving credence to knowledge possessed by those more highly educated. However, Aristotle contrasts between approximate knowledge, our best guess, and maximal knowledge. Like Plato, he believed that maximal knowledge or, theoretical knowledge, is possible and is ‘...self-luminous, necessary, universal and perfect.’ Rather than existing in a transcendental realm though and being directly contemplated by a disembodied soul, Aristotle saw universal Forms as existing in the things themselves by which they are characterized. Real things therefore, were hylomorphic; that is, made up of a matter component and a form component.

Paradoxically though, universals are independent of time and space, allowing them to enter our bodies without leaving the substances that continue to embody them, enabling them to exist both within us and the perceived object. Here, in his reproducing of the mechanistic materialist notion of space/time independence, one can discern little difference between Aristotle and Plato. Another aspect of mechanistic materialist thought is evident in Aristotle, that of mind/body dualism. In order to have perfect knowledge the intellect must be passive to allow the Forms to be received without bias. This excludes the intellect from

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23 Gare, Nihilism Inc., pp. 82-83.  
24 Ibid, p. 82.  
25 Ferré, Knowing and Value, p. 43.
having any physical organs as these are subject to disturbances, which may affect such receptions. Therefore the mind must be separate from the body’s faculty for sensation. This dualism is also evident in Aristotle’s notion of the active, creative intellect, or *poiesis*, which Aristotle honours as ‘…our special glory.’ Ferré argues that:

However much episteme may finally be a matter of *poësis*, that is, however much knowing is the product of constructive intellection, for Aristotle it is in the end a creation that is, above all, not fiction but a discovery (contemplative theoria) of what is universal and given by the formal structures of the universe itself. Plato’s ruling of what is to count as knowing is not overturned or even seriously challenged….Aristotle challenges the independent existence of those Forms, but not their status as the goal and fulfillment of the cognitive “game”.

He goes on to say:

In this Aristotle ”naturalizes” Plato’s epistemic commitments, thus assuring that the mainstream of Western thinking - in which Plato or Aristotle remained the principle choices – down to, and including much of modern times, will remain faithful to Plato’s basic insistence that authentic knowing must achieve certainty, necessity, universality, perfection, and timeless truth.

Like Platonism, Stoicism is characterized by belief in certain knowledge. Aristotle’s notion of approximate knowledge was out of the question for the Stoics whose demand for precise and infallible wisdom as sought by their hero, Socrates, was ‘non-negotiable’. Ferré illustrates this quest for and possible achievement of certainty, through Zeno’s four symbolic hand gestures. The first, an open hand, symbolizes acceptance of sense perceptions through disturbances in the air, which influence our sense organs and in turn influence our inner receptor, the heart. The second, the partially closed hand, symbolizes the perceiver’s active assent to the sense perception. This point of affirmation of an external influence is where error can occur. The third gesture, the closed fist, signifies that the perceiver has a firm, cognitive grasp of an object. The fourth and final gesture, a closed

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26 Ibid, pp. 46-47.
fist being held firmly by the other hand, symbolizes infallible, secure knowledge verified by a matching of argument and intuition.\textsuperscript{27}  

It is this fourth gesture that was required by the Stoics in defending themselves against the Skeptics. The skeptics, led by Pyrrho, refused to accept any claim made for both sensory and theoretical certainty of knowledge. Their position was symbolized by an evenly balanced scale, which left judgement forever suspended, making their goal the refutation of all claims to certain knowledge and positing in its place, a solipsistic relativism. This dialectic between the Stoics and the Skeptics continues today in polarized debates between objectivists and relativists that will be discussed in later chapters. Both beliefs, as will be further argued, have contributed to the dominance of mechanistic materialism as the tradition that preserves such dichotomies. Also contributing to this is Epicureanism and its belief in atomism, the view that the universe consists of simple, independent and irreducible entities that are only contingently interrelated (the roots of materialism) and the hedonistic belief that the highest good in life is the absence of and aversion to pain.

From the Hellenistic age emerged Neoplatonism and the rise of Christianity that was to dominate the Middle Ages. Neoplatonism, according to Gare, ‘…was the product of an attempt to develop Plato’s ideas more systematically, and it incorporated much of the thought of Aristotle and of the stoics.’\textsuperscript{28} In relation to Christianity, Gare encapsulates its basic tenets and how they evolved from a combination of ancient thought in the following passage:

Although there were differences between Eastern and Western Christianity, Christian philosophy was essentially an interpretation and justification of Hebraic thought in terms of Neoplatonist thought. According to Hebraic vision as expressed in the Bible man is in a fallen state after having been expelled from paradise, in which God had originally intended him to live, because he had sinned. However God promised to restore man to Paradise and sent his Son to earth to make this restoration possible. The One of Neoplatonism was identified with the personal, creative God of the Hebraic vision, the sensible world with the

\textsuperscript{27} Ibid, p. 51.  
\textsuperscript{28} Gare, Nihilism Inc., p. 82.
fallen world, and the realm of forms with the restored world. Thus man’s soul was seen to have originated in heaven as a creation of God, descended to earth where it must live in a perishable world of deteriorated, half destroyed value, and if salvation is to be attained by the grace of God, to be destined to return to the realm of eternal forms.  

This passage reveals the common metaphysical theme running through the Middle Ages with variations mainly in verifying God’s existence and in the epistemology of how one can better know God. A central figure, who was perhaps the greatest influence on the development of Western Christi anity from the end of the Roman Empire and throughout the Middle Ages, was the North African philosopher, Augustine. Augustine was heavily influenced by Manichaenism that was considered heresy by monotheists because it sought to explain the problem of evil in the world by claiming the existence of two Gods, a good one that ruled the mind and spirit and an evil one that ruled the body. Only after the soul had been separated forever from the body at death, could moral goodness be achieved. However, as Ferré argues, Augustine became disillusioned with the epistemic standard of Manichaenism and turned to Stoic ethics and the Neoplatonism of Plotinus, particularly Plotinus’s notion of the One as the single, transcendent divine source of all there is. Augustine was to devalue man and his sensible world by asserting the sovereignty of God, as well as affirming the eternal over the mutable and the spiritual over the corporeal. This included affirming the truth of abstract logic and mathematics over base sense perception. According to Ferré:

Augustine’s commitments on what counts as the marks of genuine ‘knowing’ echoed Plato’s on the norms of certainty, necessity, eternity, unity and perfection. He strongly reinforced one tendency in Plato, stressing the complete discontinuity between body and mind, percep and concept. What he subtracted – on the basis of other commitments that are central to Christian worship of a perfect, sovereign, creator God – was the Platonic hypothesis of an eternal, preexistent, cognizing soul. In this altered framework he was able to interpret our knowledge of necessary truths by substituting an immanent God for a transcendent Realm of Forms…

29 Ibid: pp. 82-83.
30 Ferré, Knowing and Value, p. 64.
Augustine’s ideas were part of a powerful, mutually supportive network that saw power vested in the Christian Church throughout the Middle Ages. These ideas, as has been mentioned, also served to justify and maintain particular political economies; in the case of the Hellenistic period, a slave-based economy and in the Middle Ages, a feudal economy. It is these ideas that also paved the way for the transition to petty commodity, mercantilism and finally, at least to this day, capitalism.

Mechanistic Materialism and Capitalism

Some of the ancient origins of the metaphysical tradition of mechanistic materialism have now been revealed. Gare and Ferré provide a complementary historical analysis of the various thinkers, epistemologies and values associated with these metaphysical origins. It is important now to relate these origins to the emergence and development of capitalism, the argument being that the conditions for the emergence and development of a predominately mechanistic Public Health field and the Fitness Industry are produced within the evolving structure of capitalist political economies. Pivotal to this argument is the notion that continuities exist between previous dominant political economies and late capitalism. Two, interrelated key health issues, identified within the Public Health discourse, are of particular relevance in this argument and challenge the healthfulness of mechanistic Public Health and the Fitness Industry, control and inequality.

In relation to control, epidemiological research, such as the Whitehall Study that studied civil servants in a hierarchical bureaucracy over twenty six years, has identified control as a significant determinant of health within a biopsychosocial framework. Both psychological and physiological health problems are shown to be more prevalent among those who believe they have, and who others identify as having, little control in their work environment. This was shown to be relative to being subordinate to the dictates of those higher in the hierarchy no matter what level this is. Generally though, those in lower socio-

economic classes were shown to suffer more from lack of control and associated health problems. This then raises the issue of inequality. Wilkinson brings together evidence within Public Health research, again from a biopsychosocial perspective that shows a strong correlation between health and relative social position, as determined by factors such as income.\textsuperscript{32} He stresses relative because, like issues of control, it is not just a problem of deprivation but of one’s situation relative to others. Rich countries, therefore, measured narrowly in terms of Gross National Product, with high disparities between rich and poor perform worse in terms of health indicators than many poorer, more egalitarian nations.\textsuperscript{33}

Over the past several decades there has been two simultaneous global developments, the world has converged politically and economically towards free-market capitalism and liberal democracy\textsuperscript{34} and income disparities between and within nations have increased.\textsuperscript{35} The relevance of these developments from a metaphysical perspective is in their relationship to long duration traditions of thought. The argument in this thesis is that these developments relate to a continuity of deeply entrenched, unequal power relations that effectively deny control and equality to the majority of the world’s population thereby adversely affecting their health. A metaphysical examination of the nature of these power relations will reveal that lying at their philosophical roots is mechanistic materialist thought. It is such continuities that are crucial to Gare’s modernist thesis that capitalism in its current form is a manifestation of the continuing evolution and dominance of mechanistic materialism.\textsuperscript{36} The term late-capitalism implies a continuity of social forms and forms of thinking associated with it. Therefore, the world-view underpinning today’s global capitalism should be traceable to those thinkers who reproduce the Platonic and Augustinian ideas that were previously discussed. One way of revealing the continuities of

\textsuperscript{33} Ibid.: p. 75.
\textsuperscript{34} This convergence is traced and analyzed by Fotopoulos, in Takis Fotopoulos, \textit{Towards an Inclusive Democracy: The Crisis of the Growth Economy and the Need for a New Liberatory Project}, (Cassell, London, 1997), Chs. 1 and 2.
\textsuperscript{36} Gare’s thesis is described as modernist in the sense of being in the tradition of the great systematic philosophers, such as Hegel and Marx, who approached their work from a unifying perspective, rather than a fragmenting one characteristic of postmodernism.
this dominant metaphysical system, is to examine the analyses of capitalism by postmodernist thinkers such as Lash and Urry.\(^37\)

**Disorganized Capitalism**

Lash and Urry argue that capitalism has entered a disorganized phase as opposed to a previous organized phase. They contrast Jürgen Kocka’s fourteen interrelated features of organized capitalism, beginning around 1870, with their own fourteen points relating to a more current disorganized capitalism. Essentially, these points mark a transition in economies, civil societies and states that accompanies an ideological transition from modernism to postmodernism. Economically, the transition has been from concentrated and centralized industrial, banking and commercial capital to a de-concentration of capital, with the growth of a global market and a weakening in the strength of nationally based corporations to regulate their domestic markets. Along with this has come a shift from extractive/manufacturing industries that dominated the economic life of particular regions to the growth in service industries that are often located apart from a labour-pool that commutes long distances, or utilizes modern communication technologies. Those extractive/manufacturing industries left in the developed world are facing increasing competition from developing or Third World countries, where capitalism has taken root following earlier colonial expansion, and where labour costs are much lower. This has led to declines in employment in extractive/manufacturing in the developed world and the movement of capital offshore.

Changes from extractive/manufacturing to service industries has seen a decline in the working class and collective bargaining from organized unions. This accompanies a shift from ‘Taylorist’ to ‘flexible’ work arrangements involving individual contracts. Also accompanying this has been changes in traditional class politics and increasing convergence amongst political parties. These political parties all seek to accommodate

\(^{37}\) Scott Lash and John Urry, *The End of Organized Capitalism*, (Polity Press, Cambridge, 1987), are characterized as postmodern due to their focus on micro-change and its chaotic consequences for the system as a whole.
through de-regulation and privatization, those large global monopolies that have become increasingly independent of control and regulation by nation-states. Two other points are of particular significance to this thesis. The first is:

An increase in cultural fragmentation and pluralism, resulting both from the commodification of leisure and the development of new political/cultural forms…The decodification of some existing cultural forms. The related reductions in time-space distanciation (cf. the ‘global village’) likewise undermine the construction of unproblematic national subjects.

And point eight of Kocka’s organized capitalism that Lash and Urry appear not to have responded to, that being:

Various ideological changes concerning the role of technical rationality and the glorification of science.\(^{38}\)

These two points relate firstly, to the commodification of leisure under capitalism, which includes those services offered by the Fitness Industry, and the relationship of this to globalization, and secondly, to the role of scientific rationality in these developments, a subject that will be looked at in some depth in this thesis.

The importance of all of these comparative points is that they firstly, provide a good description of the recent developments of capitalism as most of those alive have and are, experiencing it, and secondly, they indicate a large discontinuity in these developments which would seem to disprove Gare’s thesis. Lash and Urry, while importantly still defending continuity in capitalist social relations, paint a picture of major transformations in capitalist relations. The ‘…world of ‘disorganized capitalism’ is one in which the ‘fixed, fast-frozen relations’ of organized capitalist relations have been swept away.’\(^ {39}\) How can such transformations be understood though while still being labelled capitalist and therefore, how radical could this transformation have been? Here it is important to

\(^{38}\) Ibid, pp. 3-7.
\(^{39}\) Ibid, pp. 312-313.
understand how current research methodologies in the social sciences are rooted in mechanistic materialism through the emphasis on quantification, empirical data and the tendency to reduce analyses to one comprehensible level. The methodology of social science involves taking empirical snapshots of an objectified reality. This supposedly reveals the world as it is but such snapshots do not reveal how reality was and is generated. A series of snapshots reveals superficial changes abstracted from longer durational processes, processes in which continuities of thought underpin superficial change. It is through examining the level of longer durational processes that more meaningful understanding can be achieved and a context provided for reductionist research.

Csikszentmihalyi reveals the shortcomings of scientific reductionism in the social sciences, in his own metaphor of changing the magnification of the microscope. Csikszentmihalyi’s non-reductionist approach to research in psychology involves a shifting back and forth of attention from the detail of hundreds of bits of gathered information to twelve categories and then to three general classes. Each level of analysis gives a different perspective from the vast differentiation at the smallest scale to integration, similarity and consistency at the larger scale. For Lash and Urry, the decision, as postmodernism critic Frederic Jameson puts it, ‘…as to whether one faces a break or a continuity – whether the present is to be seen as a historical originality or as the simple prolongation of more of the same under different sheep’s clothing’\(^4\), is made in favour of the former at the smaller scale. Jameson’s dialectical approach, however, as characterized by McGuigan, is that ‘…it is a bit of both.’\(^4\)

In agreeing with Jameson, Lash and Urry’s analysis is revealed as lacking in long range pictures revealing more similarity and consistency over time, pictures that reveal what Ricoeur identifies as ‘…the most enduring features of our temporal condition…- those which are the least vulnerable to the vicissitudes of the modern age.’\(^4\) These shortcomings were also discussed in the Introduction in relation to Restivo’s focus on epistemological change and superficial value shifts. What needs to be understood is that such approaches

\(^4\) Ibid: p. 66.
fail to account for an underlying activity, which is where process metaphysics proves superior, as will be discussed in Chapter Three. For now, it is important to understand the need for a non-reductionist, multi-level, complementary approach to research that reveals and respects perspectives at different levels. Therefore, the superficial transformations to capitalism, outlined by Lash and Urry, also need to be understood from a metaphysical perspective as being linked to the continuity of underlying, long durational traditions of thought, strengthening Gare’s argument.

**Labour Relations under Capitalism**

Most important of Lash and Urry’s apparent transformations for the argument in this chapter, is to labour relations, the interface between people and the capitalist economy which Karl Marx so brilliantly analysed. Marx, writing in the mid-to-late nineteenth century, revealed the nature of the relationship between wage labourers and the newly emerging bourgeois owners of capital. This relationship, according to Marx, was concealed by a political economy that proceeded from the fact of its existence rather than from the processes of its development, the same problem just identified with Lash and Urry’s methodology. By tracing capitalism’s historical roots, Marx was able to discern the difference between selling one’s labour and selling one’s labour power, which then reveals the difference between slavery, serfdom and the modern free wage labourer. It is the commodification of labour power that distinguishes the modern free wage labourer. As Marx writes:

> Labour power was not always a commodity. Labour was not always wage labour, that is, free labour. The slave did not sell his labour power to the slave owner, any more than the ox sells its services to the peasant. The slave, together with his labour power, is sold once and for all to his owner. He is a commodity which can pass from the hand of one owner to that of another. He is himself a commodity, but the labour power is not his commodity. The serf sells only a part of his labour power. He does not receive a wage from the owner of the land; rather the owner of the land receives a tribute from him. The serf belongs to the

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land and turns over to the owner of the land the fruits thereof. The free labourer, on the other hand, sells himself, and indeed, sells himself piecemeal...The worker belongs neither to an owner nor to the land, but eight, ten, twelve, fifteen hours of his daily life belong to him who buys them.  

The free wage labourer is not a commodity, like the slave, but has a commodity that can be exchanged for other commodities, labour power. Unlike even the limited ownership of the serf though, the wage labourer has no ownership of the means of production or the finished product. These are the property of the owner of capital who seeks to sell the finished product at a profit, a sum greater than the cost of production. Wages, therefore, are ‘...not the worker’s share in the commodity produced by him. Wages are the part of already existing commodities with which the capitalist buys for himself a definite amount of productive labour power.’ In this relationship, labour becomes estranged or alienated from its product and becomes a commodified object to be bought or discarded depending on the demands of the market. As Marx emphasized, this relationship must be understood as being particular to a co-dependent system that tends towards reducing all of society to either property owners or propertyless workers. Essentially then, one can argue, capitalism, while being a newly emergent form, continues a historical tradition of control and inequality through perpetuating the master/slave relationship. Mediated through the impersonal exchange mechanism of the market though, it is one in which the master has less responsibility for the slave.

The relevance of this is in the concern within the Public Health critical discourse with the relationship between health and capitalism, whether capitalism is explicitly referred to or not. The central questions are, is capitalism in its current form compatible with achieving an optimum level of health for all and if not, what are the alternatives or what modifications need to be made? These are questions related to political economy and are reasonable in light of the continued dominance and global expansion of capitalism evident in Lash and Urry’s points. According to Marx there are pathologies associated with the alienation and

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inequality that are intrinsic to the structure of the capital/labour relationship and therefore cannot be addressed from within the system. It is to the capital/labour relationship therefore, that one must look in relation to health. The question must be asked in light of concerns within the contemporary Public Health discourse over health problems related to issues of relative lack of control and equality and in relation to Lash and Urry’s arguments, whether similar capital/labour relationships, as revealed by Marx, exist today?

**Labour Relations and Disorganized Capitalism**

In Lash and Urry’s points as listed, we see what appears to be a dramatic shift in labour’s relationship both to the products of their labour and to the owners of capital. There has been a shift in the West from labour-intensive heavy manufacturing, involving ‘Fordist’ and ‘Taylorist’ methods of control over large, mainly low-skilled workforces, to the growth of service industries which provide more flexible working arrangements to a better educated workforce. This new flexibility precludes previous collective bargaining procedures in favour of freedom for the individual to negotiate their own terms of work. Increasing globalization has required a more mobile workforce no longer tied to regional economies and in touch with the world through new communications technologies. This has also brought with it a breakdown in traditional national and class identity and seen the emergence of new social movements. Capitalism is therefore in a state of disorganization in regard to labour relations as economic change connected with the accumulation of capital has had an effect on occupational structure.

While acknowledging the persistence of fundamental aspects of capitalism, notably accumulation, Lash and Urry’s conclusions rely on one superficial, empirical level of analysis; that being observable and superficial spatio-temporal differences. By applying a metaphysical perspective to ideological influences in capitalism, a different picture emerges; that of the emergence, development and dominance of what Argy terms, hard economic liberalism or what will be termed in this thesis, Neoliberalism.\(^{46}\) While Argy’s

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arguments focus on Australia, the increasingly globalized interdependence of world economies allows for some generalization.

Argy characterizes hard economic liberalism as an extreme position and so in his own conservative perspective, sees its increasing dominance as alarming. He lists what he sees as its three basic policy propositions:

First, a primary (ultimate) goal of economic policy should be to enhance material living standards – broadly measured by GDP per head…While hard liberals acknowledge other societal goals…these are generally perceived as by-products of strong GDP growth.

Second, hard liberals believe that, to facilitate strong and sustained growth in GDP per head, policy should be directed at six intermediate targets. These are:

1. strong productivity growth, preferably above that of our trading partners, so as to improve competitiveness;
2. effective stability in the general level of prices over the business cycle;
3. sound public finances, e.g. fiscal balance or surplus over the cycle;
4. small government (economic freedom),…lowest possible levels of recurrent government expenditure, taxation, government regulation and involvement in the provision of services;
5. external balance…maintain the confidence and support of financial markets;
6. a level of profits sufficient to ensure a positive investment environment.

Third, hard liberals believe specific policy instruments should be assigned to specific intermediate targets.47

These specific policy instruments see micro-economic reforms such as increased workplace flexibility used to achieve higher productivity targets, or labour market deregulation to promote employment along with welfare reforms aimed at motivating people to work and

penalizing those who do not. Argy further argues that hard liberalism is underpinned by a strong philosophical commitment to individualism, self-reliance and personal responsibility and is generally contemptuous of collectivist, communal and societal ideas. Argy, also lists nearly all current major financial, economic and conservative media institutions as places where these ideas are now predominant and points to current and future Australian Coalition Government policies as leading us further down this ideological path. Policies aimed, for instance, at reducing the protections for low-paid workers previously defended by collective bargaining processes and policies that show ‘...an increasingly hard social edge and an increasing insensitivity to distribution effects.’

Hamilton also believes there is global convergence in Neoliberal ideology but sees growing complexity emerging in the labour/capital relationship. The need for flexibility in the labour market promoted by corporations has produced a labour force that is now up to fifty percent casual and part-time. In what Hamilton refers to as a period of abundance in the West though, or post-scarcity, he argues that a large percentage of these workers are choosing to work less hours in pursuit of different lifestyles. In other words, the shedding of jobs and removal of long-term security by corporations and the Neoliberal governments that support their interests in the need for global competitiveness, is creating a re-orientation in the expectations of life among those comfortable enough to do it. Such complex arguments are important to this thesis as they emphasize the co-evolutionary development of interrelated processes. However, there is still a suspicion in Hamilton’s argument that such changes are superficial. The corporation, that represents the power base of capital today, now exerts institutional control over workers, whether full-time, part-time or casual. Hamilton, attacking postmodernists, such as Lash and Urry as well as Neoliberal governments such as Britain’s ‘Third Way’ Labour government, argues that:

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49 Ibid, p. 58.
50 Clive Hamilton, Growth Fetish, (Allen and Unwin, Crows Nest, 2003), Ch. 6.
The failure to recognize that corporate power continues to lie at the centre of social, as well as economic, transformation is the error of both the postmodernists and the advocates of the Third Way. Theorists of postmodernism have forgotten about the economy – the relationships between people and the production and consumption of goods and services – and have had eyes only for processes of cultural change. But, without falling into deterministic Marxist notions of an economic base supporting the political and cultural superstructure, it must be recognized that the processes of cultural change and differentiation are shaped and constrained by the ideological and cultural needs of economic, corporate and, above all, marketing organizations and systems. Individuals cannot be constituted outside of their institutions. In the case of the ‘lifestyle politics’ of the Third Way, its advocates fail to understand and react to the way corporations, through their marketers, have seized on and captured the yearning people have for authenticity, attributing ‘autonomy’ to people who remain captive in an entirely new way.51

If one sees a correlation between the ‘disorganized’ world described by Lash and Urry, the hard economic liberal philosophy and policy as outlined by Argy and the institutionalized corporate control by bourgeois elites revealed by Hamilton, then it can be concluded that the world is in fact becoming increasingly organized around Neoliberal ideology. When one further takes into account the strong links between Neoliberal philosophy and classical economics suggested by Argy, the continuities of thought run deep. In other words, despite postmodernist fracturing, despite exponential technological change and despite changes in fashion and architecture, ideas that existed at the beginning of capitalism underpin much of the capital/labour relationship today. What are these ideas and what is their origin? Here is where it is necessary to return to the continuing production and reproduction of mechanistic materialist thought.

**Labour Relations and Mechanistic Materialism**

Maintaining a focus on labour relations and its effect on issues of control and inequality, it can be shown that the current world situation reveals a particular metaphysical understanding of the nature of humanity. As was revealed previously, Plato and the

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Neoplatonists showed little regard for nature.\textsuperscript{52} Nor did they have regard for humans who had not transcended nature through contemplating the Forms. This was a world of strong hierarchical structures of Kings and philosophers in Plato’s time and God, Church and King in Medieval times. It was a world in which slavery, torture and murder had structural justification and was often staunchly defended by some of the most notable thinkers of the time. One such thinker, emerging from the Florentine Renaissance in the early fifteenth century, was Machiavelli. Gare describes this period as the culmination of a transition from feudalism, dominated by the Catholic Church, to mercantilism and the emergence of the self-governing city republic which, with the split from the rule of the Pope, required new rules of operation. Machiavelli sought to provide these rules on the basis of what he perceived as the reality of human interaction in a world where ‘…forms of relationships between people based on hierarchy and honour had effectively dissolved.’\textsuperscript{53} He therefore rejected higher notions of ethics as advanced by the Stoics, in favour of the pragmatic application of cruelty, perfidy and deception to achieve and maintain power. In this way, argues Gare, ‘…he originated the doctrine that reasons of State transcend ethics.’\textsuperscript{54}

The importance of Machiavelli’s influence is in showing how a nihilistic mood emerged from a splitting of Neoplatonism, rejecting its higher ideals and leaving only a debased sensible world filled with debased, mutable human beings. This nihilistic thought was partly due to the success of Nominalism that rejected the reality of universals and asserted that only particular realities, or individuals, exist.\textsuperscript{55} One such Nominalist, influenced by Machiavelli, was Hobbes, whose political philosophy based on a negative, atomistic view of a self-interested, power-seeking humanity requiring forceful control, was to prove influential. Nominalism contributed to what Cascardi argues was ‘…the replacement of the striving toward transcendent ideals by a normative concept of progress as the immanent

\textsuperscript{52} This does not include the radical Neoplatonists such as the Hermetics or ‘nature enthusiasts’ based on the traditions of John Scotus Eriugena and the Heretics of the Free Spirit discussed by Gare: \textit{Nihilism Inc.}, p. 114.
\textsuperscript{53} Ibid: p. 120.
\textsuperscript{54} Ibid, p. 120. This doctrine is still relevant today except the passage could be altered to read, ‘reasons of corporations transcend ethics.’
\textsuperscript{55} Ferré, \textit{Knowing and Value}, traces the roots of Nominalism in the Middle Ages to Roscellinus and his student, Peter Abelard at the end of the eleventh century, pp 72-77. Later in the Middle Ages, Copleston emphasizes the importance of William of Ockham to the development of these ideas and their later influence on the development of science. Frederick Copleston, S.J., \textit{A History of Philosophy}, Book One, Volume III, Ockham to Suarez, (Image Books, New York, 1985), Ch. IX.
development of human powers and aims. This transformed the world from an all-embracing cosmos to an objective representation. Lash and Urry’s analysis reflects this transformation which accompanied the development of science and its methodologies. Referring back to the characteristics of organized capitalism, special reference was made to ‘ideological changes concerning the role of technical rationality and the glorification of science.’ It is the period from ‘The Renaissance’ on that these ideological changes begin to fully emerge. Therefore, further developments in the metaphysical world-view underpinning capitalist labour relations cannot be understood without tracing the development of mechanistic science and its relationship to Neoliberal ideology.

The Development of Mechanistic Science

The term mechanistic science is based on a metaphor that emerged to form the foundation of a particular world-view. This world-view is of the universe as a vast machine comprising separate, replaceable parts that grind together moved by an external power source. As Gare argues, it was the invention of the mechanical clock that became pivotal in this development. He quotes Kepler as saying in 1605: ‘I am now much engaged in investigating physical causes; my goal is to show that the celestial machine is not in the likeness of the divine being, but in the likeness of the clock…’ In this telling quote, one can see the beginnings of the separation of science from religion and the re-creation of the universe in the image of man and his new inventions. The analogy of the machine subordinated Neoplatonist, Aristotelian and atomist elements that had contributed to its formation and ‘…became the thematic motif symbolizing the ultimate value, the ‘meaning of life’ for people in Western civilization.’ One only needs to refer back to the beginning of this chapter and Baum’s characterization of the biomedical model as the ‘clockwork’ perspective that defines the body as a machine, to see that this analogy still dominates thought today and is generally regarded within the Public Health critical discourse as being problematic.

57 Quoted in Gare, Nihilism Inc., p. 134.
There were many influential figures in the development of mechanistic science from Copernicus to Newton and later Darwin, with Newton still arguably the central figure in this development. Burtt not only describes the history surrounding the scientific achievements of some of these figures, but also provides an argument in support of these achievements having emerged from within a metaphysical tradition. With Copernicus we see the beginning of the demise in the sixteenth century of Aristotelian cosmology and physics, that replaced Neoplatonism from the thirteenth century as that which was most influential in medieval thought. This demise Burtt attributes to a change in the ontological status of mathematics:

The orthodox Aristotelian school minimized the importance of mathematics. Quantity was only one of the ten predicaments and not the most important. Mathematics was assigned an intermediate dignity between metaphysics and physics. Nature was fundamentally qualitative as well as quantitative; the key to the highest knowledge must, therefore, be logic rather than mathematics.

Copernicus’s achievement was to unite geometry with astronomy and so introduce the notion of relative mathematical values into astronomy, challenging the Earth’s status as the immovable centre to which all else is referred. In the process, the Earth and the universe were reduced to simple mathematics that suggested that not only was the universe geometrical, but that it was fundamentally mathematical in its structure, elevating the ontological status of mathematical objects.

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60 Ibid, p. 43.
Continuity of Thought

Rather than viewing this development as a complete paradigm shift, as perhaps would Lash and Urry and many in the Public Health area whose analysis rarely precedes Newton, Burtt sees Copernicus’s achievements as only becoming possible against a background of a continuity of Neoplatonist thought. The dominance of Neoplatonism prior to the thirteenth century was centred on Plato’s dialogue in the Timaeus that reveals Plato’s Pythagorean influence in his theory that plurality unfolded itself from unity by a necessary mathematical process. It was this mathematical bent in Plato that underpinned natural philosophy in Neoplatonism and attracted many thinkers who helped ensure its survival against Aristotelianism. As Burtt argues:

Neo-Platonism was not by any means routed, but remained as a somewhat suppressed but still widely influential metaphysical current…The interest in mathematics evidenced by such freethinkers as Roger Bacon, Leonardo, Nicholas of Cusa, Bruno, and others, was in large part supported by the existence and pervading influence of this Pythagorean stream. Nicholas of Cusa found in the theory of numbers the essential element in the philosophy of Plato. The world is an infinite harmony, in which all things have their mathematical proportions. Hence “knowledge is always measurement, number is the first model of things in the mind of the Creator”; in a word, all certain knowledge that is possible for man must be mathematical knowledge.”

The eventual success of the ideas of Copernicus must therefore be understood as having resonated with those endeavoring to promote a particular tradition of thought. In the dialectic between Aristotelianism and Neoplatonism, Neoplatonism triumphed despite the absence of empirical proof of its claims, due to the legitimation of the epistemological strategy of mathematical reductionism. Only mathematics, it was claimed, could provide a priori knowledge of a mathematical universe, further devaluing sense perception and privileging those involved in mathematical science. Two of those privileged scientists, though suffering from controversy in a period of transition, were Kepler and Galileo.

61 Ibid, pp. 41-42.
Kepler revived Neoplatonism and devised a new cosmology based on the Copernican world-scheme. Galileo, transformed notions of time from an Aristotelian temporal process of a continuous transformation of potentiality into actuality, where ‘...the present exists unmoved and continually draws into itself the future,’ to a mathematically measurable line moving in a direction from past to future.\(^6^2\)

Before proceeding further it may be helpful to summarize what metaphysical transition was taking place through the work of Galileo. In the Aristotelian world-view the question of why is more significant than how. Man is seen in an intermediate position between an essentially qualitative natural world and God. Events in nature are explained in terms of their use for man and the why of man is seen as his eternal quest to be united with God. God is thus the final cause in this scheme and man has purpose. For Galileo, drawing on the tradition of thought from Plato, Pythagoras and Democritus, causation is seen as the mathematically measurable motions of atoms. The problem for Galileo, in such a religiously sensitive environment, was in finding a role for God in this scheme. He did this by inverting God’s role from final cause to efficient cause. God is now seen as the initial creator and mover of the atoms. Nature is now essentially mathematical in structure and independent of God, leaving man on the outside with no purpose other than as a passive observer of God’s mechanism. The work of subsequent influential thinkers, such as Descartes, was then directed towards strengthening the epistemological position of mathematics and the machine analogy, while at the same time marginalizing the secondary qualities of human sense perception.\(^6^3\)

There were at least two major motivations for these developments. As Gare argues, a meaningless, mechanical universe left all meaning residing in an independent God, strengthening the Neoplatonic view of a transcendent deity against those Aristotelians and radical Neoplatonists, such as Bruno, who saw God as immanent. Descartes defined creative, dynamic nature out of existence with his conception of matter as extension that changed position through locomotion. By creating the strange paradox that God could be

\(^6^2\) Ibid, p. 85.
\(^6^3\) Ibid, pp. 89-113.
independent but in control of our minds, Descartes paved the way for mathematical science to justifiably dominate nature.\textsuperscript{64} This domination was facilitated by the separation of knowledge from value. The beginning of a pessimistic view of knowledge emerges, in this regard, with Boyle’s realization of a vast epistemological gap between a pre-eminently real realm of being, and man, whose soul is not in contact with the outside world, as both a limited and irrelevant knower of such a realm. Therefore, as Burtt states in relation to Boyle’s position:

> Since the reach of human knowledge is so small in comparison with the totality of being, it is ridiculous to attempt the projection of great systems; better to have a little knowledge which is certain because based on experiment, and is growing, though always incomplete and fragmentary, than to construct large speculative hypotheses of the universe.\textsuperscript{65}

It is in a negative sense then that sense perception assumes some importance. Man is reduced to knowing, only through an empirical methodology, the phenomena of nature as caused by the local motion of one part of matter striking another. It is this embryonic positivist reductionism that would both influence Newton and be advanced by him in developing his mechanical laws of physics. It also poses the question of how Newton’s little, fragmentary and incomplete knowledge became a large speculative hypothesis of the universe.

**Newton’s Influence**

Two aspects of Newton’s influence are revealed through his laws of motion. One, is his articulation of the mechanical universe and two, his rejection of hypotheses in favour of a pure, positive empiricism. Newton’s three laws of motion are as follows:

1. Every body continues in its state of rest, or uniform motion in a right line, unless it is compelled to change that state by forces impressed upon it.

\textsuperscript{64} Gare, *Nihilism Inc.*, p. 128.
2. The change of motion is proportional to the motive force impressed; and is made in the
direction of the right line in which that force is impressed.
3. To every action there is always opposed an equal reaction; or, the mutual actions of two
bodies upon each other are always equal, and directed to contrary parts.\textsuperscript{66}

In these three laws one can see simply expressed the mechanistic materialist metaphysical
position. Space and time are relative, but exist within a Platonic concept of absolute space
and time that is paradoxically fixed from infinity to infinity. Absolute space is therefore a
contained, static void comprising hard bits of lifeless matter, or atoms, that are either inert
or have been set in motion on a determined path by a force. This force was initially God,
but is now caused by the moving bits of matter impacting upon each other, causing a
contrary reaction. Such actions and reactions are determined and are therefore predictable,
but the universe as a whole, has no apparent purpose other than perhaps as God’s toy. Man
as an objective observer of these machinations can know the universe by reducing it to
these laws at every level and through empirical experimentation and observation,
continually reveal the truth of these laws in nature. These laws are revealed to us as truths
through the abstract universal language and logic of mathematics; speculative, imaginative
hypotheses are therefore irrelevant.

Fuller provides an insight into Newton as having revealed the parametric nature of
scientific rationality. In relation to Newton, he argues that:

The decision maker of concern to us here is the scientist who optimizes his situation by
obtaining a fully determinate (completely informative, noise-free) representation of the
world system...A scientist such as Newton intends to eliminate the noise, or “anomalies,”
in the Aristotelian world-system by providing a unified and mathematized theory of motion.
He operates on the assumption that his strategy will solve more problems than it creates
and, thus, will count as a step toward total knowledge. However, given his finite
intellectual resources (great as they may be), Newton cannot survey all the possible states

of the world-system that may result from each of the courses of action available to him. Consequently,...in the immediate vicinity of the problems he is trying to solve, such as those concerning the motions of the planets, Newton makes striking advances over Aristotle. Indeed, the advances are so striking that they divert the public’s attention from the massive noise being generated at the other conceptual end of the world-system.\(^{67}\)

This other conceptual end has already been highlighted as the place of man in the mechanical universe. It is this conceptual separation of man, the knower, from what he knows as well as the mechanical metaphor, that continues to underpin the development of science, as well as continuing to divert the public’s attention from its limitations. Of particular interest in this thesis is the influence of mechanistic physics in the development of medical science. As was discussed earlier, the dominant biomedical model is generally criticized as being too limited in its scope. This limitation can now be understood as the limitation of the mechanistic materialist world-view, as Newtonian physics is applied within a different domain; that of the body. There has therefore been a failure to account for humans in a mechanical and mathematical, objectified treatment of the body. As with physics, this was a consequence of the shift away from Aristotelianism, and its belief in the organic unity of living things, to Neoplatonic atomism and positivist reductionism. The argument being made is that this led to a fragmented perspective on health, concurrent with the development of capitalism, that provided the conditions for separate fragments, such as Public Health bodies and the Fitness Industry, to emerge.

**The Development of Mechanistic Medical Science**

With Plato, as was discussed earlier, the body that changed, deteriorated and eventually died, was held in contempt as a lesser form of reality. With Aristotle, the soul was embodied, but there was still the belief in a higher form of reality beyond the sensible world. Like physics, medical science developed with the Platonic notion of a disembodied perfection which enabled the body to be set aside from the soul, mind or person that occupied it in order to be dissected, partitioned and mathematically measured. This was

notable in Harvey’s discoveries of the circulation of the blood that influenced Descartes’ ideas on physiology; ideas that required the concept of an ether in which to transfer any qualities of bodies that could not be analyzed mathematically. Harvey though represented a growing movement, including Hobbes and later Locke, that valued empirical proofs as much as mathematical, apriori logic, further distancing religious values from science and so providing a basis for man’s scientific domination of nature. As Doyal argues:

Increasingly, science was no longer concerned with understanding the essence or teleological purpose of the natural/supernatural world. Rather, the scientist… attempted to discover and explain those regular and recurring sequences of events which could be described and codified in a quantitative and generalizable way. It was believed that this would make possible the utilization of nature through the making of accurate predictions based on these codified generalizations. In other words, the new science increasingly equated an understanding of the natural world with a capacity to control it…In the case of medicine, the ‘new scientists’ of the renaissance began for the first time to map out in detail the internal workings of the human body…These early investigations were largely founded upon a mechanistic view of the nature of men, and of human sickness and health. That is to say, they followed the more general pattern of Renaissance science in analyzing living things as sets of mechanical parts – as machines rather than organically integrated wholes.

Doyal goes on to say further that:

…the adoption of a mechanistic paradigm of this kind did limit the nature and boundaries of what is conceived as the medical task. Thus, scientific medicine ultimately became curative, individualistic and interventionist, objectifying patients and denying their status as social beings.

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Stages of Development in Western Medical Science

Doyal sees the development of Western medical science as going through three stages; bedside medicine, hospital medicine and laboratory medicine. All three can be analyzed in relation to the three stages of development in Public Health as outlined by Lupton; Public Health before the Enlightenment, during the Enlightenment and the modern Public Health movement. Bedside medicine refers to the period of the Middle Ages prior to the Enlightenment and the scientific reaction against Aristotelianism; a period where only the wealthy had access to Doctors, whose patients were their patrons. In this period the ‘sick man’ was at the centre of medical concern. Disease was thought related to a major disturbance to the whole body system and so all aspects of the patient’s life were of significance, with particular value placed on the patient’s own account of his or her symptoms and feelings. In relation to Public Health, this period was notable for outbreaks of epidemic disease such as the plague that re-emerged in Europe throughout the fourteenth and fifteenth centuries. The two main theories that underpinned health care in this period were the ancient miasmic and humoral theories. Both theories were Aristotelian in their holistic emphasis on relating one’s personal constitution to the environmental conditions. Both also emphasized a loss of equilibrium in both mind and body which required measures to restore such equilibrium through either diet, exercise and asceticism in the case of the humoral theory, or the removal of foul odours from one’s environment in the miasmic theory. As has already been discussed in relation to this period, all such theories were overarched by a supernatural theory of God as the ultimate cause. This was the period of Copernicus, Galileo and Macchiavelli, whose ideas had not yet dominated thinking.

The period from the end of the seventeenth century to the end of the eighteenth century is generally referred to as the Enlightenment period and includes the articulation of the laws

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of mechanical science by Newton as well as the influential philosophies of Descartes, Hobbes, Locke and Kant. Both Doyle and Lupton emphasize the growing influence of scientific rationality in this period. For Doyle, this is evident in the changing nature of the relationship between Doctors and patients from patient dominance to Doctor dominance. Doctors developed their profession through the adoption of mechanistic science in a time when the newly emergent Industrial Revolution was creating unhealthy cities and masses of sick poor. From the Enlightenment emerged capitalism, industrialization and the establishment of huge hospitals to house the growing numbers of sick factory workers and their families. The new scientific, professional Doctor now had higher status than his patients, with mechanistic science enabling the objectification of patients that could be diagnosed, classified and categorized by hospital bureaucracies. Patients were increasingly regarded as Newtonian bodies, comprised of smaller parts and ill health seen as the malfunctioning of one part or another. Empirical verification assumed major importance as surgical techniques and new equipment aimed at invading the body in order to locate diseased parts. As Doyal argues:

Doctors became concerned to correlate verifiable external symptoms (those reported by the patient were of less importance) with those internal malfunctions that they could discover (often on autopsy or after exploratory surgery)…Instead of Doctors having to listen to what their social superiors told them about their ailments, they were able to probe into the recesses of the bodies of thousands of 'cases' and subject the results they obtained to statistical analysis.\footnote{Doyal, The Political Economy of Health, p. 32.}

For Lupton, this period is characterized by the belief that like the universe itself, the causes of disease were determined by underlying laws of nature that could be revealed through scientific inquiry, empirical data collection and mathematical analysis. With the development of new nation states, the concept of social medicine emerged involving a paternalistic notion of state intervention and regulation in matters of population health. Social medicine sought to increase its authority and legitimization in order to achieve its public health goals, through developing itself into a science, in line with the mechanistic
science of the time, paving the way for the emergence of areas such as epidemiology. Lupton speaks in Foucaultian terms of the extension of the ‘medical gaze’ beyond the individual to all aspects of society. Medical science and its techniques of health management are therefore becoming a pervasive metaphor in the development of society. As Lupton argues:

The ‘pathogenic’ city became a site for medicalization, in its open spaces, its sewerage and drainage, abattoirs and cemeteries, prisons, ships, hospitals, housing. As a consequence, a ‘medico-administrative’ knowledge developed, rendering medicine as a ‘general technique of health’ and not simply a means of ministering to or curing the ill.\(^75\)

From the latter half of the nineteenth century to today, we have seen what Doyal calls ‘the final victory of the mechanistic world view’ in the development of ‘laboratory medicine’. Medicine was becoming fully established as a science through embracing mechanism over vitalism and experimentation and vivisection over comparative anatomy. Developments in histology and physiology saw the cell replace organs as the mechanical, atomic parts, producing a more fragmented definition of human illness through biological reductionism. In Public Health, Lupton emphasizes the increasing quantification of health influenced by the early nineteenth century statistics movement, that saw statistical data gathered on geography, social class, morbidity and mortality, allowing for mathematical, comparative analysis. The discovery of the microbe helped to further legitimize medical science as it revealed at the cellular level the causes of contagious disease, ‘…narrowing public health problems to those that could be identified under the microscope.’\(^76\)

Within this historical development of medical science and the Public Health movement, can be seen the basic tenets of mechanistic materialism reproduced. There is the atomism of Democritus, as the body is reduced to its component parts; the Platonic belief in the existence of immutability and Galileo’s belief that immutable laws can be revealed through mathematics; the dualism of Descartes in the separation of the material body from the

\(^75\) Lupton, *The Imperative of Health*, p. 23.
\(^76\) Ibid: p. 36.
immaterial soul, or mind, leading to the body’s objectification; and the mechanical, clockwork body of Newton, comprised of an interchangeable series of moving parts. If one adds to this Darwin’s evolutionary theory, reducing human beings to mere animals whose development and survival is determined by pure accident, we are left with the strange paradox that Boyle alludes to whereby a limited method for obtaining knowledge, devised by a limited and purposeless animal, is apparently capable of explaining all causality in the universe. How then has this limited view become so dominant?

The Role of Logical Empiricism

Part of the answer is the limited nature of this view itself. Mechanistic science, and therefore medical science, is now underpinned by Logical Empiricist epistemology. Salmon characterizes Logical Empiricism in three main points taken from Hans Reichenbach’s 1938 book, ‘Experience and Prediction’:

First, he rejected phenomenalism as an analysis of human knowledge, adopting instead a physicalistic approach in which our knowledge is based upon our admittedly corrigible observations of middle-sized material objects…Second, like the positivists, Reichenbach advocated a criterion of empirical meaningfulness. Unlike the positivists, however, he required only the physical possibility of positive or negative empirical probabilistic evidence, not the possibility of complete confirmation or refutation. Third, Reichenbach supported scientific realism, arguing that we can have probabilistic knowledge of unobservable entities.77

Amidst all of this empirical probability we see reflected the negative and seemingly humble position of Boyle in relation to limits to knowledge. For Gare though, the roots and goals of Logical Empiricism paint a more grandiose and sinister picture in its concordance with the dominant metaphysics of mechanistic materialism. Gare argues that:

Logical Empiricism can be understood as the effort to represent the objects of knowledge as eternal (true propositions or facts and the logical relations between them), while being consistent with the form of empiricism engendered by the mechanistic conception of the world (true propositions are those which have been confirmed directly or indirectly by sense impressions). And this amounts to a research programme to characterize human knowledge and rationality in a way which is consistent with the conception of humans as complex machines...  

Ferré supports Gare in relation to Logical Positivists that preceded Logical Empiricists, but in which Gare finds little distinction, despite Salmon arguing that Logical Positivism is dead. Ferré argues that:

The reductionist empiricists take, as their central model for success in knowing, the highly specific observation report, such as we associate with carefully controlled scientific research. These statements, describing sensory experiences, are taken to be our clearest, most fundamental, incorrigible direct encounters with the world. For the Logical Positivist, these basic or atomic statements asserting sense data, when combined in “definitions of use,” provide all the content there is (or can be) for what we mean by “objects” in the “world.” Understanding the “world,” so defined, requires analysis of relatively confused objects and events into the pellucid parts from which they are constructed. Knowing is most secure at its foundational levels in minimum sense contents. Theory is best when most tightly tethered to these most knowable minima. The more theory floats into more distant reaches, the more suspicious one should be.

Logical Empiricism can therefore be seen to reproduce both mechanistic thought and Neoplatonism. It is the culmination of the growing legitimacy of empirical observation from Galileo, to Newton, Locke, Hume, Comte and Mill, that has seen a focus on smaller and more limited observational contexts in the spirit of atomism matched to the Platonic belief in an objective truth accessible through the necessary truths of mathematics. For Comte, it was the final attainment of maturity in human thought as metaphysical speculation of hidden causes was denied importance in favour of the power of prediction.

78 Gare, Nihilism Inc., pp. 284-285.
79 Ferré, Knowing and Value, p. 233.
It is the institutionalization of the ‘epistemological gap’, the gap between us, the knower and external reality; the gap, initially opened by Plato and subsequently widened by Descartes’ dualism, Hobbes’ Nominalist atomism and Kant’s ‘Copernican Revolution’. As Fuller argued earlier in relation to Newton, Logical Empiricism has been enormously successful in its limited domain. With its ties to Neoplatonism, this success has been broadened to the point where science, underpinned by Logical Empiricism, provides our only access to truth as well as enabling apparent prediction of the future, a development that will be discussed in greater detail in Chapter Five.

It is this development that has also underpinned the success and domination of the biomedical model of health. As Gare argues, it is areas of science such as biology, chemistry and psychology, areas that are closely associated with medical science that have clung most dogmatically to mechanistic, Logical Empiricism. Gare and Ferré also see Logical Empiricism as underpinning the increasing fragmentation of science into ‘…a cacophony of sub-disciplines inhabited by ultra-specialized ignoramuses’. The success, therefore, of mechanistic science, can be understood to be largely due to a division of knowledge into what can be known with some degree of certainty, and what is left. A limited abstract framework encapsulates what can be known, excluding broader perspectives as outlined by Baum at the beginning of the Chapter. Certainty is sought through dividing knowledge into smaller and smaller manageable fragments. From this perspective, the biopsychosocial model can be seen to be just so many more fragments added together. It is, therefore, as rooted in reductionism as the model it seeks to replace. It is this fragmentation into highly specialized sub-disciplines, pointed to in Lash and Urry’s disorganized capitalism, that is instrumental in providing the conditions for the emergence of highly specialized approaches to physical inactivity. It is this idea that will now be explored in relating this development of mechanistic science back to the development of capitalism and capitalist labour relations.

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80 Ibid, Ch. 4.
81 Gare, Nihilism Inc., p. 166.
82 This is evident in the methods health economists use to construct utility instruments for quantifying the quality of life. Examples and comparisons of such instruments can be found in G. Hawthorne, J. Richardson and N. Day, ‘A Comparison of Five Multi Attribute Utility Instruments’: Centre for Health Program Evaluation, Working Paper 140, (Melbourne, 2003).
Capitalism and the Public Health Discourse

A possible reason for the success of mechanistic science has been given in its ability to reveal apparent truths of probable certainty in limited contexts. A further reason that needs to be explored though is in how mechanistic materialism produces and re-produces unequal power relationships through the ideologies and forms of political economy it underpins. Earlier in this Chapter, the Public Health critical discourse was argued to be principally concerned with the impact of capitalism, the predominant form of political economy, on Public Health issues. In a brief look at changes in late-capitalism it was shown that what appeared radically different and disorganized, could, through a broader metaphysical perspective, appear to be organized in line with the Neoliberal ideology currently underpinning capitalism. This broader perspective required a brief historical analysis of the development of mechanistic science to reveal the mechanistic metaphysical underpinnings of Neoliberalism and the ontological view of human beings it produces. Labour relations, the interface between the capitalist economy and people, becomes therefore, perhaps the most important area of analysis for revealing this ontology. It can now be argued in reference to labour relations, that in late-capitalism, dominated by Neoliberal ideology and underpinned by a secular, mechanistic, Logical Empiricist based science, human beings are little more than metaphorical cogs in a vast Newtonian machine, albeit a more sophisticated machine than in early capitalism. This provides the justification for continual reproduction of capitalism’s form of master/slave relationship and therefore, the continual reproduction of pathologies stemming from alienation, lack of control and inequality revealed by Marx.

The implications of this for Public Health are quite explicit in the Public Health critical discourse. Bunton, for example, points to the ways in which Neoliberalism is transforming and re-conceptualizing health care in contemporary, globalized, post-industrial capitalism:

Contemporary health care systems have been subject to a number of changes typified by a shift towards neo- or advanced liberal rationality that specifies new relationships between the state and professional knowledge, a more plural set of policy interventions and a new configuration of the healthy citizen. This new rationality relies upon risk calculation and
management as a technology of governance. Alongside these changes a parallel and integrated organizing principle is emerging which highlights choice, self-expression and even playfulness focussed upon the body. The influence of consumer culture has produced an ‘aesthetization of health’ as a more general aesthetization of everyday life.  

As benign as this appears, these developments are in the context of Bunton’s argument that in Neoliberal capitalist culture it is almost impossible to address growing inequalities in health care through any modernist, universal strategies. She argues that the ‘…diminished state will not be able to implement them, health care strategies will not prioritize them and highly reflexive enterprising subjects will not choose them.’ Like Lash and Urry, who Bunton refers to, the world is seen as too fragmented, globalized and plural with rapid flows of goods and information, for universal approaches to succeed. Despite this though, Bunton argues, health inequalities have remained on the political agenda, (in particular with the signing of The World Health Organization’s ‘Health for All 2000’ statement by many neo-conservative governments) due to a subtle shift in emphasis from social justice concerns to economic efficiency concerns. This appears to contradict Bunton in suggesting that there are possibilities for modernist, universal strategies in health care; a case being the universal strategy of Neoliberalism to address health inequalities in order to produce a more productive labour pool, or perhaps, healthier cogs.

It is the dominance of economics in Neoliberalism and the obsession with economic growth that was seen earlier in Argy’s analysis, that produces the contradictions within Public Health between the aims of capitalist economies and the health needs of human beings. This is also a central theme in Hamilton’s critique of Neoliberalism as the dominant ideology, one based on a pathological growth fetish. Both Doyal, in her Marxist analysis and Lupton in her postmodern analysis, see similar problems in the reduction of the majority of humanity to labour power, functioning to fuel economic growth to sustain the unconstrained consumption and accumulation of a few. While this has produced a higher

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84 Ibid, p. 37.
85 A scathing critique of Neoliberalism as an ideology that threatens the quality of human health is in Hamilton: Growth Fetish.
material standard of living for many in the West and increased life expectancy overall, it has continued to reproduce levels of inequality and perpetuate high levels of poverty. For example, in a world of six billion people, 1.3 billion are estimated to live in absolute poverty, seventy percent of whom are women, and another two billion earn enough to meet only basic needs. Meanwhile, the total wealth of the world’s 358 billionaires is equivalent to the combined incomes of the poorest forty five percent of the world’s population. It is such structural inequalities that Wilkinson argues destroys social cohesion and produces unhealthy societies. Reich argues as well, that contrary to Bunton’s and Lash and Urry’s postmodern positions, class issues between capitalist and working class dominate more than ever:

Ownership of capital assets has become increasingly more concentrated than in the nineteenth century, or even in the first third of the twentieth century, while the growth in the proportion of the population whose livelihood depends exclusively or almost exclusively on the sale of labour power has been equally spectacular.

This is once again an issue related to levels of understanding. One can either see class as disintegrating in the rapidly changing workplace relationships of disorganized late-capitalism in which individual agency is all that counts, or, like Edwards, see class as structurally inherent in the productive and social relationships within capitalism and its various forms. It is from a position that recognizes the importance of complementary levels of analysis that Edwards defends the concept of exploitation as the basis of class structure in capitalism. The two-class model of the exploiters and the exploited, much criticized by

87 Wilkinson, Unhealthy Societies.
89 This argument is in Paul Edwards, ‘Late twentieth century workplace relations: class struggle without class’: Renewing Class Analysis, eds. Rosemary Crompton, Fiona Devine, Mike Savage and John Scott, (Blackwell Publishers, Oxford, 2000), pp. 141-164.
postmodernists, that is a consequence of this concept, can then be defended as a constraint on the development of relationships at the micro level, a constraint that helps explain the conflict inherent in class relationships.\textsuperscript{90} It is from a broader level of understanding therefore, that McFarlane’s simple definition of capitalism in a basic textbook on comparative economics becomes relevant:

‘Capitalism is a system based on the private-sector ownership of the means of production by the few and labouring duties for the many.’\textsuperscript{91}

**Emergence of the New Bourgeoisie**

From this one can argue that the relationship between capitalism and medical science is complementary in that the latter exists to perpetuate the former, particularly in the aims of maintaining an efficient and properly functioning labour force. This radical proposition needs to be understood in relation to the power transition in the emergence and development of capitalism, from the aristocracy to the bourgeoisie to the new aristocracy a more concentrated bourgeoisie now represent. Each development of mechanistic science and the political ideologies it underpinned can be seen to have further strengthened the political position of the bourgeoisie as traditional metaphysical world-views and epistemologies were cast aside. This historical evolution of increasing political power of the bourgeoisie, is summed up by Edwards, Reich and Weisskopf:

Each step in the development of the bourgeoisie was accompanied by a corresponding political advance of that class. An oppressed class under the sway of the feudal nobility, an armed and self-governing association in the medieval commune, here independent urban republic (as in Italy and Germany), there taxable “third estate” of the monarchy (as in France), afterwards, in the period of manufacturing proper, serving either the semi-feudal or the absolute monarchy as a counterpoise against the nobility, and in fact, cornerstone of the great monarchies in general, the bourgeoisie has at last, since the establishment of Modern

\textsuperscript{90} Ibid: p. 159.

Industry and of the world-market, conquered for itself, in the modern representative State, exclusive political sway.\footnote{Edwards, Reich and Weisskopf, \textit{The Capitalist System}, p. 21.}

Mechanistic science thus created the legitimizing metaphysics that enabled the bourgeoisie to wrestle power from traditional church and aristocratic rule. This was particularly evident in newly industrialized Britain in the seventeen hundreds. Men, such as the grandfathers of Charles Darwin, physician Erasmus Darwin and industrialist Josiah Wedgwood, typified this period. Both embraced the Newtonian science from which emerged so much mechanical innovation and powered the factories, producing the forces that helped shape Darwin’s theories of evolution. According to Desmond and Moore:

> These forces were generated in the age of iron and steam. The blasts of Coalbrookdale and the wheeze and snort of Boulton engines echoed across the English Midlands in the mid-eighteenth century. New money was to be made, new families were on the rise. These calliper-carrying industrialists had faith in a progressive nature, a democracy of intellect, and technological salvation. They were marginal men, but on the make; arrivistes-merchants, standing outside the old, complacent squirearchy.\footnote{Adrian Desmond and James Moore, \textit{Darwin}, (Penguin Books, London, 1991), p. 7.}

The intellectual basis for these marginal men at odds with the dominant Anglican Church was Unitarianism and its most notable scientist and philosopher, Joseph Priestley. Priestley’s religious philosophy was a paradoxical mix of extreme materialism and transcendent Christian purity, reflecting the notion that has been discussed of a God as efficient cause of a material world that man is free to dominate and manipulate. In this mechanistic form of religious faith, people are like machines whose gears of improvement are pushed and pulled by the forces of pleasure and pain. What is not corrected in this life, is repaired and removed of defective parts in the workshop of the next life.\footnote{Ibid: p. 9.} Religion itself, therefore, can be seen to be pragmatically manipulated to justify the mechanistic materialist beliefs of the new industrial bourgeoisie and its particular agenda. In America, similar developments have occurred with the rise of religious groups such as the Mormons,
initiated by the conspicuously materialist charlatan Joseph Smith, described by a Mayor of Boston in 1844 as a ‘bourgeois Mohammed.’

These pragmatic developments in religion accompany the rise to power of a new bourgeoisie underpinned by a spiritually vacuous mechanistic materialism. This vacuum has been filled by the application of a mathematical technical rationality to all aspects of life. Those thinkers that have influenced the development of the Neoliberal capitalist global market that dominates today tend to believe that in business traditional forms of religious control should be substituted for another form of control, scientific management. Scientific management has its origins in the Hobbesian view of isolating individuals into atoms, moved by the forces of appetites and aversions; such forces that can be manipulated to socialize individuals in to a natural hierarchical structure. Adam Smith formulated his Classical Economics in mechanical terms of self-interested, independent constituents who could most efficiently play their part by pursuing their own selfish needs within their place in the hierarchy. With Darwinian evolution, this natural hierarchy shifted from a pre-ordained, celestial order to an earthly measure of fitness. Freedom to pursue one’s interests was thought to only be possible within the rigid constraints of a machine. This scientific social engineering reached its peak with the growth of bureaucracies and ‘Taylorism’, which still arguably operate to re-produce social hierarchies today.

Ritzer, for example, reveals continuities between the rationalized, de-humanizing classical bureaucracies described by Max Weber at the beginning of the twentieth century and what he regards as today’s equivalent of the classic bureaucracy and model of rationality, McDonald’s fast-food restaurants. ‘McDonaldization’ is Ritzer’s metaphor for the process of rationalization dominating Western societies aimed at finding the optimum means toward achieving given ends through the application of pre-determined rules and regulations. Drawing on principles of ‘Taylorist’ scientific management, ‘McDonaldization’ is primarily aimed at replacing the irrationality of free human behaviour and judgement with strict rule-governed and mechanical behaviour. It is the application of

machine technologies to human management to achieve greater efficiency, predictability, quantification and control. As Ritzer argues, the underlying ‘…idea is to reduce people to human robots or computers that make few, if any, judgements.’\footnote{Ibid: p.22.}

Schlosser details the historical development of ‘McDonaldization’ from its mechanistic and Social Darwinist roots to its growing political power and to the level of exploitation it has created relating to its role in the reduction of the minimum wage, its exploitation of teenagers and poor immigrants and its efforts to prohibit union membership. In regard to labour relations, he argues:

\begin{quote}
The strict regimentation at fast food restaurants creates standardized products. It increases the throughput. And it gives fast food companies an enormous amount of power over their employees…The management no longer depends upon the talents and skills of its workers – those things are built into the operating system and machines. Jobs that have been “de-skilled” can be filled cheaply. The need to retain any individual worker is greatly reduced by the ease with which he or she can be replaced.\footnote{Eric Schlosser, \textit{Fast Food Nation: the dark side of the all-american meal}, (Houghton Mifflin Company, New York, 2001), p. 70.}
\end{quote}

As will be discussed in the following chapter, ‘McDonald’s’ is a major influence in the development of the Fitness Industry in being a popular model for Fitness Centre management. Not all see this as a problem, however, particularly postmodernists who are highly critical of the generalizing nature of the ‘McDonaldization’ thesis that seemingly ignores individual agency. Miles, for example, sees ‘McDonaldization’ as having become the type of cultural constraint that provides stability, particularly for young people, which gives them a sense of control over their choices.\footnote{Steven Miles, ‘McDonaldization and the Global Sports Store: Constructing Consumer Meanings in a Rationalized Society’: \textit{McDonaldization Revisited: Critical Essays on Consumer Culture}, eds. Mark Alfino, John S. Caputo and Robin Wynyard, (Praeger Publishers, Westport, 1998), pp. 53-65.} In this type of thinking, deeper currents of thought are understood to be less relevant than how individuals can construct their own meanings from ‘McDonaldized’ institutions. Such constructed meanings, however, must be understood as being conditioned by deeper currents of thought that if found defective,
must be challenged at that level. This is supported by both Mwachofi, who complements Ritzer with an emphasis on the cultural basis of irrationality in ‘McDonaldization’ processes, and Jeannot, who like this thesis, draws on Marx to reveal how ‘McDonaldization’ is conducive to the power relations inherent in capitalism.\textsuperscript{100,101}

From this deeper perspective, mechanistic science, particularly in its application to human resource management, can be understood as having become the justification and means for creating a natural social hierarchy at any cost; one that facilitates control and management of those on lower levels. As Heilbroner argues, Adam Smith’s moral justification for what emerged as inherent inequalities in income distribution in capitalism, centred on the need for the maintenance of social order. According to Smith:

\begin{quote}
The peace and order of society...is of more importance than even the relief of the miserable...Nature has wisely judged that the distinction of ranks, the peace and order of society, would rest more securely upon the plain and palpable difference of birth and fortune, than upon the invisible and often uncertain difference of wisdom and virtue.\textsuperscript{102}
\end{quote}

The new bourgeoisie, having embraced these beliefs, particularly in respect to fortune, can be understood as having achieved a form of power not dissimilar to preceding forms, except that coercion and manipulation of appetites and aversions is now concealed behind scientific rationality and a form of freedom that hides the distinctions between relationships of dependence. The particular relationship of dependence involved is the one that has been focussed on, the relationship between labour and the bourgeois owners of capital. It is in the service of producing and re-producing this unequal and exploitative relationship that mechanistic science has been employed. Populations are reduced to statistics, communities to epiphenomena of quantifiable individual motions and individuals are reduced to the sum of quantifiable determined behaviours and genetic codes. Mediating human relationships

\textsuperscript{100} Ngure wa Mwachofi, ‘Missing the Cultural Basis of Irrationality in the McDonaldization of Society’: Ibid, pp. 143-158.
are abstract economic concepts of exchange values, reducing everything to the status of a measurable commodity. Labour is therefore exploited in a scientifically legitimized manner by a new bourgeoisie that is becoming more and more concentrated through an ideology of unconstrained accumulation, into a seemingly natural form of aristocracy. This concentration of wealth and power also produces a growing proletariat at the other end. As Edwards, Reich and Weisskopf argue in relation to current trends:

The low strata of the middle-class – the small tradespeople, shopkeepers, and retired tradesmen generally, the handicraftsmen and peasants – all these sink gradually into the proletariat, partly because their diminutive capital does not suffice for the scale on which Modern Industry is carried on, and is swamped in the competition with the large capitalists, partly because their specialized skill is rendered worthless by new methods of production. Thus the proletariat is recruited from all classes of the population.¹⁰³

The ideological roots of this development, according to Gare, can be traced to Locke in the seventeenth century and his notion of a ‘social contract’ rooted in an exchange economy and private ownership of property, including one’s labour power. This justified the removal of land from the yeomanry in the enclosure movement and the re-classification of yeoman to the status of wage labourer, enabling a greater concentration of property ownership to rest in the hands of the rising bourgeoisie. Gare argues that:

By conceiving of property, including labour, as independent of civil society, Locke was able to defend the unequal distribution of property and, once money had been introduced, the unlimited acquisition of wealth by the propertied class, to justify the sovereignty of the propertied class to maintain the conditions under which wealth could be appropriated, and at the same time rule out any interference by government in their acquisition of property.¹⁰⁴

The growing proletariat and their labour power has, therefore, effectively become the property of the bourgeois aristocracy and the global corporations they control. They are

objects to be manipulated both within and outside working hours with some care but little and lessening responsibility.

**Conclusion**

The Newtonian atomism explicit in the ideas of Locke, Adam Smith as well as Utilitarians such as Mill and Bentham, that underpins liberalism and stresses that individual liberty is the highest value and the pursuit of individual ends the ultimate purpose, now underpins Neoliberalism today. In fact, it could be argued that Gare’s preceding quote was directed at the year two thousand rather than the eighteenth and nineteenth century. As Zohar and Marshall argue, it is this atomistic individualism that leads to the belief that society exists solely to facilitate individual ends and a ‘natural harmony of interests’ is achieved only through some mysterious homeostatic process. Like atoms, liberal individuals are immutable and therefore, while they may participate in and influence society, society does not influence them. Rather than a community, liberal individuals exist in a culture of narcissism where one’s own goals and emotions are primary and others exist only for one’s amusement or to be manipulated toward achieving one’s own goals.\(^{105}\) It is in this nihilistic world that concerns are raised in the Public Health critical discourse about the commodification of health and growing inequalities, and in which the Fitness Industry has emerged to cater to the narcissism of the new bourgeoisie.

Like Argy previously, Baum identifies the growing dominance of Neoliberalism and its policies of economic rationalism and scientific managerialism over the past twenty years, but in relation to Public Health. The principal effects of this have been:

1. applying market logic to public health, which is an essentially non-market activity
2. the privatization of public services and the transformation of services delivered to ‘products’

3. transformation of bureaucracies to ‘funders’ and ‘purchasers’ of services through organizational forms based on the private sector
4. the emphasis on short-term measurable outcomes
5. the growing inequities evident under economic rationalist policies
6. no commitment to broader social goals and the placing of activities such as public health below those with a direct economic improvement goal.106

Looking through these points, one can see the current manifestation of the undercurrents of thought running through this chapter. First there is the application of the mathematical logic of mechanistic science and simplistic Neo-Darwinist views on human nature to an area of broad complexity. This leads to the narrow definitions and over-specialization that the Public Health critical discourse is so critical of, as well as the scientific objectification of people. Secondly, there is the new bourgeoisie’s removal of institutions and the privatization and commodification of what were public services, in its place. Thirdly, there is the transformation of bureaucracies essentially from one form of scientific social management to another ‘McDonaldized’ form that is more coercive. Fourthly, there is the obsession with mathematical measurement within measurable parameters, that is the only source of true information as to the value of anything. Fifth, there are the institutionalized inequities of capitalism that blatantly favour the bourgeois aristocracy and their appetite for unconstrained power and accumulation. Sixth, there is the evidence of the still widened epistemological gap as humans continue to be removed from the equation; humans as atomized individuals rather than social beings.

Here one can clearly see the historical metaphysical continuities linking the critiques of the Public Health discourse to Gare’s articulation of mechanistic materialism. From this, one can understand Lupton’s critique of new developments in Health Promotion campaigns that blame the individual for irresponsible, irrational behaviour, while defending the system that promotes such behaviour. One can understand Doyal’s critique of capitalism in reference to the growing contradiction between health and the pursuit of profit. One can understand Cooper, Stevenson and Hale’s critique of the fragmentation of medical knowledge that

makes the biopsychosocial model of health as mechanistic as the biomedical model it aims to replace. One can understand Baum’s critique of Neoliberalism as not being conducive to improvements in Public Health. Finally, one can understand why issues related to control and inequality continue to create poor health.
TWO

THE EMERGENCE AND DEVELOPMENT OF THE FITNESS INDUSTRY

With the understanding in the previous chapter of the link between mechanistic materialism and capitalism, the concerns of the Public Health critique can now be linked to the emergence and development of the Fitness Industry, a field in which capitalism and physical activity related Public Health merge. The emergence and development of this industry can be linked through an historical exploration of the relationship between mechanistic materialism and changing attitudes to physical activity. What will be argued is that the emergence and growth of this industry over the same period in which physical inactivity and obesity grew, provides an insight into some of the probable causes of physical inactivity. In other words, the Fitness Industry will be revealed to be part of the problem.

In the previous chapter, the argument was made that a metaphysical tradition of thought, mechanistic materialism, with origins in the ancient world, has and continues to dominate the direction of human development and now underpins the ideologies driving capitalist political economies. This dominant tradition and its continuity from the past to the present, was shown to be particularly evident in people’s relationship to their labour, although, it must be added, not limited to this. There is a pattern throughout history of people’s labour power being harnessed and channeled as means towards the ends of a powerful few. This relationship, in which inequality is reproduced and meaningful control is denied to most, is continually legitimated through being reified. In late-capitalism, this reification process is in the naturalization of technical systems of people management with the effect that today’s workers suffer relatively from similar afflictions of lack of control and inequality as slaves
and serfs suffered. The problem for the Fitness Industry, argued for in this thesis, is that it has emerged and developed as a means for creating and maintaining such unhealthy relationships. An industry that supposedly exists to improve health can therefore be understood to be implicit in undermining health. This will become more starkly evident when a process definition of health is developed later in the following chapter. However, it is also evident if one focuses on the relatively short history of the Industry itself.

The difficulty encountered in exploring the history of the Fitness Industry was alluded to at the beginning of Chapter One. As well as there being little or no critical discourse, there is little or no historical literature to engage with. There is certainly a need for this history to be researched in considerably more detail than this thesis can provide. As a consequence, one is reduced to drawing on superficial articles often found in bodybuilding magazines such as, ‘The Origins of Bodybuilding Part II’, in which bodybuilder Nelson Montana reveals the pioneering role of bodybuilders in the emergence and development of the Fitness Industry. Reference will necessarily have to be made to such articles together with this author’s personal observations, experiences and discussions with practitioners in the Industry. Much more historical literature is available from another source, but one that will be shown to be entirely relevant to the Fitness Industry. This is in relation to the history of physical education, exercise science and general physical activity stemming from various academic sub-disciplines. It is this literature that provides perhaps more profound insights into the conditions for emergence and continuing development of the Industry. In line with the methodology in the previous chapter, this history will be related to what aspects of mechanistic materialism are revealed within it.

**A Brief History of Physical Activity**

The history of physical activity, like all histories, is one of cultural change at many levels. Like all areas of human culture, physical activity has evolved within the increasing complexity of human social life and environment that has transformed the ways we work,

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relate and relax. Contradictions in the history of physical activity generally relate to the way these three aspects of life are defined, or prioritized by particular cultures. For example, the Ancient Athenians who, as in the study of philosophy, are revered as the proper starting point of civilization, were distinguished by their intrinsic pleasure in physical development as opposed to more barbaric peoples that engaged in physical activity purely for survival. Both Leonard and Barrow and Brown, regard the Athenians as embodying the highest ideals of any civilization, ideals that have yet to be matched, as well as being the most influential culture on current principles of physical education. Ancient Greek culture stressed the educational aspects of physical activity seeing it as an essential part of the production of good citizens. Physical education began for boys under the age of eighteen at school in the ‘palaestra’ where many games, athletic and self-defence skills, were learned and practiced. After eighteen, men would attend the ‘gymnasium’. These were purpose built structures incorporating exercise areas, baths and parkland. There are two interesting points regarding gymnasia that are of particular relevance, one is that they were state institutions maintained at public expense, and the other is that gymnasia became centres for Greek social and intellectual life, as well as physical training. Leonard reminds us that the three great gymnasia in Athens were the homes of Plato’s Academy. In agreement with Barrow and Brown, one can argue that this culture still provides relevant models for today.

If we add to these descriptions of history a metaphysical perspective, we can reveal some of the negative aspects of Greek culture that have contributed to problems in Public Health today. Plato, for example, influenced the development of dualistic notions of mind and matter and the consequent devaluing of the sensual, perceiving body. As Barrow and Brown argue, the Athenians saw developing strength and fitness as a purely physical component of a total individual that produced a healthy body capable of housing the all important mind, the gateway to the perfect reality of the Forms. For Aristotle, while

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physical activity was an important part of a well-rounded life, thought was also activity, although a separate and superior form. Contemplation was therefore to become the highest, most worthwhile form of activity.\(^5\) As these historians all correctly point out, the achievements of Ancient Athens have to be seen in its political economic context of a slave-based economy, where such physical and contemplative pursuits were only available to the dominant class. As has been argued both Plato’s and Aristotle’s positions did little to challenge this order.

**Asceticism and Hedonism in the Roman Empire**

The history of physical activity in the Roman Empire, particularly towards its demise, provides perhaps a better model of today’s situation. As Gruneau argues, the history of physical activity is interlaced with two contradictory arguments that have ‘…left indelible marks on modern European and American cultures.’\(^6\) On one side of the argument is bodily indulgence as a basic human characteristic, right of privilege, or popular entitlement, and on the other, the ‘…view that such indulgence was a sign of immorality, irrationality, decadence and weakness…’\(^7\) This argument is exemplified (in Roman times) by the tension between Stoicism, and its uncompromising belief in asceticism influenced by Cicero, and forms of hedonism, such as Epicureanism. Perhaps more relevantly, however, hedonism is more closely aligned to Cyrenaics, founded by Aristippus, and its belief in the highest good being the attainment of intense immediate pleasure, even if it is at the expense of others.\(^8\) In Rome, physical activity was centred around the ascetic demands of military service and some Greek ideals of moderation for maintaining health on one side, and a decadent hedonism amongst nobility on the other; particularly in the Empire’s periods of

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6 Ibid, p. 198.
7 Ibid, p. 198.
8 This description of Cyrenaics is in Peter Angeles, *Dictionary of Philosophy*, (Barnes and Noble, New York, 1981), p. 53.
Physical inactivity and obesity in late–capitalism

This asceticism came to dominate the Middle Ages as Neoplatonism took root. This was partly the result of a reaction against the excesses and the consequent weakness of the Romans against the ‘…”barbarian” energy, vigor and bodily discipline…’ that cleansed the decadence of the Roman Empire. Gruneau argues, it is the ascetic ideal that emerged to define much of the subsequent political and institutional culture.

This asceticism came to dominate the Middle Ages as Neoplatonism took root. This was partly the result of a reaction against the excesses and the consequent weakness of the Romans against the ‘…”barbarian” energy, vigor and bodily discipline…’ that cleansed the decadence of the Roman Empire.9 Life became a preparation for the next world in line with Augustine’s philosophy. As Leonard argues, this led to excesses of its own in extreme levels of self-denial, self-neglect and self-mutilation of bodies that were held in contempt in comparison to the contemplative life of the mind.10 It was the Crusades and the incursions of Mohammedan warriors into Christian territory that saw the Catholic Church shift its policy to military asceticism, with Knights replacing hermits as heroic figures. This military asceticism can be seen to have persisted in the humanism of the Renaissance and, following the re-discovery of the works of the Ancient Greeks and Romans, the re-introduction of physical training into schooling.

Asceticism and the Rise of the Bourgeoisie

As discussed in Chapter Two, it was from this period on that the new mechanistic scientific rationality began to emerge, exemplified by physicians such as Cardano (1501-1576) and Mercurialis (1530-1606).11 One philosopher, mentioned previously, who was influenced by mechanistic science and had a powerful influence on education reform, was John Locke. It was to Locke that the notion of a sound mind in a sound body is attributed in his ascetic demands for the disciplining and hardening of male children’s minds through physical exercise and exposure to the elements.12 As has been argued previously though in relation to Locke, these ideas were propounded in the context of establishing and justifying the rise of a new dominant class of bourgeoisie. A sound body was one of several means to the end of becoming a proper bourgeois gentleman capable of both rising above the labouring class

10 Leonard, A Guide to the History of Physical Education, Ch. IV.
11 Ibid, Ch. VIII.
12 Ibid, Ch. IX.
and matching the aristocracy. Locke was part of the Realist movement in education that emphasized preparation for an earthly life in line with the new Empiricism. This movement was a response to the Puritanism that emerged following the Protestant Reformation which Barrow and Brown describe as having little time for physical education or play in its ascetic philosophy. Similar to Locke though, this ascetic philosophy promoted ideals of self-help and individuality as well as linking individual material success to the meaning of spirituality. Locke was also part of what Gruneau argues was:

The self-conscious cultural modernism that slowly developed in Europe from the sixteenth through the nineteenth centuries… that was ‘…centred on the related ideas of expanding individual rights against Absolutist power, perceived aristocratic parasitism and indulgence, and the religious domination of literate culture.’

It was this Absolutist power that Hobbes sought to justify. With the emergence of the liberal nation state, the work of Locke, Adam Smith and later, Utilitarians such as James, Mill and Bentham, was directed at finding mechanisms to legitimate and sustain control by the bourgeoisie. One such mechanism was free-market capitalism that received an ideological boost from Protestantism. One can see in this new movement’s reaction against the decadence of the Absolutist State, the continuation of the tension between asceticism and the decadence of hedonism. New regimes seek to counter the decay of the old through new forms of disciplined behaviour that usually involves some view of the physical as manifesting such behaviour. This can be seen in the growing prominence of physical education in conjunction with growing nationalism in eighteenth and nineteenth century Germany where Guts Muths and Friedrich Jahn developed gymnastics within a strong militarist structure. This structure, which was later combined with the Romanticism of German Idealist philosophy, was to underpin the ideal of physical perfection in Nazism. As Barrow and Brown argue, in relation to Jahn:

Imbued with the great desire for independence and nationalism, Jahn saw the necessity for a strong and vigorous youth. His system of gymnastics, known as the Turner movement, was devised for this purpose.\[^{15}\]

Bourdieu provides an important link here between the development of physical activity into organized sporting activity and class consciousness. Bourdieu sees the ‘production’ of sport in terms of supply and demand. Similar to Ancient Greece, one can argue, the supply of sport is tied to the demands of the bourgeois elites. According to Bourdieu:

> The school, the site of *skhole*, leisure, is the place where practices endowed with social functions and integrated into the collective calendar are converted into *bodily exercises*, activities which are an end in themselves, a sort of physical art for art’s sake, governed by specific rules, increasingly irreducible to any functional necessity, and inserted into a specific calendar. The school is the site, *par excellence*, of what are called gratuitous exercises, where one acquires a distant, neutralizing disposition towards language and the social world, the very same one which is implied in the bourgeois relation to art, language and the body...What is acquired in and through experience of school, a sort of retreat from the world and from real practice, of which the great boarding schools of the ‘élite’ represent the fully developed form, is the propensity towards activity for no purpose, a fundamental aspect of the ethos of bourgeois ‘élites’, who always pride themselves on disinterestedness and define themselves by an elective distance – manifested in art and sport – from material interests.\[^{16}\]

This disinterestedness partly constitutes the aristocratic philosophy of sport known as amateurism, which was ‘...training in courage and manliness, ‘forming the character’ and inculcating the ‘will to win’ which is the mark of the true leader, but a will to win within the rules.’\[^{17}\] It is ‘training’, in this sense, that has the ascetic character of *antiphysis*, fundamental to mechanistic materialism, that is in recurrent opposition to *phasis*, regarded as being a hedonistic form of laissez-faire or physical expression. For Bourdieu, it is this

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\[^{15}\] Barrow and Brown, *Man and Movement*, p. 75.


\[^{17}\] Ibid, p. 343.
‘aristocratic disposition’ of the new bourgeois and the struggle to impose legitimate definitions of sporting activity that produces tensions between bourgeois amateurism and a working class instrumental disposition toward sport and the body, one that has seen sports and physical activity in general, develop into material and cultural products for mass consumption.  

**Fitness, Consumerism and the New Nationalism**

Gruneau argues, drawing on Foucault, that it was the emergence of a new nationalism that saw health and fitness become a moral and patriotic duty to the state as well as a personal responsibility, necessitating the need for surveillance and control of deviant groups. New technologies of control emerged such as hospitals and asylums, but more generally these included prisons, poor houses, factories (utilizing ‘Taylorist’ scientific management) and schools. Interestingly, while Foucault saw these developments as broad paradigm shifts with the advent of modernity, Gruneau, in support of this thesis, sees continuities in the newly dominant groups applying traditional discipline and surveillance in different forms. He argues that:

The apparent inadequacy of traditional controls in emerging, industrial, capitalist societies created a sense of urgency about the necessary reintegration of social life. Leaders in the new liberal states in Europe and North America increasingly felt it necessary to articulate a new form of collectivism, to build a new sense of national community, and to promote a competitive national economy, now composed of “free” individuals unencumbered by the kind of traditional allegiances and obligations that had bound lord to serf and ruler to vassal. They sought to do this with the redeployment of discipline in state institutions geared toward the kind of socialization perceived to be necessary to create a newly harmonious social body integrated around the emerging demands of industrial production and international economic competition between modern nation states.

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18 Ibid, pp. 345-349.
However, as was argued in Chapter Two in relation to Zohar, such a national community of unencumbered individuals requires a mysterious homeostatic process such as an ‘invisible hand.’ It is Adam Smith’s ‘invisible hand’ of market forces that has mediated a continuity of tension between asceticism and hedonism within capitalist culture. While the state, influenced by the needs of the new aristocracy of dominant bourgeois owners of capital, continues to instill the need for discipline and order amongst the working classes, growing consumerism increasingly leads to the promotion of hedonism. This has been exacerbated by the dominant class in their relationship to the increasing authority of the market. The new ‘ultrarich’ have come to define not only evolutionary fitness but morality through their increasing status as the exemplars of material success, visible in their conspicuous consumption and extravagant lifestyles. This has created problems for government efforts to appropriately control and channel recreation time. Consumers increasingly see recreation time as the pursuit of pleasure, as enjoyed by the rich, and a release from the strict controls of work and school. In late-capitalism, this tension is evident in the contradiction between dire warnings of the dangers of hedonism and over-consumption in Public Health promotion and hedonistic marketing images produced by the Leisure and Food Industries, including the Fitness Industry.\(^\text{20}\) In today’s globalized Neoliberal world, where all relationships have been reduced to economic exchange, the moral regulation of leisure and disciplining of the body have become profoundly contradictory.

These contradictions are the basis of arguments in this thesis that for many in the culture of late-capitalism, physical activity has become meaningless, and no longer fits patterns of lives. This ill fit is evident in the continual drive toward developing and marketing consumer products aimed at either removing the need for physical activity altogether, or reducing the amount of time required for physical activity. A significant proportion of media advertising, for example, is devoted to weight loss schemes involving either medical technologies, such as drugs or surgical procedures, or engineering technologies, such as specially designed machines that can make you ‘fit’ in the least amount of time.\(^\text{21}\) Even

\(^\text{20}\) Ibid: p. 216-222.
\(^\text{21}\) Advertisements appear regularly on early and mid-morning television programs promoting cosmetic surgery, fat-loss medications and machines and training systems that can make one fit in minimal time relative to other methods.
programming within Fitness Centres is increasingly aimed at reducing workout time based on an endorsement that there are ascetic demands of higher priority than fitness training, such as productive work. These technologies amount to attempts to either rationalize hedonism, abbreviate asceticism or confine asceticism to non-physically active pursuits, positions that are generally at odds with Public Health directives but which are often endorsed by the Fitness Industry in its efforts to increase profits at any cost. In other words, there is money to be made in producing and reproducing a dichotomy between asceticism and hedonism. However, this necessitates the communication of mixed messages that, in conjunction with the development of work and leisure practices that increasingly require less physical activity, obscure the validity of physical activity as normal practice. Reified layers of abstractions that appeal to nihilistic hedonism obscure the primary need for physical activity.

This nihilism and the tendency to reify abstractions are reasons why this brief history of physical activity can be summarized as having revealed the continual creation and maintenance of mechanistic materialism. It is this tradition that has continually sought to freeze power relationships at the expense of those lower in the hierarchy. One can clearly see, particularly in relation to labour relations, continual efforts by dominant classes to channel the productive energy of the masses towards their ends and the justification of these ends through appeal to some greater truth. In late-capitalism, the greater truth is that the contradiction between asceticism and hedonism has been removed by reducing both to exchange commodities. The reality is though that they have never been more contradictory. This greater truth therefore, must be understood as superficial, one that only thinly disguises the tightrope that those in power have to walk through history between enjoyment of the fruits of exploitation and sustaining the source of such exploitation. Perhaps as Gare argues, we are now in a phase in late-capitalism, similar to the end of the

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22 An example of this is a new, popular personal training scheme, ‘Systemized Personal Training’, that involves only thirty minutes per week to fit in with today’s busy lifestyles. McEvoy and Associates, *Systemized Personal Training: Technical Training Manual*, (McEvoy and Associates, Broadbeach, Queensland, 1997).
Roman Empire, where nihilism and extreme hedonism has diminished capacities for sustainability. 23

The Fitness Industry and Mechanistic Science

The production of the conditions for the emergence of the Fitness Industry can now be understood as relating to the co-evolution of physical activity with mechanistic materialism. The history of physical activity has been linked to the history of mechanistic materialism through ideologies of control. Dominant classes have generally sought to harness the energies of lower classes or exclude them altogether, through processes of defining the status of the body and constraining the manner in which it should be used. The Fitness Industry, in its relationship to mechanistic materialism, has emerged as a co-creator of the conditions that facilitate the defining and constraining of physical activity in a manner conducive to the aims of the dominant class, while also pandering to their hedonistic needs. The power of the dominant class is currently legitimated through current manifestations of mechanistic materialism that confers on mechanistic science a monopoly on objective truth. Mechanistic science serves to naturalize such abstract notions as atomistic, self-maximizing individuals, free-market economics and Social Darwinist notions of ‘survival of the fittest’, that enable exploitation of a growing proletariat and continued concentration and accumulation amongst the bourgeois ‘ultrarich’ aristocracy that set global agendas.

Certainly there is a subversive aspect to the history of the Fitness Industry that began with those enthusiasts who believed, in a revolutionary and altruistic spirit, that they were countering a growing problem of human physical inertia in increasingly decadent capitalist consumer cultures. Many of the early pioneers of bodybuilding and athletic training began with such high ideals drawn from the Ancient Greek tradition. This spirit emerged though from within a dubious sub-culture of hardcore, obsessive extremists who Montana reveals were happy to not fit in and be labeled freaks. 24 In subsequent chapters it will be revealed

that such extremism has little relationship to health. However, while this hardcore still exists, it is the mainstream entrepreneurs who helped develop fitness training into an industry with a high level of focus on business development and scientific legitimacy. One such entrepreneur is Joe Weider who has made his fortune from marketing and promoting bodybuilding and gym culture in general. According to Montana it was Weider who, in the late 1960’s and early 1970’s, developed a strong association between science and bodybuilding. He argues that:

Keeping in the spirit of the times as America began its space program, Weider claimed to use “space-age technology” wherever and whenever he could. The word science appeared frequently through his magazines…The Weider training system was deemed scientific. His supplements were scientifically formulated. He even added a special science wing to his operations. Advertisements for his product line showed men in lab coats. An office door with a plaque that read “Research Clinic” was conspicuously featured in pictures of the Weider headquarters. (Incidentally, that door led to a broom closet.)

Weider’s deceit has itself proved to be a model for many fitness entrepreneurs.

There is an interesting correlation though in the 1960’s and 70’s between the emergence of the Fitness Industry and its pioneers, such as Weider, and the emergence of sub-disciplines in exercise science. Swanson and Massengale trace this development from the 1960’s, ’…a period of social, political, and intellectual foment.’ This is a time when the general study of physical education was engaged in self-reflection as a premium was placed on mathematics and science in schools and universities in response to the ‘space race’. A growing critical awareness in society at the time also saw sport psychology and sport sociology emerge as separate disciplines. Soon demand was increasing for opportunities to receive Doctorates in more and more specialized areas of exercise science. Some were concerned about this increasing specialization and its effect in devaluing the parent discipline, some such as S.J. Hoffman:

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I...worry about the academic character of some of the Ph.D.’s we are graduating, exceptionally narrow people - technicians almost – who lack a scholar’s understanding of how their discipline relates to the broader framework of physical education and academic life, and who studiously avoid anything that looks or sounds too philosophical. 27

These developments were in conjunction with Public Health campaigns to improve the fitness levels of Americans suffering as a consequence of technological advance and over-consumption. It was in this environment of scientific specialization and state coercion that the Fitness Industry emerged together with information linking lifestyle and diet to disease and premature death. The Fitness Industry emerged as one of what Gruneau describes as a ‘...growing constellation of vested interests around the promotion of physical activity defined in a very narrow physiological manner.’ 28 Less flatteringly, one can argue that the Fitness Industry emerged as a parasite on an emerging public health problem. In the 70’s, this was in the context of the growing dominance of bio-medical and science-oriented approaches to health, but it was also in response to a growing fiscal crisis that saw health and fitness regarded as one means to reduce Western budget deficits. This linking of fitness to mechanistic economics is evident, for example, in the work of Shephard and his obsession with the importance of productivity enhancement and cost/benefit analysis in the promotion of fitness programs. 29

The development of physical activity into a mainstream industry was also, like other counter-cultures in the 1960’s and 70’s when the industry emerged, related to the process of subversive cultures being commodified into marketing strategies to cater to what Lash and Urry and Hamilton refer to as the new politics of identity; a politics where sub-cultures seek to be recognized by the dominant class. 30 Having become mainstream, however, the Fitness Industry still seeks such recognition. This is evident in the continual desire to develop large fitness chains and franchise operations designed to create economies of scale.

30 Lash and Urry, The End of Organized Capitalism, pp. 296-300. Hamilton also argues that the growth of marketing around such image building has become a terrible waste of intellectual talent. Hamilton, Growth Fetish.
that tightly constrain competition and diversity. Within these organizations, intellectual power is channeled not into the realization of human potential, but into producing the ‘one best way’ of producing profits through the rationalizing scientific processes of ‘McDonaldization’.\textsuperscript{31} This is partly a consequence of the owners of capital in the Industry becoming or aspiring to become, part of the hedonistic new bourgeois dominant class themselves, reducing their fitness operations to instruments of exploitation for the purpose of capital accumulation. This often involves practices of staff exploitation and de-skilling as well as the channeling of membership fees into speculative, non-related investments, often with catastrophic results that can sometimes permanently disrupt individual’s patterns of physical activity. For the owners of Fitness Centres, like the owners of capital in general, all that contributes to their profits, such as employees or clients, are reduced to means. All relationships are based on manipulation and exploitation of the cogs in the machine, justifying Macchiavelli’s and Hobbes’s beliefs about human nature as well as confirming Marx’s insights.\textsuperscript{32} Revealing in this thesis the deep flaws in this understanding of human nature will help to explain the impoverished morality of an industry that preaches asceticism while promoting hedonism.

**Growth, Booms and Drop-Outs**

As was revealed in Chapter One, the Fitness Industry, despite some significant collapses, continues to grow. Since the mid 1970’s, the Industry has moved away from just bodybuilding to provide services in areas such as aerobic exercise, flexibility, stress management and nutritional counselling. The introduction of these activities is related to the rapid growth of scientific research into physical activity in conjunction with a ‘fitness boom’ in the late 70’s and early 80’s. According to McElroy, the major condition for this

\textsuperscript{31} Both Ritzer and Schlosser provide excellent critiques of the systematic drive toward monopolization through de-humanizing, de-skilling and exploitative technologies in Ritzer, *The McDonaldisation of Society*, and Schlosser, *Fast Food Nation*.

\textsuperscript{32} It should be noted from a gender perspective, that from the experience of this author at various conferences and having observed the practices of many owners and managers, these practices are endorsed by both male and female owners and managers. In fact, there are many women such as Casey Conrad, who act as high profile consultants to introduce McDonald’s type systems into fitness centres. An example of her mechanistic materialist position is in Casey Conrad, ‘The Power of the Secondary Offer’: *Club Fitness Network*, (Australian Fitness Network, Sydney, April 2000), p 7.
‘boom’ was growing individualism, revealed earlier as a key tenet of Neoliberalism. She argues in relation to America, where the ‘boom’ originated, that:

People were expected to take personal responsibility for their health largely because many lifestyle variables that contribute to health were assumed to be under individual control. The ethos of individualism, which gained momentum...in response to a growing disillusionment with the limits of medicine and pressures to contain health care costs, assumes that individuals can make choices in relative isolation from their broader social environments. Thus, the stage was set for millions of Americans to take up physical activity in a way never witnessed before.33

During the 1970’s and 80’s the number of Americans exercising daily, seemingly doubled. As part of this growth, the number of fitness clubs grew from 350 to 7,000.34 Aerobic exercise became the popular activity following findings by exercise physiologists that it could improve cardiovascular functional capacity, reducing heart disease risk. However, from the mid-1980’s, the ‘fitness boom’ declined, almost as quickly as it grew, to levels that have changed little to this day. While there are a host of reasons for this, including economic fluctuations, the issue for McElroy seems to be not one of why the ‘boom’ ended but whether it was particularly significant. It was certainly a significant period for the Fitness Industry and one in which the current practices of the Industry were established. It was this period in which the modern Fitness Centre was formed with its weight equipment, aerobic training machines and exercise classes all under one roof. It was also a period in which fitness instructor training courses emerged and accreditation procedures were put in place to protect consumers and ‘professionalize’ the Industry. Various associations and government controlling bodies also emerged to control the development of an industry that at times seemed to be growing out of control.35 Many controversial bankruptcies during this period continue to affect public perception of the Industry. However, some sport and

33 McElroy, *Resistance to Exercise*, p. 76.
34 Ibid, p. 76. While there are no figures available in Australia it is generally regarded that the Australian Fitness Industry has consistently followed America’s pattern of growth.
35 In Australia in the 1980’s, following several damaging bankruptcies, Industry associations emerged to develop voluntary codes of ethics to head off the threat of government legislation. Government bodies such as Vicfit in Victoria were established to see that the codes were adhered to as well as develop instructor accreditation schemes.
exercise historians question whether there was a ‘boom’ at all, or at least a meaningful ‘boom’. They point to the homogeneity of participants during this period, arguing that exercise participants ‘...were more likely to be rich than poor, executives than blue-collar workers, white than nonwhite, college graduates than high school graduates, adults than children.’ In other words, the supposed ‘boom’ was only significant to a narrow socio-economic range of Americans, those within the highest levels of the bourgeoisie.

Today, the Fitness Industry continues to be identified with the Fitness Centre in which fitness services are contained, although the emergence of personal trainers and ‘boutique’ fitness studios is becoming a significant new development. Whether privately owned or government owned, which with increasing privatization of government services now generally means privately managed, the preferred model is that of a club comprised of members. Participants pay a membership fee on a term or monthly basis that entitles them to use the facilities and receive professional advice. Unlike most club structures though, in fitness clubs members do not have ownership or voting rights. Nor are their membership fees wholly used for operating and capital expenses. Private owners, as well as management companies that control most government facilities, instead seek to create a surplus that contributes to their own wealth, often at the expense of members and employees. Also in these clubs, members have little input into the nature and structure of the activities being offered, but are instead tightly constrained by what management is prepared to provide, which is determined by profitability. In other words, there is no room in these clubs for self-organizing activity, an essential element of healthy systems and a key issue in process thought, one that will be discussed in the following chapter.

The key to the profitability of fitness clubs is to have the majority of paying members not use the facilities. The Industry regards as acceptable high attrition rates. International

36 McElroy, Resistance to Exercise, p. 77.
37 Details of the generic structure of Health Clubs can be found in Robert W. Patton, William F. Grantham, Richard F. Gerson and Larry R. Gettman, Developing and Managing Health/Fitness Facilities, (Human Kinetics, Champaign, 1989).
38 Goodwin uses an example of a British, community owned recreation centre to reveal how allowing self-organization amongst the members led to healthier members and greater utilization of the facility. Goodwin, How the Leopard Changed Its Spots, pp. 210-224.
Health, Racquet and Sportsclub Association figures estimate, for example, that in the year 2000 while average new memberships per club were 1,334, there were 1,156 members that dropped out. This means that there are extremely high turnover rates and that clubs must continually market aggressively for new members. Such intense competition inevitably produces many casualties. According to Patton, et. al., each year ‘…about 250 major commercial health/fitness facilities and three to four times as many small exercise studios open their doors in the U.S.; unfortunately, about the same number close their doors.’

This can have devastating effects for maintaining continuity in one’s exercise program and alienate permanently many of those who are still insufficiently motivated. Clubs also have what they describe as a core, or active membership. This means that, for example, out of 3,000 members, only perhaps 1,000 will be active and out of this there will be a regular core group of perhaps 300. The reality is that Fitness Centres are simply not equipped to handle their full membership and so are structured around non-use. Without this cynical understanding that the majority of people who join a fitness club will never use it, the commercial viability of the Industry would evaporate. Marketing practices are structured, not on vetting potential members to admit those intent on using the facilities, as many golf clubs do, but on creating a critical mass that can maintain cash flow without using the facilities. This is perhaps a key to understanding how a growing Fitness Industry can, in fact, have little impact on improving physical inactivity levels but some impact on making them worse. Many more people seem to be involved in the Industry than actually participate and many who were persuaded to participate have found their club closed and their subscription spent. It is also only effectively serving a very small percentage of populations, those who are white, rich and can be bothered to show up, neglecting the real problem groups in lower socio-economic circumstances.

As argued earlier, in the commercial sector of the Industry members are primarily the means for achieving the owner’s financial ends and any concern for their health and fitness needs is structurally secondary. This is starkly evident in the lists provided by Patton, et. al.

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al. of primary and secondary objectives of four different fitness program service providers. In the community not-for-profit sector, for example, the primary objectives are improved health status, community and personal development. In the hospital sector primary objectives include generating profits for hospital services and cost reduction, as well as improving patient compliance and treatment outcomes. In the corporate sector, primary objectives involve reduction of illness, absenteeism and accidents and increases in productivity, stockholder profits and competitiveness. In the commercial sector there is only one primary objective: obtain a reasonable profit on capital invested. Clearly this is not the objective that should be most influential in addressing the physical inactivity problem.

Conclusion

The Fitness Industry can now be understood to be a manifestation of the contradictions inherent in capitalist relations discussed in the Public Health critical discourse. The Fitness Industry’s emergence also relates to mechanistic materialism through mechanistic science that legitimizes capitalism. If we relate these developments to the history of mechanistic materialism, we see that these events coincide with the growing dominance of Logical Empiricism, with all of its roots traceable to mechanistic science and limited domains of truth. Such scientific specialization, as has been discussed, underpins both the success and limited nature of the biomedical model much criticized by the Public Health discourse. As one of the ‘vested interests’, the Fitness Industry can be understood therefore as being one of the specialized fragments within this limited biomedical model, though one on the fringe in terms of credibility. It serves to legitimate the biomedical model while feeding off the fear the model generates in relation to illness. As a specialized fragment, or parasite, the Industry has a vested interest in creating and maintaining the perception that it is the embodiment of physical activity in Western culture, a perception greater than reality as evident in attrition rates. What the Fitness Industry does embody are the basic tenets of mechanistic science, Logical Empiricism and Neoliberalism, that underpin the biomedical model and the culture it thrives in, with all its associated problems for Public Health. The

41 Ibid, pp. 8-11.
conditions co-created by the Fitness Industry are therefore those that have emerged from within the tradition of mechanistic materialism. This argument can now be developed by contrasting the prevailing perspective with the world-view of process metaphysics.
THREE

THE PROCESS TRADITION: ITS FOUNDATIONS, PROBLEMS AND METAPHYSICAL CATEGORIES

In Chapter One the argument was made that the emergence and development of the fields of Public Health and the Fitness Industry is linked to the historical development of the metaphysical tradition of thought of mechanistic materialism. It is this metaphysical worldview that underpins mechanistic and reductionist definitions of health. This then undermines intuitive, holistic approaches to health, in both concept and practice, the strength of which are dependent on the quality of relationships at a multitude of levels. This undermining effect contributes to the continued growth in Western cultures of poor health linked to physical inactivity, despite the wealth of scientific knowledge from Public Health research linking health with physical activity, expensive promotional campaigns emphasizing this link and a growing Fitness Industry. Early in Chapter One, the argument was also made that simply revealing the problematic nature of mechanistic materialist thought and its influence on current culture was not enough. There have been volumes written, not least in the Public Health critical discourse, on mechanistic science and reductionism and its inadequacies with seemingly little effect in challenging its dominance.

What is required is firstly, the recognition that unified metaphysical systems of thought such as mechanistic materialism need to be conceived as such so that they can be contrasted with other unified systems of thought, and secondly, that the conditions are created allowing other alternative unified systems to be researched and articulated.

Gare has pointed out the current unfashionable status of such systematic approaches in philosophy, itself a consequence of a preference for analytic and reductionist approaches in
philosophical inquiry. These approaches then further produce and re-produce mechanistic materialism. Such approaches in philosophy fail to provide solutions to questions raised in pre-philosophical discourse, placing philosophy on the margin of current debates. Alasdair MacIntyre, for example, argues that philosophy is now seen to be ‘…a harmless, decorative activity, education in which is widely believed to benefit by exercising and extending the capacities for orderly argument, so qualifying those who study it to join the line of lemmings entering law school or business school.’\(^1\) A ‘decorative activity’ perhaps best characterizes the efforts of the Public Health critical discourse and its impotence in challenging the biomedical hegemony as well as the failure of the Fitness Industry to affect physical activity levels in general. What is required, contends Gare, is a unified and integrated systematic approach that draws together common, but currently fragmented and isolated alternative views. Gare outlines what such a systematic philosophy should consist of:

My contention is that to be systematic, philosophy should consist of a metaphysical system which, by characterizing the nature of physical existence, can provide the foundations for the natural and human sciences, and by providing a basis for understanding life, humanity and society, provide the foundations for social, political and ethical philosophy.\(^2\)

Such an approach, he argues, is indisociable from the development of a new grand narrative. Through such an approach, one should not only articulate a new metaphysical system, but strive to gain a greater understanding of the success and failure of other systems, though as Gare points out, one advantage of such an approach is that characterizations of the fundamental nature of physical existence have few candidates. Mechanistic materialism can then be understood as having been extremely successful in integrating people and institutions into a grand narrative of social, political and scientific progress culminating in the complete domination of the world by Neoliberalism. The purpose of this chapter is to outline Gare’s concept of an alternative metaphysical system,


\(^2\) Ibid: p. 284.
one that will underpin a grand narrative that has the potential to re-integrate people and institutions into a system of thought that is more conducive to health at many levels. This metaphysical system of process thought will be revealed in two stages. First, Gare’s metaphysical categories will be outlined and discussed in relation to developing parallel traditions of thought that challenge the mechanistic materialist world-view. Several problems within these developing traditions will be addressed. Secondly, Gare’s categories will be shown to make coherent newly emerging areas of science that reveal the universe to be very different to the one understood within mechanistic materialism. In the chapter that follows, the categories of process metaphysics will be applied to the construction of a process definition of health; one that can provide an alternative to the mechanistic definitions revealed in Chapter One, as well as helping initiate a process of unifying anti-mechanistic views in the Public Health critical discourse.

The Foundations of Process Metaphysics

Metaphysics is about making explicit our fundamental categories of understanding; such categorizing being understood as inherent in the structuring activity of human consciousness. In the metaphysics of mechanistic materialism, discussed in Chapter One, categories and associated concepts of space, time, matter, motion, God, rationality or meanings in language, are understood as being fixed, static, eternal and immutable. In contrast, categories in process metaphysics are not fixed but are, according to Gare, in a dialectical process of constant re-formulation. This dialectical process has a number of dimensions that sees new metaphysical categories as firstly, developing within the culture of a functioning community; secondly, transcending former categories through elaborating new analogies which are then counterposed to dominant categories; thirdly, subjecting existing categories to both critical and comparative analysis; and fourthly, developing through their application and incorporation into practices. This means that process

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3 Throughout this chapter the terms process metaphysics, process thought and process philosophy will be used. Process metaphysics refers to the underlying categories; process thought is the activity and process philosophy is the particular academic discipline underpinned by the categories and engaged in the activity.

4 Gare, Nihilism Inc., pp. 311-312.
metaphysics is an evolving metaphysics, one that acknowledges processes of emergence, transcendence and decay that emerge from within cultural traditions.

This ‘active’ metaphysics gives a different meaning to the foundation metaphor in Gare’s concept, aligning it with that of both Pols and Varela. Pols, like Gare, argues that philosophy has been and is, dominated by attempts to find static, solid ground as a basis of reality for all theory, particularly scientific theory. He identifies the central figures in this attempt as many of those who were precursors to or defenders of mechanistic materialism in Chapter One, notably Plato, Descartes and the Logical Empiricists. Pols’s position is that the outcomes of such attempts to establish fixed foundations are abstracted from and given primacy to, the activity of their formulation, repressing certain rational capacities for satisfying the persistent appetite for reality fundamental to metaphysics. He argues that:

‘…the most important objection to the metaphor is that it fails to do justice to the active nature of the power or powers by virtue of which we know and by virtue of which we produce the complex propositional structures in which knowing is expressed, stabilized and made communicable. The foundation metaphor – with all those overtones of something that supports because it is static, inactive, and enduring; of something that does not actualize itself in the temporal order – strikes quite the wrong note. It also helps encourage that most hubristic of all aspirations of first philosophy and science: the aspirations to an ideal, complete and perfect knowledge consisting of a set of propositions bound together in a deductive unity.’

This static foundation metaphor also strikes the wrong note with Varela who reveals through his investigations in cognitive science, phenomenology and Buddhism, that no ultimate ground can be found on which such foundations can be based, whether it be in the mind from an idealist perspective, or in the world from a scientific realist perspective. To think in terms of a solid foundation always implies a disembodied view from a position of radical dualism similar to Descartes, as well as the possibility of atemporal structure or

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entities. Alternatively, Varela argues that all categorizing and conceptualizing is a constant process of dependent co-origination, (borrowing a Buddhist term), that cannot occur outside of immediate experience. Moments of immediate experience, or ‘nowness’, he conceives of as occurring within the ‘specious present’, a term he borrows from William James but characterizes in Husserlian terms not as a point in time, but as a ‘temporal fringe’, or field, containing a unity of ‘now’, ‘before’ and ‘after’. Each moment or event of immediate experience within the ‘specious present’ involves the embodied acting, or ‘enacting’ of a world, that is neither fixed nor pre-given. From this perspective, fixed foundations become disembodied, autonomous, immutable realities existing outside or behind immediate experience that both nature and minds then represent. It is this logic that process metaphysics seeks to reveal as incoherent. Alternatively, it is the notion of primary reality being embodied action within the ‘specious present’ that is a pivotal concept in process metaphysics, one that makes the contradictory notion of a ‘groundless ground’ comprehensible. It is also a concept that aligns process metaphysics with many Eastern philosophies, particularly Zen Buddhism that Varela himself draws upon.

From this, one can understand that when Gare refers to the categories of process metaphysics providing a foundation, it is foundation as a metaphor for the activity of formulating and re-formulating such foundations. In this following passage then, Gare is not only referring to what the categories of process metaphysics relate to, but to the active nature of the categories themselves:

Process metaphysics construes the world as a complex of processes of creative becoming rather than a world of things. In such a world each process is to some extent an immanent cause of its own being, new processes emerge that transcend their conditions of emergence, and objects, space, and time have only a derivative and relational status. As such this philosophy should not be identified with any particular philosopher. The exaltation of and

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8 This concept can be found in Francisco Varela, Evan Thompson, and Eleanor Rosch, The Embodied Mind: Cognitive Science and Human Experience, (The MIT Press, Cambridge, Massachusetts, 1993), Ch. 7.
excessive deference to a particular philosopher is a sign of the failure of his or her ideas to generate a creative tradition.  

In this quote, the importance of seeing the ontologically primary categories of mechanistic materialism as derivative of and in relation to, an active reality is stressed, a position that is central to this thesis. The last two sentences refer to why the particular categories of Gare’s that will follow are to be understood as a synthesis of a rich tradition of thought. This tradition began in ancient times with the theories of the underlying reality of flux from Heraclitus and the activity of potentiality becoming actuality through processes of becoming in Aristotle. This was to influence radical Neoplatonist and Hermetic philosophers in the Renaissance, the Nature and Romantic philosophers of the Enlightenment and more recently the Phenomenologists, Existentialists, Pragmatists, Post-structuralists and Constructive Postmodernists. Gare also draws on anti-reductionist movements in both the physical and social sciences. Many of those from within these movements, argues Gare, are united in their conception of the universe as a process of becoming, in which what is taken as an entity, is ‘...an enduring pattern of activity, an island of stability within the flux which can only maintain itself through constant interaction with the background flux and other patterns of activity.’ In this, they oppose the nihilism implicit in mechanistic materialism and the social order it underpins, and affirm life, meaning and creativity. Practically, many of these, including Gare, offer socio-political alternatives that potentially could serve to produce and re-produce process thought. It is these traditions that will now be explored.

Aristotle and Process Metaphysics

While Gare’s metaphysics is to be understood as a synthesis of all of those thinkers he regards as process orientated, his categorial structure is heavily derived from Aristotle and Alfred North Whitehead, as well as interpreters of these, such as Ivor Leclerc. Both Aristotle and Whitehead are pivotal figures in process metaphysics due to their explication

10 Gare, Nihilism Inc., p. 310.
of categories that emphasize the temporal nature of reality. Where Gare transcends both though is in his insistence on the primacy of becoming and his rejection of Foundationalism, Substantialism and Absolutism, all of which he finds evident in some aspects of their categories and dominant within Western thinking in general. In this, he shares common ground with some Eastern traditions of process thought, particularly Zen Buddhism that has just been discussed in relation to Varela. Buddhist traditions have also influenced those such as Whitehead, as will be discussed later in this chapter. According to Abe, Zen has long provided an alternative to Western thought through its radically different understanding of the nature of grasping towards absolutes, foundations and substance as well as its rejection of this determination of primary reality. Some important similarities will therefore be made throughout this chapter between this tradition of thought and Gare’s metaphysics.

In Chapter One, Aristotle was revealed to have contributed somewhat to mechanistic materialism. This was mainly due to his notion of ‘ousia’ being interpreted as substance and the Absolutism of his belief that the highest level in his hierarchy of reality, where the God’s exist as pure form, is not subject to change and represents an end-point in his cosmology. Another reading of Aristotle though sees his importance in the development of process thought. This importance stems from his insights into the nature of change and his inversion of Plato’s hierarchy of reality such that the more natural things become the more real. This inversion, argues Abe, introduces the notion of ‘Being’ as a fundamental category of human thought that became the basis for Western metaphysics up until its replacement by Kant’s philosophy of ‘ought’, in his notion of the categorical imperative. Using the Buddhist terms ji, meaning particular or temporal, ri, meaning universal or atemporal and u, meaning being, Abe provides a different interpretation of ‘ousia’ by arguing that:

According to Aristotle, form should be called ‘being’ or u rather than the ‘universal’ or ri. Only by thus denying universal ri that transcended individual ji was Being (ousia), which

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12 Abe situates Aristotle as the one who enunciated ‘Being’ as one of three fundamental categories of human thought, the other two being Kant’s ‘Ought’ and Nagarjuna’s ‘Nothingness’. Ibid, pp. 83-87.
Aristotle took as the basis of metaphysics, realized as ‘Being’ that makes \( ji \) (particulars) to be \( ji \). However, this ‘Being’ as form was in motion and never at rest. God, as the supreme Being, was also the prime mover, the pure first form (\textit{proton eidos}) which had no trace at all of the shadow of matter. Ultimate Being was pure activity itself.\(^{13}\)

Aristotle’s ‘ousia’, as ‘Being’, can therefore be understood to be a much more dynamic concept than that of material substance, one more consistent with a process orientation that will now be explored in more depth. In Chapter One, it was shown how the scientific revolution, beginning in the Renaissance and proceeding through the development of mechanistic science in the seventeenth century, was in large part a reaction against Aristotelianism and a return to Neoplatonism. Therefore, as Leclerc argues, Aristotle’s importance to process thought is evident in what it was that mechanistic science reacted against. He summarizes Aristotle’s concept of nature in the following:

For Aristotle, \textit{physis}, “nature,” pertains to a being, an existent, which has in itself the source of its \textit{kinesis}, “change,” more particularly the process of change which is its becoming, its growth and development. A natural being stands in contrast to an artificial thing. An artifact cannot be, exist, in virtue of itself; its being is dependent on an artificer, and the latter must be a natural being, that is, one whose very being, existence, is not derivative…A physical or natural being in Aristotle’s analysis is essentially involved in a process of becoming, genesis; it is not except in becoming. That is to say, for Aristotle the being, the existence, of all physical and natural beings involves an inner process of change which is their becoming. The becoming of a natural being is a constant process of actualization of its potentiality. This process of actualization is ultimately analyzable in terms of \textit{eidos}, “form,” and \textit{hyle}, “matter.” Actualization is the \textit{energeia}, “enacting,” of \textit{eidos}, “form,” “definiteness.” The concept of \textit{hyle} is an essentially correlative one; that is, \textit{hyle} is not understandable on its own, apart from form, but only in reference to form.\(^{14}\)

Aristotle’s primary being therefore, comprises both matter and form, but, unlike Plato’s eternal, immutable Forms, it is form, that changes. A common example given is that of a

\(^{13}\) Ibid, p. 89.

substance such as metal that is fashioned into the shape of a spoon. The metal as a potentiality is made actual in the form of a spoon, but such a process of becoming is caused by a natural being and thus derivative. For the natural being, such a process of becoming is immanent. As Leclerc interprets it, this process of becoming is also immanent in the cosmos:

Nature used as a collective noun meant the totality of natural or physical existents. This totality is no mere arithmetical sum; rather, it is a whole constituting a cosmos, “order,” which is an order of relatedness of the plurality of physical existents. The physical existents in this ordered relatedness have to be conceived, Aristotle maintained, as involving the conjoint operation of a fourfold determination – traditionally referred to, perhaps somewhat misleadingly, as the “four causes.” Aristotle held that the analysis of each physical existent requires its consideration in respect of (1) that out of which it comes to be, (2) that from which as a source it comes to be, (3) that form or definiteness which determines it as this existent and not another, and (4) that for the sake of which it comes to be, that is, that which determines the reason for its existence.15

For Gare, as will be shown, it is Aristotle’s concepts of causation, (Leclerc’s fourfold determination), together with the notions of becoming, potentiality, actuality and *energeia* that help underpin a metaphysics that accounts for a partially self-causing relational order in the universe, one that is in process of becoming. For mechanistic science though, it was a different matter. In agreeing with Aristotle that a primary physical existent must be a unitary entity, rather than composite, the discovery, particularly in medicine with Sebastian Basso, that human bodies are composite, led mechanistic thought at the time to conclude that human beings could not be primary physical existents. Rather, the primary physical existents are their most elemental components. This led to the atomism discussed in Chapter One and the consequent return to Neoplatonism as reality was reduced to the divinely caused, mathematically described abstract motion of inert, indivisible and immutable atoms. Matter was thus separated from what had been its Aristotelian correlate, form, and given primary ontological status, at the same time denying natural existents any immanent capacity for ‘*kinesis*’. As Leclerc argues, this formed the basis of modern

physics as mechanism, rather than organism, and established motion, like space and time, as ontologically distinct, rather than as derivative.\textsuperscript{16}

Another problem for the mechanists posed by Aristotle was the nature of extended bodies. Aristotle understood the contradiction in the notion that an extended, indivisible atomic body could be composed of smaller, indivisible atomic bodies. The reactions to this contradiction ranged from a denial of its relevance to scientific research, an attitude that Leclerc argues was prominent among medical researchers and came to characterize ‘positivism’, to Galileo’s assertion that atoms were without extension and were rather geometric points in a geometric universe, a notion that was advanced by Descartes and gave mathematics ontological primacy. The influential position of Newton on this problem amounted to a \textit{deus ex machina}. Leclerc argues that Leibniz provided the most penetrating analysis of the problem of atomic matter having the attribute of extension, by introducing the concepts of relations and force. He states in relation to Leibniz:

\begin{quote}
All the features which are ascribed as the attributes of body – extension, solidity, hardness or impenetrability – are not strictly attributes at all but must be analyzed as relations. Thus, there can be no simple body, as the atomist conceived it; a body is necessarily a plurality, and the features of body are the relations between the physical existents which are the constituents.\textsuperscript{17}
\end{quote}

In regard to Leibniz’s concept of force, he states:

\begin{quote}
Leibniz argued that this concept can consistently and coherently be introduced only by grounding it in the nature of the physical existent, as indeed Aristotle had done. Now this is possible only if we reject the prevalent conception of the physical existent as simply actual, that is, in itself changeless, without any internal process of becoming. We have to recognize with Aristotle that the physical existent must be in-act, it must be an acting entity, and that the concept of “force” required in physics is to be grounded in this acting of the physical existent.\textsuperscript{18}
\end{quote}

\textsuperscript{16} Ibid, pp. 22-25.
\textsuperscript{17} Ibid, p. 33.
\textsuperscript{18} Ibid, pp. 31-32.
From the incoherence of the mechanist’s arguments against Aristotle, one can gain an understanding of the importance of Aristotle to process philosophy. Not only did he originate metaphysics, which positive science and later Deconstructive Postmodernism tried to dismiss as pointless, but his ideas and cosmology underpinned many movements throughout the Middle Ages and the Renaissance. As will be shown later in this chapter, he has also influenced attempts this century to renew the philosophy of nature in light of current theories in science. Such incoherence in the arguments against Aristotle by the mechanists raises the question of why his ideas, in relation to mutability and immanent purpose, were so vehemently opposed.

While Leclerc focuses on the scientific and philosophical problems at issue, Gare adds relevant political issues, such as were discussed in Chapter One in relation to Macchiavelli, Hobbes and Locke. These were issues of power and ideology as the bourgeois elites, in their efforts to establish rule in the sixteenth and seventeenth centuries, opposed calls by the humanist Hermetics for an egalitarian distribution of wealth and harmonious relations between people and nature. Gare characterizes Hermetic philosophy as a radical form of Neoplatonism that held that ‘…God is immanent in the world, that nature is active and divine and that the end of history, the millenium which was evidently at hand, would not involve a transcendence of the world, but the establishment of a new order on earth based on brotherly love and a reunification of humanity with nature.’ The importance of the Hermetics is in their notion of God’s immanence in the natural world and the ontology that saw humans as self-organizing, creative agents capable of changing the dominant hierarchical order. It is ideas such as these that underpinned the theistic branch of process philosophy as exemplified by the Idealists and the Constructive Postmodernists.

The Hermetics, in challenging the status quo, were pitted against what Jonas argues was a Gnosticism similar to that in the early Greco-Roman period of Christianity. Gnosticism is characterized by the split, discussed in Chapter One, between man, God and the world and

19 Gare, Nihilism Inc., pp. 125-130.
Wilber characterizes this conflict between the Gnostics and Hermetics as the split between the Ascending, or transcendent view of God, and the Descending, or immanent view of God. He argues that both Plato and Aristotle, and much of Western cosmology prior to the Enlightenment, recognized two movements. The first, was the movement of transcendence from the Many to the One, and the second, was ‘...the movement whereby the One empties itself into all creation, gives itself to all forms, so that all creation itself is a perfect manifestation of spirit.’ From this analysis, the bourgeois, ruling elite Gnostics of the Enlightenment, can be understood as Ascenders who were self-justified in treating nature and those regarded as lesser forms of humanity indistinguishable from nature, as means for their ends of transcending the world. Those, (such as the Hermetics), who promoted a Descendent theistic view of a more earthly transcendence, were seen as a threat to the achievement of such ends. However, from this split also emerged secular Descenders, the atheists, agnostics and materialists firmly rooted in the world, who, in some respects, have proven to be as great a threat to the Ascenders through their nihilism and consequent self-destructive behavior. Wilber regards the most important thinkers to emerge from this split as those who sought to re-unite these movements, principally Schelling, Hegel and Whitehead. However, the notion of Ascendence is not so easily removed from human thought and action and raises problems for Descendent process thought, such as Gare’s, that will now be discussed.

**Ascendence and Theistic Process Metaphysics**

Wilber’s view, synthesizing Eastern and Western metaphysics and developmental psychology typifies, in a contemporary sense, the dominant theism in process philosophy

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and the belief, following Aristotle, in the teleological conception of a universe that has a
purpose toward which it is struggling, often conceived as a movement from the Many to the
One. This view, suggesting a cosmic evolution of consciousness, is at the heart of the
cosmologies of both Schelling and Hegel and influenced Whitehead’s metaphysics. Gare
finds problematic views such as these that reduce humanity’s development to being
ultimately determined by a grand, cosmic final cause. These views are in need of being re-
formulated in relation to a more human scale, where emergent novelty is ontological. Of

of course, the idea of an evolution of consciousness is fundamental to the process view and the
ontology that sees humans ‘...as self-creative participants in the becoming of nature and
society, and the development of their understanding as the world becoming conscious of
itself.’.23 It is a view that is in stark contrast to the mechanistic view of humans as machines
and thus incapable of growth. It is also in contrast to those Postmodern cultural relativists,
or as Zohar refers to them, philosopher dilettantes, such as Richard Rorty, who reject
evolutionary progress through history as ‘...just so many elements of play.’24 What
distinguishes Gare is that he stresses the contingent nature of such progress and its
relatedness to both the natural and cultural conditions of life. Process philosophy therefore
needs to account for both. One cannot simply have two partial monisms that each trespass
into the sphere of the other as is the unfortunate consequence, according to Jonas, of
opposing mechanistic materialism with idealism. As Jonas argues:

The problem is still the same: the existence of feeling life in an unfeeling world of matter
which in death triumphs over it. If its dualistic solution is theoretically unsatisfactory the
two partial monisms – materialism and idealism – at bottom evade it, each in its own
manner of one-sidedness. Their means of unification, i.e., of reduction to the chosen
denominator, is the distinction of primary and secondary reality: of substance and function
(or “epiphenomenon”) in the case of materialism, of consciousness and appearance in the
case of idealism. As an ontological position, i.e., as serious monism, either standpoint
claims totality for itself and thus excludes the other.25

23 Gare, Nihilism Inc., p. 350.
Hegel and the Evolution of Consciousness

An evolutionary development of consciousness is therefore implicit in process thought that is itself a higher level of conscious awareness that can be reached through the identification, transcendence and integration of both mechanistic materialism and idealism. Similar to many Buddhist traditions, it has the ability to transcend dualisms in order to reveal a middle way, the difference being in how such transcendence is conceived. Gare’s method is dialectical in the Hegelian tradition of seeking a new synthesis from opposing positions. He draws on many labeled either materialist, such as Marx, or idealist, such as Hegel, who he sees as attempting to transcend divisions. An example is in Hegel’s work, the ‘Phenomenology of Mind,’ that Gare views as exemplifying the level of understanding required for scaling the heights of process thought. Of Hegel he writes:

Hegel rejected Kant’s notion of a preformed ego, the ‘I’ represented as a pure unity relating to itself. Instead Hegel portrayed the ego as the result of the development, from immediate sensitivity to self-awareness, then to self-consciousness gained through a reciprocity of perspectives in interpersonal relationships, and finally to universality through participation in ethical and cultural life. He characterized this formative process as part of three interdependent dialectical patterns: symbolic representation which operates through the medium of language; interaction on the basis of reciprocity which operates through moral relations; and the labour process which operates through the tool.  

Here we see, revealed in Hegel, two fundamental concepts in process thought. Firstly in his three dialectical patterns, there is the non-reductionism of seeking a broad and complementary understanding of human evolution and activity by drawing on multiple aspects of human development. In Chapter One, for example, the current manifestation of mechanistic materialism, Neoliberalism, was revealed mainly in relation to the labour process. This analysis though, should not be abstracted from how such a manifestation is symbolically represented or how moral relations are affected. Secondly, there is the idea that living systems to some extent are the immanent cause of their own process of

26 Gare, Nihilism Inc., p. 351.
becoming and not just passive participants in a pre-determined world. For Hegel however; ‘…Reason…is both substance and infinite power, in itself the infinite material of all natural and spiritual life as well as the infinite form, the actualization of itself as content.’\textsuperscript{27} History is therefore the progress of man’s reason to higher levels of rationality and freedom, a process that had a logical and seemingly pre-determined terminal point in the achievement of absolute self-consciousness. Despite this, Hegel’s understanding of the development of self-consciousness was ground breaking, as Habermas affirms:

\ldots Hegel does not link the constitution of the “I” to the reflection of the solitary “I” on itself, but instead understands it in terms of formative processes, namely the communicative agreement [\textit{Einigung}] of opposing subjects, it is not reflection as such which is decisive, but rather the medium in which the identity of the universal and the individual is formed.\textsuperscript{28}

Therefore:

\ldots Hegel’s fundamental experience of the “I” as an identity of the universal and the singular has led him to the insight that the identity of self-consciousness is not an original one, but can only be conceived as one that has developed.\textsuperscript{29}

Hegel, therefore, does not consider the experience of self-consciousness as the original one but as resulting from the experience of interaction where consciousness, or Spirit, exists as the medium. The development of self-consciousness is a shared journey tied to the engagement with and recognition of others, as well as the shared tools and symbols engaged with. Hegel can be interpreted, therefore, as having transcended pure idealism through his emphasis on relations. This view also reveals the totally abstract nature of Kant’s moral philosophy, that Hegel was rejecting, and the extent to which it is removed from the formative domain of moral relationships. Kant, as Fukuyama argues, saw progress to greater freedom driven by a universal, competitive human desire to dominate and rule, the ‘wellspring of social creativity’. This is revealed however, as a static view of

\textsuperscript{27} G.W.F. Hegel, \textit{Reason in History}, (Bobbs-Merrill, Indianapolis, 1977), p. 11.
\textsuperscript{29} Ibid, pp. 156-157.
human nature that denies the possibility of transformation, echoing both Macchiavelli and Hobbes. Lakoff and Johnson support this in their argument, based on their concept of second generation cognitive science that emphasizes the embodied, metaphoric nature of reason, that Kant’s categorical imperative, the universal, unconditional and absolutely binding moral laws that man is duty-bound to obey, reveal a ‘strict father’ metaphor that seeks to suppress creative development. It is this static, Absolutist view of the pre-formed ‘I’, one that underpins Neoliberalism, that was challenged by Hegel, as well as the idea that individuals could achieve freedom abstracted from the social and cultural world. As Solomon argues in relation to philosophy prior to Hegel:

Virtually every other philosopher…, whether metaphysician or epistemologist, essentially offered us a static view of knowledge, a concept of the understanding that – except for education from childhood and the detailed knowledge gained by the sciences – did not change, did not grow, did not develop. Hegel provides philosophy (and humanity) with a historical perspective. Truth is not, as many philosophers had insisted ever since ancient times, what is. Truth develops, as the human mind develops. Truth is not being but becoming.

What Hegel does is link cosmology, ontology and epistemology such that the evolution of human consciousness becomes an immanent cause of the world becoming conscious of itself. Furthermore, this consciousness is totally integrated with the world and extends beyond the individual to become a World Spirit. The history of much process thought can be said to focus on those thinkers who have conceived of humanity and more broadly, all living systems, in this way. This teleological humanism (or perhaps purposive organism) seeks to transcend the gulf, highlighted by Jonas, between idealism and materialism. The supposedly idealist Hegel and his supposedly materialist critic, Marx, for example, are both pivotal process thinkers because they share this belief in historical evolution where man

actively alters his consciousness and hence his world-view, through space and time. Also, as Dupre argues, both Hegel and Marx ‘…introduced social relatedness into the very heart of consciousness’, rejecting the notion dominating social thought, following Kant, of mere intersubjective cooperation. \(^{33}\) Marx’s utopian vision however, while emphasizing this social dialectic, became too tied to advances in productive economic activity liberating man from scarcity, lending itself to mechanistic prediction. What is problematic for Hegel though, is the Absolutist and deterministic position that such a process will necessarily unfold and reveal higher levels seemingly despite human agency.\(^{34}\)

**Wilber and Stages of Consciousness Development**

This seemingly inevitable, disembodied trajectory is evident in contemporary theistic process views such as Wilber’s. Wilber argues that evolution is a process of increasing complexity in the encompassing of greater and deeper wholes, or holons. Drawing on the rich tradition of developmentalists from Plotinus and Padmasambhava to Kohlberg, Loevinger, Maslow, Piaget, Gilligan, Habermas and including Hegel, to name a few, Wilbur’s synthesis suggests a hierarchy of consciousness development from the purely sensorophysical world of the infant to levels of self-actualization and self-transcendence. Growth process in humans involves the overcoming of egocentrism and the continual de-centering of the self. The earliest stages of development are therefore highly egocentric where the infant or toddler is unable to differentiate between its needs and the world. As children develop through to early adolescence they become more sociocentric as they recognize the needs of others and the demands and conventions of their society or culture. They can to some extent put themselves in the role of others and begin to identify with family, community and ethnic groups. At still higher stages toward adulthood they may become more worldcentric, transcending ethnicity and beginning to think about thought itself, questioning conventionality from the critical distance of such a higher level that begins to identify with all of humanity. At this level creativity can blossom as idealistic

\(^{34}\) Gare argues that the notion of becoming actualizing pre-determined ends, held by German Romantics such as Hegel, was itself an Absolutist position. Gare, *Nihilism Inc*. p. 310.
possibilities open up, but it is also a level from which one can slip back through an inability to recognize the process one has gone through to reach such a level. In other words, one can fail to understand that one is embracing a humanity that may not yet have developed to embrace you. At each stage of development, a different world-view emerges as greater levels of complexity are identified and integrated into greater and deeper wholes.

In this thesis, process thought can be understood as emerging within this first world-centric stage, a stage that Wilber argues applies to the majority of academics in universities today. Process thought becomes fully integrated though at a higher level, what Wilber refers to as the vision-logic stage. According to Wilber:

...vision-logic adds up the parts and sees networks of interactions. When employed in a merely objectifying...fashion, it produces objective systems theory in general. But when it is the basis of actual interior transformation – which is not covered by systems theory! and which is very rare! – then it supports an integrated personality. When the self's centre of gravity identifies with vision-logic, when the person lives from that level, then we tend to get a very highly integrated personality, a self that can actually inhabit a global perspective, and not merely mouth it.\(^\text{35}\)

Reaching such higher stages, as was mentioned before, involves an evolutionary process of recognizing ones level, transcending it and then integrating new levels with previous ones. Wilber though, argues that there are high levels of complexity and fluidity involved as one is never wholly in one stage. There is, therefore, no simple linear progression but rather, it is non-linear; ‘...there are all sorts of regressions, spirals, temporary leaps forward, peak experiences, and so on.’\(^\text{36}\) Also, there is no guarantee that individuals, or humanity as a whole, will achieve the highest levels. As depth increases, span decreases, so there will always be less human beings with relatively deep levels of consciousness, than molecules, or atoms. As Wilber argues, the noosphere, what he refers to as the deep realm of thought, transcends and includes the biosphere that transcends and includes the physiosphere. The destruction of the noosphere will not destroy those levels beneath it, but the destruction of

\(^{35}\) Wilber, \textit{A Brief History of Everything}, p. 191.

\(^{36}\) Ibid, p. 148.
either the physiosphere or biosphere will destroy the noosphere. From this is derived Wilber’s ‘moral intuition’ inherent in all holons of a drive to promote the greatest depth for the greatest span, the realization of which will require the unification of the Ascending and Descending. Such a union is where harmony is found; ’…where the couple finally unite, the entire game is undone, this nightmare of evolution, and you are exactly where you were prior to the beginning of the whole show.’

In this, Wilber importantly recognizes a hierarchical structure in human development that is continuous with a hierarchical universe, an important insight in process thought that will be discussed further. What distinguishes Wilber as a theistic thinker though, is that reaching the highest stages of his hierarchy of consciousness development is a cyclic process, one that returns to its origin. What this passage of Wilber’s reveals is perhaps the underlying psychology of theistic thought, be it Descendent, Ascendent or both; that is, the overwhelming desire for a return to a harmonious state of homeostasis and the necessary contempt for evolutionary change this implies. Such celebrations of evolution and change as can be found in Wilber and other theistic process philosophers are therefore necessarily instrumental, relating to evolution as a means and never as an end in itself. Despite Wilber acknowledging that there is no guarantee of reaching higher levels, what one achieves when reaching them is essentially pre-determined. This is based on the notion of an evolution of consciousness that cycles between birth and individuation to death and reunification that is itself dependent on the notion of a cyclic universe. Such deterministic Absolutism viewed from a perspective that privileges becoming, such as Gare’s, is seen to trivialize fifteen billion years of evolution while necessarily denying the ontological reality of free will and novelty. In comparison, Gare’s metaphysics must be understood as attempting to provide an ontological basis for a truly open universe.

38 A good example of this is Zohar’s concept of the chain of evolving consciousness in which things emerge as fluctuations in the quantum vacuum, ‘…grow towards renewed coherence, and return to the vacuum as “enriched” fluctuations.’ This can be understood as her version of the cycle of God, The Fall and Redemption. In Danah Zohar, The Quantum Self: Human Nature and Consciousness Defined by the New Physics, (Quill/William Morrow, New York, 1990), pp. 227-230.
Wilber’s deterministic Absolutism is manifest in his anthropocentric notion of the noosphere as an evolutionary development but with an intimate and privileged relationship to a transcendent, atemporal order. This problematic view derives from his notions, mentioned previously, deriving from Plato, Plotinus, Schelling, Hegel and many Eastern philosophies, of higher stages of self-transcendence, of pure ‘Emptiness’, glimpsed by some Western philosophers, but mainly attained through Eastern meditative techniques. The implication here is that being able to conceive of an interrelated universe is not enough. It must be accompanied by an interior transformation that affects the practice of one’s life, such as is derived through Buddhist meditative practices. This is the basis of Wilber’s critique of Western thought. While at the level of vision-logic systematic philosophers can be seen to emerge such as Schelling, Hegel, Whitehead, Marx, and Gare, who are able to encompass greater wholes and have an acute sense of interrelatedness, they, according to Wilber, have no means by which they can examine their own lived, transformative experience of knowing reality. Consequently, they are limited in how high they can go in continually elevating concepts over practice. Higher levels of transcendence, according to Wilber, necessitate an engagement in meditative practices to reveal the true nature of lived experience pre-conceptually.

This presents a challenge to Western process thinkers as to how their concepts of reality may be experienced. It also raises an interesting paradox in relation to higher levels. According to Wilber, achieving high levels of a global perspective and a decentred self, ‘…is a rare, elite, extraordinary perspective of great depth, and…relatively few individuals…actually make it to that depth.’\(^{39}\) He also argues that the ‘moral intuition’ can be realized through the unification of the Ascending and the Descending at such levels. This raises the question; realized by whom? For Wilber, one has to be one of the few great sages who can only explicate what most can never experience. How though, can one’s ‘moral intuition’ be realized from a position of great depth and little span? In Wilber’s view, the universe can only become conscious of itself through the agency of an elite few, thereby denying the rest of humanity much of a role in cosmic evolution. This creates a problem for those partially transcendent individuals, such as the Western process

philosophers previously mentioned, who produce utopian visions of just, equal and creative societies where all can achieve higher levels of development. The implication is that such visions are both futile and wrongheaded. In other words, the elite few who transcend all others to reach higher stages are deluded in suggesting any possibility of such transcendence for all. This though puts Wilber at odds with the views of other Buddhist scholars such as Abe, who see humanity’s salvation in the ‘self-awakening’ of all individuals.40

It seems that in Wilber’s hierarchy there is the nihilistic implication that the ‘moral intuition’ of most holons must remain unrealized. We must put our faith in those rare, elite individuals who emerge from time to time within Buddhist communities with a privileged access to the Absolute who will remind us of our immutable inadequacies. This effectively denies human holons even the challenge of realizing one’s ‘moral intuition’ whereas this is precisely the challenge humanity, and particularly process philosophers, should be confronting. That is, to identify the pathways to levels at which there is great depth relative to great span, levels at which possibilities remain open to all, avoiding the utilitarian character of Wilber’s concepts. Wilber’s problem stems from his elevation of what has become the ideal of great depth, over the ‘moral intuition’, or the conditions for growth for all. This relates to his Absolutism as will now be discussed in relation to Schelling and Hegel.

**Schelling, Hegel and Absolute Spirit**

Revealing the Absolutism inherent in Wilber and theistic process philosophy requires examining the problematic issue of Spirit, engaged with by the Idealists but, as Wilber argues, crushed in Modernity by a monological view of nature.41 The Enlightenment saw the transcendence of the ‘mythic’ stage of development and the differentiation of culture, morality and science. These have still not been integrated, allowing empirical science to dominate. This domination has seen everything reduced to an empirical, material nature

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40 Abe, *Zen and Western Thought*, Ch. 15.
where both mind and Spirit cannot be accounted for. Contiguous with this development was the polarization of the ego and eco camps, ego being those such as Kant, who sought to transcend nature and eco, those such as Herder, who sought to be one with it. According to Wilber, it was Schelling, who best sought re-integration by endeavouring to transcend the ego and eco camps in his suggestion that we have to go beyond reason, or a return to nature. Interpreting Schelling he argues:

…we have to go forward beyond reason in order to discover that mind and nature are both simply different movements of one absolute Spirit, a Spirit that manifests itself in its own successive stages of unfolding…Spirit is not One apart from Many, but the very process of the One expressing itself through the Many – it is infinite activity expressing itself in the process of development itself…

Schelling, then, identifies absolute Spirit with infinite activity, from which mind and nature are derivative, a move that situates him within the process tradition. Meynell supports Wilber’s interpretation in his argument that Schelling, was the philosopher who best revealed the merits and limitations of Idealist philosophy. He interprets Schelling in the following:

It is the ultimate identity of real and ideal, of objective and subjective, which is the business of the philosopher to display; with nature as “visible Spirit” and Spirit as “invisible nature.” Philosophy must show forth nature as a unified system which aims towards consciousness of itself through human thought. In the representation of itself through conscious human subjects, sleeping spirit awakens, and nature comes to knowledge of itself. “The Absolute is the ‘pure identity’ of subjectivity and objectivity. And this identity is revealed in the mutual interpenetration of Nature and Nature’s knowledge of itself in and through man.” The temporal order is a manifestation of the Absolute, and is related to it as a consequent to antecedent.

Here we see repeated however, the anthropocentric notion pervading theistic process

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42 Ibid, p. 298.
thought, of a teleological movement in nature toward consciousness of itself through, humans. This is nature that for Schelling, according to Wilber, is a spiritual process, a self-organizing dynamic system that is the objective manifestation of spirit:

Thus, for Schelling (and for his friend and student Hegel), Spirit goes out of itself to produce objective nature, awakens to itself in subjective mind, and then recovers itself in pure Nondual awareness, where subject and object are one pure immediacy that unifies both nature and mind in realized Spirit.\(^4^4\)

The problem here however, is in the cyclic notion of something substantial being recovered, or of something returning to a substantial origin, in this case, absolute Spirit.

**Schelling, Hegel and Substantialism**

This is where Zen Buddhism perhaps provides a less problematic account of ultimate reality than Hegel, Schelling, or Wilber. As Abe argues, from the perspective of Zen, there is always the suspicion that ultimate reality is something substantial in both Hegel and Schelling’s concepts. This is despite Hegel having many similarities to Zen. His use of the term ‘…the negation of negation being a great and absolute affirmation’, being a case in point.\(^4^5\) In Zen, the negation of negation leads to absolute Nothingness where the absolute and the individual are identical, a concept that can only be understood existentially. In Hegel however, according to Abe, it leads to something arguably substantial, the absolute Spirit. He argues that:

The individual may be paradoxically identical with the absolute only when the absolute is grasped as non-substantial – only when there is nothing substantial whatsoever as ‘absolute’ behind or beyond the individual. In Hegel, the individual is not fully grasped as an individual because for Hegel, the absolute is not absolute Nothingness, but absolute Spirit, which is in the final analysis something substantial. It may not be accurate to say that Hegel’s notion of the absolute Spirit is simply something substantial, for it is an extremely


\(^4^5\) Masao Abe, *Zen and Western Thought*, p. 19.
dialectical notion which is actualized only through the negation of negation. Inasmuch as this is the case, it cannot be said to be substantial. And yet, in the light of Zen’s realization of absolute Nothingness or Emptiness, the substantial nature of Hegel’s notion of the absolute Spirit becomes clear. Furthermore, when his notion of a ‘trick of reason’ is taken into account, one cannot but think that there is something behind the individual, and that the individual is to some extent manipulated by that something — that is, by the absolute Spirit.\textsuperscript{46}

For Hegel then, the problem is that his notion of absolute Spirit, as ultimate reality, is itself differentiated. Schelling recognized this problem in his rejection of Christian concepts of Heaven and the spirit world as ultimate reality. He realized that difference could not emerge from that which was already differentiated, such as Heaven, conceived by those such as the German mystic, Emanuel Swedenborg as both, containing particularity and being the final resurrection immediately after death.\textsuperscript{47} It was Schelling’s alternative conception of an undifferentiated identity that was criticized by Hegel as ‘…the night in which…all cows are black.’\textsuperscript{48} As Abe argues though, Schelling’s notion of absolute identity, or Indifference, was still, like Hegel, a concept of something substantial, in this case, oneness. From a Zen perspective, and also arguably Gare’s, primary reality is ‘…one’s realization in which everything and everyone, including oneself, are respectively and equally realized as they are.’\textsuperscript{49} This occurs temporally within the horizon of present experience. Therefore, the cyclic notion of a return to oneness, or Absolute Spirit, that pervades Schelling, Hegel, Wilber and theistic process thought in general, involves the realization of something that is identical to something else, something that is ultimately an objective state and not pure identity at all. Realization of things as they are requires open-ended views of evolution that the process thought of the theistic Idealists ultimately, cannot provide. These views will now be discussed.

\textsuperscript{46} Ibid, pp. 19-20.
\textsuperscript{47} This is in Horn’s thesis arguing that Schelling, while not referring to him directly, was strongly influenced by Swedenborg, particularly in relation to his views on life after death. Friedemann Horn, \textit{Schelling and Swedenborg: Mysticism and German Idealism}, trans. George F. Dole, (Swedenborg Foundation, Pennsylvania, 1997), pp. 95-99.
\textsuperscript{48} Masao Abe, \textit{Zen and Western Thought}, p. 67.
\textsuperscript{49} Ibid, p. 181.
**Embodied Reasoning**

According to Wilber, evolution cannot be understood by those whose evolutionary holarchy stops at reason. Schelling and Hegel reveal to Wilber the problem since the Enlightenment, of the separation of the Ascenders from the Descenders, or the ego from the eco as mentioned before. Today there is either the Descendent view of an immanent God, as well as atheism, or the Ascendent view that dominated the Middle Ages, of a transcendent God. In ancient views such as Aristotle’s and most Eastern religions, God, or Spirit were both transcendent and immanent, inspiring both Hegel and Schelling to suggest that evolution involves the interaction of both. This leads to Wilber’s suggestion, reflecting his Buddhist influence, that still higher stages of self-transcendence need to be aspired to that require engagement in meditative or yogic practices. These common practices then reveal the ‘Emptiness’ or non-dual ground state of conscious awareness, or what is generally being referred to in different contexts as the ‘Divine’, Absolute Spirit or God. Is this evolution in general that cannot be understood though, or a particular view of evolution as a pre-determined teleological unfolding?

Based on the limited experience of this author, meditative practices have some value in the development of a process world-view. Certainly, there are some similarities, at least with the aims of Western philosophical concepts such as Bergson’s notion of intuition, Husserlian phenomenology and what Gare refers to as ‘indwelling’, the ‘...development of subsidiary awareness of the ordering activity of the individual through which...potentialities are actualized’, if not the practice. However, there are problems with Wilber’s conception of the role of meditative practices in the claims he makes for its ultimate insights, claims that, for instance, extend beyond Abe’s characterization of Zen. For example, Wilber’s contention that his highest stages of self-transcendence towards non-dualism go beyond reason can be interpreted as a dualistic separation of faith and reason. Surely non-dualism should also require the transcendence of faith? The problem lies in the nature and role of reason that needs to be better understood in relation to such practices.

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For example, Zohar argues that underlying Eastern practices is a rational science of consciousness, or states of awareness. In relation to Buddhism, she argues that this science:

…was concerned with how to see through their illusions, how to control them, and the Buddhists thus conceived of the universe as something like the all-embracing ground state of consciousness, a consciousness from which human consciousness had become split off. The challenge was to return to the ground state, to achieve union with it and thus to achieve nirvana – timelessness and awareness/unawareness.  

This raises the question as to whether such rational conceptions condition meditative experience. If so, this then presents the problem for Wilber as to whether his higher stages of transcendence actually tap into the ultimate reality or whether they too reflect a particular world-view. As has been revealed through quantum theory, any truth human beings are seeking is influenced by the role of the seeker, a point acknowledged by Wilber. As Lakoff and Johnson point out, though, this role is often obscured through the processes of our mainly unconscious, embodied reason. This reason derives from and makes use of our sensorimotor system in its everyday functioning that, when correlated with our subjective experiences and judgements, gives rise to metaphoric reasoning. Lakoff and Johnson hypothesize that metaphors such as ‘nirvana’, ‘Emptiness’, ‘the face of the Divine’, or God and Spirit, all derive from this embodied process, making notions of these as transcendent, problematic. They also shed doubt on the ability of meditative practices to transcend the categorizing nature of living systems arguing that neural beings cannot have a purely uncategorized, unconceptualized experience. Therefore, the argument that one can go beyond reason can be said to be trapped in an outmoded concept of a disembodied, or purely conscious reasoning, one that itself reveals a certain lack of development or transcendence.

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52 This point is particularly emphasized by Ilya Prigogine, *From Being to Becoming: Time and Complexity in the Physical Sciences*, (W.H. Freeman and Company, San Francisco, 1980).
53 Lakoff and Johnson: *Philosophy in the Flesh*, Ch. 25. These ideas challenge Eastern philosophers such as Nagatomo, who have been at the forefront of notions of embodiment and unconscious perception, but have failed to associate these with reason. Shigenori Nagatomo: *Attunement Through the Body*, (Suny Press, Albany, 1992).
An understanding of the sense in which meditation is not an unconceptualized experience, is provided by Varela in his argument for science to take seriously the nature of lived experience if it is to better understand the nature of consciousness. Varela sees Buddhist practice as particular and ancient research projects, projects that are far from being monolithic, that understand the primary nature of lived experience and the derivative, reflective nature of concepts. In Varela’s conception, Buddhist meditative practices of mindfulness/awareness, practices that seek to enable one to be present with one’s mind in its activity of conscious thought, fill a gap left unfilled by normal reflective science and philosophy. Essentially, Varela argues, mindfulness/awareness meditation incorporates various methods for experiencing directly the temporal and embodied nature of one’s present experience. It is a means for focussing on one’s thoughts as they emerge and decay, illuminating the temporal, impermanent nature of reality. From this though, one can argue that as an embodied activity, conducted within present experience, it does not reveal a reality that is outside of the process of dependent co-origination of the individual meditator. Meditation, therefore, is itself an activity of ‘enaction’ whereby the embodied subject is engaged in processes of dependent co-origination in each present moment. These processes are not removed from, but informed by concepts and past experience within the field of the specious present. In other words, each experience of meditation is informed by previous experience that conditions our direct experience of temporality. Otherwise, it would seem, meditation, as that which precedes reflection, would not be able to inform the rich philosophy that has emerged from it as it has.

This leaves Wilber and other theistic process thinkers essentially with an objective view of a reality that is somehow outside and behind momentary experience, despite their belief in immanence. This then leads to the postulation of a finite evolutionary scheme that ends for some in a re-unification with a necessarily objective Ultimate. While Wilber argues that one continually has to apply their enlightened understanding to newly emerging forms, there is no scope for transcending the reified highest structural levels of his holarchical scheme itself, which amounts to a static metaphysics. It is one thing to argue historically and empirically for the existence of general patterns of processes constraining the

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54 Varela, Thompson, and Rosch, *The Embodied Mind*, Chapter 2.
development of a child to an adult and seeing parallels in the development of humanity itself, it is another thing though to see this as firstly, identical to natural evolution and secondly, a process culminating in a mass enlightenment, or specifically, in a particular cultural practice that reveals what is apparently the one true, eternal, immutable reality.

This type of thinking has much in common with Herbert Spencer’s cosmogony, one that Bergson argues necessarily sees intelligence both as conscious reasoning and as given, rather than engendered. Once a direction is admitted, then developmental psychology becomes an exercise in ‘…reconstructing evolution with fragments of the evolved.’ Bergson argues that evolution cannot be understood simply through this exercise of the intellect in reconstructing evolutionary development through a series of snapshots on a single time-line. Similar to Wilber perhaps, he puts forward the idea of engaging in an intuitive immersion in the ongoing process itself. He suggests this though not in relation to the constraints of particular cultural practices or the pre-determination of the ultimate effect of such immersion, but introduces the notion of the emergence of multiple evolutionary pathways.

The Nature of Emergence

This leads to the central problem for Wilber and theistic thought being the nature of emergent processes in evolution that apply as much to the form of his holarchy as they do to other form in the world. While Wilber uses the term emergence, he does not make explicit what it is he means by it. Revealing what is implicit in his understanding of emergence is necessary for an argument against theistic thought in general and requires an examination of the nature of emergence. Emergent processes can be characterized as those that transcend their own ingredients, therefore defying reductionist attempts at explanation. As Cohen and Stewart argue, the notion of emergence makes ‘…respectable the idea that a collection of interacting components can “spontaneously” develop collective properties that

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These processes have been highlighted through the work of Ilya Prigogine on far-from-equilibrium, dissipative, self-organizing systems, systems that are able to create negative entropy for a time. Human beings as emergent processes, are such dissipative self-organizing systems that are as such, partial causes of emergent processes. Such emergent processes are conceived as being on a higher level than their ingredients and have a downward causative effect on their ingredients. This idea assumes, like Wilber, that many levels of reality co-exist, and are interrelated. It is toward understanding the nature of this interrelatedness that theories of downward causation can be applied.

The notion of downward causation is necessary for understanding the ontological status of emergent processes. As Emmeche (et. al.) argue, linear, reductionist models of bottom up causal processes logically imply that higher levels are relatively impotent and mere epiphenomena of lower levels. By complementing notions of upward causation with downward causation, the ontological prominence of higher levels can be restored. They argue that it is the relative strength of this ontological prominence and the nature of the downward causative power of higher levels that is at issue in revealing different concepts of emergence. In this regard, Emmeche (et. al.) outline three versions of downward causation that provide a basis for different views of emergence. They characterize these as Strong, Medium and Weak.

Strong downward causation, or strong DC, is where ‘...a given entity or process on a given level may causally inflict changes or effects on entities or processes on a lower level.’ They argue that:

This idea requires that the levels are sharply distinguished and autonomous...In the history of science, representatives of this theory may be found in the classical vitalists of early

57 Prigogine, From Being to Becoming.
bacteria, who supposed the existence of a creative or formative power outside the range of scientific description. When the vital power has done its work and created the higher level entity, this entity functions autonomously and independently of the lower level. The best examples of such theories are probably found in psychology and philosophy among the classical dualists, who assumed the existence of an immaterial soul that inhabits the body and is able to control it due to its special causal powers.\footnote{Ibid, p. 19.}

Medium DC is where ‘…an entity on a higher level comes into being through a realization of one amongst several possible states on the lower level – with the previous states of the higher level as the factor of selection.’ This definition is explained through the concept of ‘boundary condition’. They argue that:

In relation to level theories, boundary conditions are conceived as the conditions which select and delimit various types of the system’s several possible developments. The realization of the system implies that one of these typical developments is selected, and the set of initial conditions yielding the type of possibility chosen are thus a certain type of boundary condition which has been called constraining conditions. They only exist in complex multi-level phenomena on a level higher than the focal level, and are the conditions by which entities on a high level constrain the activity on the lower focal level…In contrast to strong DC, medium DC does not involve the idea of a strict “efficient” temporal causality from an independent higher level to a lower one, rather, the entities at various levels may enter part-whole relations (e.g. mental phenomena control their component neural and bio-physical sub-elements), in which the control of the part by the whole can be seen as a kind of functional (teleological) causation, which is based on efficient, material as well as formal causation in a multinet system of constraints.\footnote{Ibid, p. 25.}

In both of these versions, higher level emergent processes have a high degree of ontological prominence. In weak DC, as the term implies, there is less prominence. As Emmeche (et. al.) argue, theories of weak DC are derived from essentially static, decontextualized scientific models of reality called phase space models. Within such spaces, higher level emergent entities are characterized as attractors that form a basin of attraction for lower
levels. In phase space scenarios, downward causation is an interpretation given to the regulation of perturbations by coincident, relatively stable attractors. While such attractors are understood as irreducible, their ontological status is the weaker one of an organizing principle, or formal cause, rather than a fully, or semi-autonomous entity. Such a conception can be understood as derivative of dominant, abstract scientific practices of quantitative analysis and computer simulation. For this reason, it is limited in its application to lived experience.

From a process perspective, both strong and weak DC are the most problematic. Weak DC, is problematic due to its being limited to a context of an abstract, pre-formed phase space with fixed parameters and boundary conditions, a context that Emmeche (et. al.) argue gives this version scientific legitimacy. It is a context though that cannot account for higher levels changing the nature of the space itself through their very emergence. In other words, weak DC is not consistent with processes of dependent co-origination. The metaphor of the basin of attraction also produces the image of initially static lower levels being pulled in and trapped in one basin. There is no possibility therefore for a lower level to be correlated with several higher levels, as with medium DC. Strong DC on the other hand, is problematic in the theistic sense discussed in this chapter. It necessitates an unknowable and ultimate efficient cause, fully autonomous of lower levels, a view that again is not consistent with dependent co-origination. It is strong DC that ultimately underlies theistic views, whether process related or other. It is also the basis for theistic views such as Zohar’s, where lower level processes in the quantum realm are inverted to become the highest level. Alternatively, the position of this thesis is that medium DC is most consistent with a process view that sees ontologically real, higher level emergents as multi-nested constraints on a primarily active and open universe. This will become clearer when Gare’s metaphysical categories are outlined. Armed with a better understanding of the nature of emergence though, the problems of theistic process thought can be further explored.

62 This is in Zohar: The Quantum Self. It reveals Zohar to be both a reductionist and Absolutist.
The Nature of Evolution

It is emergent processes involving medium DC that undermine notions such as Wilber’s, Schelling’s and Hegel’s, involving strong DC, of history as a teleological unfolding of some inner essence or World Spirit. It is this type of thinking that reduces individuals and cultures, as argued before, to the means toward some final end, providing common ground with mechanistic materialism. Emergence, requires that within the parameters of certain dynamic constraints, systems be open to a multiplicity of directions of evolutionary development so that the future of an organism, or a culture, is never fully determined, but may branch in novel directions. There are at least two important implications here for the coherence of the theistic process view coming from more recent understandings of evolution. Firstly, as Cohen and Stewart argue in relation to their theory of complicity, these novel directions in evolution generally, but not always, involve an increase in complexity, (a phenomenon celebrated by the theistic process philosophers), as it is easier to add on to a process of development, building on whatever exists, than change it. As Cohen and Stewart point out though, this phenomenon is only intelligible when thought of as a continuous process.

To use an analogy, if one ran a chocolate factory and decided to produce potato chips, the factory would have to go back to the start and develop a wholly new process for manufacturing potato chips, discarding all that went before. The chocolate currently produced by the factory though has emerged from the company’s historical process of chocolate development. The decision to improve the chocolate, rather than make potato chips, would involve adding something to this process, so adding to the complexity of the process. In this way, increasing complexity continually and irreversibly distances processes from their origins as well as qualitatively altering their form. Furthermore, the more complex a process, the longer is its duration, as is evident in the evolution of the universe where, it is hypothesized, there was as much percentage increase in the trillionth of a trillionth of a trillionth of a second after the Big Bang, as there has been in the fifteen

63 Gare, Nihilism Inc., pp. 369-373.
billion years since. Wilber’s notion then, of an evolution toward re-unification with one’s origin, would require a time reversal, devolution, or perhaps the annihilation of a process. Such annihilation though is also problematic due to the interrelatedness of processes in emergence involving medium DC, meaning that processes are only partially autonomous.

The second implication relates to what Cohen and Stewart refer to as life at the edge of disaster. They argue that:

…this process of continuing complication can’t go on forever. Living creatures are forced by evolutionary pressure to operate right at the limits of what they are capable of, to perform a delicate balancing act on the edge of disaster. There may come a time when the “style” of an organism - its system of organization – starts to get top-heavy. Having chosen to specialize, all it can then do to improve is to become more specialized; it’s trapped in an evolutionary dead end.

The evolution of species such as humanity, the emergence, transcendence and integration of greater wholes, is therefore both limited and finite. Greater specialization as complexity increases will in fact lead to less transcendence and integration of complex wholes as the universe evolves beyond both our understanding and existence. This is supported by the thesis of Konrad Lorenz in relation to ‘sacculinization’, or retrograde evolution; a reversal of creative process through diminution of external stimuli. Humanity’s cultural devolution toward a monoculture as a response to greater complexity, he argues, leads to intra-specific selection, the consequences of which are the reverse of any pre-determined progressive advance. The implication here is that for humanity to continue to survive we must actively, slow down, the growth in complexity of cultural evolution to a more humanly comprehensible level. This is not a conservative argument though but one aimed at preserving openness in the face of change rather than an agoraphobic retreat inward, or

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specialization as described by Lorenz. This has implications, as will be discussed later, for preserving and developing the quality of relationships.

There is yet another problem raised by Cohen and Stewart for theistic process philosophy, in the importance of the contingent role of the organism itself in evolution, in relation to both intent and context.\textsuperscript{67} While purpose and context are central to theistic philosophy in general, it is always subsumed by an ultimate purpose and an aetemporal context. This devalues the individual’s ability to generate real novelty. Novelty in evolution is better understood as the product of the interaction of external environmental constraints with internal processes of individual organisms; the implication being, that individuals cannot be reduced to either species, cultures, evolutionary development ladders or Ultimate purposes. This is also supported by Varela’s notion of evolution as ‘natural drift’, rather than adaptation to pre-given environments.\textsuperscript{68} In dominant scientific realist perspectives, there is the notion of the pre-existing phase space to which natural selection is reacting to select organisms of optimal fit. In theistic perspectives, there is the pre-existing and eternal Absolute that ultimately determines the direction of adaptation. Both involve a prescriptive logic. Alternatively, ‘natural drift’ implies that rather than evolution following a path, it is always in the process of laying a path in present experience. Laying paths is a process where individuals, coupled to their environments, enact worlds, or dependent co-origination. What emerges is determined by a proscriptive logic that sees natural selection in the broad sense of a survival and reproductive constraint on the rich, self-organizing capacities of biological networks. In this sense, any attribution of optimal fit can only be made after an organism has emerged.

**Implications for Theistic Process Thought**

What then are the philosophical implications of such emergence and complexity for the Absolutist, theistic view in process thought? In summary, fundamental to the Absolutist view is the cycle of emergence from the ground-state of existence, being God, Nirvana or

\textsuperscript{67} Cohen and Stewart, *The Collapse of Chaos*, Ch. 10.
\textsuperscript{68} Varela (et. al.), *The Embodied Mind*, Ch. 9.
the quantum vacuum, and an eventual, necessary return. This is the theistic answer to the age-old questions of; where do we come from, where do we end up? For theistic Eastern philosophy this generally involves cycles of birth and re-birth and the idea that reality can be glimpsed through meditative techniques, the practice or non-practice of which will effect one’s next life. For theistic Western philosophy, the idea of a transcendent God’s kingdom dominates, from which, one emerges and to which, one will return, provided certain moral obligations are met. Theistic Eastern philosophy, views the universe as fully created, perfect and requiring active discovery by humanity, whereas theistic Western philosophy, with its Fall myth, views humanity as having been ejected from God’s Kingdom and needing to create ways and means by which it can return. This can range from contradictory practices such as living a life of poverty and prayer to generating enormous wealth and transforming nature.

The theistic process view combines both in the argument for a purposeful evolution of life toward a level of creativity that will match that of the immanent creative force, or Spirit. In this, there is the notion of a ground-state that can be glimpsed through particular development pathways, as well as the notion of progress towards a specific, transcendent end. Such emphasis though on the Ultimate ground of the universe ignores, as has been argued, the real complexity of evolution. While such a ground may have been the initial condition for the emergence of the universe, emergent evolution tells us that the universe is now a much more complex process, one that is far removed from the initial conditions and which such initial conditions could not have predicted. Furthermore, continual evolution of complexity in a species is ultimately self-destructive, as is perhaps evident in humanity’s situation today. This more complex view of evolution reveals that humanity’s future success is not pre-determined or required by a universe seeking to become conscious of itself, but linked to humanity’s own ability to synchronize its pace of development with its environment.

The Absolutist view of Wilber can be understood to reveal a feedback loop that in his terms leads from a static view in the noosphere of an ultimately closed system, to extension into the reality of the biosphere and physiosphere, that in turn justifies this view in the
noosphere. This is similar to what Whitehead called ‘the fallacy of misplaced concreteness’ in relation to the degree in which abstract notions acquire the status of reality. The whole history of attributing to God a reality other than conceptual, must be seen as such misplaced concreteness, including some Eastern conceptions of the world as a self-sufficient completion of the creative act. One can argue that it is these abstract notions of closed systems that provide common ground between many process oriented thinkers and mechanistic materialists, the difference being that these process thinkers try to argue for freedom and creative emergence as derivative of the ultimate category of the Absolute, while the mechanistic materialists remain perhaps more consistently deterministic.

Whitehead, however, appears to be more complex in defining the primordial nature of God as being ‘…the acquirement by creativity of a primordial character.’ It is ‘creativity’ therefore, along with ‘many’ and ‘one’, that are the ultimate categories of being for Whitehead. According to him:

> Creativity’ is the universal of universals characterizing ultimate matter of fact. It is that ultimate principle by which the many, which are the universe disjunctively, become the one actual occasion, which is the universe conjunctively. It lies in the nature of things that the many enter into complex unity. ‘Creativity’ is the principle of novelty. An actual occasion is a novel entity diverse from any entity in the ‘many’ which it unifies. Thus ‘creativity introduces novelty into the content of the many, which are the universe disjunctively. The ‘creative advance’ is the application of this ultimate principle of creativity to each novel situation which it originates.

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70 Ibid, p. 21. Despite this and the view that Whitehead’s metaphysics can be made to work without God because it is panentheistic (i.e. God is influential in all things) rather than pantheistic (i.e. God is in all things), Whitehead is regarded in this thesis as a primarily theistic process philosopher, not only because he has been adopted by theologians such as Hartshorne, but also due to the strength of the arguments of those who are critical of the theistic process position, such as Sherburne. An example of Sherburne’s arguments against Whitehead’s theism is in, Donald W. Sherburne, ‘De-centring Whitehead’, *Journal of Process Studies* (Vol. 15, Summer 1986), pp. 83-94.
Whitehead’s Metaphysical Categories

Whitehead, writing in the early part of the twentieth century, realized that while new theories in science were emerging, specifically relativity and quantum theory, that challenged the coherence of Newtonian physics, no new metaphysical systems were being developed to take account of the new physics. In fact, with the rise of Logical Empiricism, metaphysics itself was seen to be unnecessary. Whitehead characterizes this development from modernity as a form of anti-rationalism that is content with a secondary level of explanation. As Cobb writes:

Modernity in the seventeenth century had turned attention from ultimate questions to penultimate ones, believing that at that level an adequate, intellectually satisfying account of nature could be found. It did not press theoretical questions about its mechanistic model, but it did assume that this model was an adequate, and even accurate, replication of the most important features of the natural world. For the founders of modern science and philosophy, therefore, the world was rational in the twofold sense that it conformed to an intelligible pattern, and that thought about the world should be coherent. If the work of biologists could not yet be interpreted fully in terms afforded physics, this represented a gap that further research would fill. The goal was rational, not in the sense of probing the meanings of the key terms and seeking the ultimate reason for things, but in the sense of seeking a unified and accurate picture of the whole and of all the details of the natural world.71

Cobb argues that this view that the world could be adequately known, mechanistically, brought with it the segmentation of knowledge characteristic of specialized disciplines in universities today, a development discussed in Chapter One. However, it also brought with it the opposite view of a radical abandonment of any possibility of knowing reality other than our own relative knowledge, starting with Hume and Kant, through to Nietzsche, Heidegger and Deconstructive Postmodernists such as Derrida. It was Whitehead’s insight

to see that the new physics demanded a re-appraisal of the ultimate questions of what constitutes primary being, as well as the re-conception of the organization of knowledge as a whole in order to breakdown both forms of anti-rationalism. As Cobb states:

A Whiteheadian postmodernism begins by insisting that such bifurcation and fragmentation falsifies reality, that all things are interconnected, and that this pattern of relationships is constitutive of the relata. What is said from this perspective cannot be contained within the organization of knowledge based on modern principles.\(^72\)

This emphasis on relations, which was discussed earlier in regard to Liebniz, is fundamental to Whitehead’s metaphysics and stems from the identification of sub-atomic entities in quantum physics. The Newtonian metaphysics of unchanging, indivisible atoms and their relative motions, was put in question by quantum physics, not only by the knowledge that atoms themselves are constituted, but also by the strange nature of the sub-atomic world where waves can be particles and particles, waves. The wave/particle nature of quantum reality is described by Hawking:

Although light is made up of waves, Planck’s quantum hypothesis tells us that in some ways it behaves as if it were composed of particles: it can be emitted or absorbed only in packets, or quanta. Equally, Heisenberg’s uncertainty principle implies that particles behave in some respects like waves: they do not have a definite position but are “smeared out” with a certain probability distribution. The theory of quantum mechanics is based on an entirely new type of mathematics that no longer describes the real world in terms of particles and waves; it is only the observations of the world that may be described in those terms. There is thus a duality between waves and particles in quantum mechanics: for some purposes it is helpful to think of particles as waves and for other purposes it is better to think of waves as particles.\(^73\)

For Whitehead, these sub-atomic quanta of energy were best described as energy events than as substances. This ontological inversion from substances with attributes to events in

\(^72\) Ibid, p. 170.
relation is a major shift in thought that introduces duration into the primary level of reality. The solid reality of substantial things that has dominated humanity’s sense of reality was therefore only apparent and could be more accurately described as stable patterns of activity. For Whitehead though, it was not such stable patterns of activity that were actual entities, but their constituents. With this in mind, Whitehead’s categories will now be discussed.

Actual Entities and Atomism

There are forty five categories in Whitehead’s system. The following is therefore to be understood as a general overview of the main themes. Whitehead’s metaphysical categories begin with his interpretation of Aristotle’s ‘ontological principle’ that asserts, against Plato, that metaphysics must be about what are the fundamental, actual existing things, and not the Forms of things. Whitehead argues:

Actual entities’ – also termed ‘actual occasions’ – are the final real things of which the world is made up. There is no going behind actual entities to find anything more real. They differ among themselves: God is an actual entity, and so is the most trivial puff of existence in far-off empty space. But, though there are gradations of importance, and diversities of function, yet in the principles which actuality exemplifies all are on the same level. The final facts are, all alike, actual entities; and these actual entities are drops of experience, complex and interdependent.74

In this, Whitehead rejects monism, the idea that there is only one actually, existing entity and the dualism of Descartes in favour of a plurality of actual entities. These actual entities are not enduring substances sustaining persistent qualities, either in their essence, or as accidents. Such simple notions are abstractions rather than concrete actualities and are incoherent in trying to derive change from the changeless. To account for change and durational processes in the world, actual entities themselves must be processes and their being, constituted by their becoming. An actual entity as a process of becoming cannot be

74 Whitehead, Process and Reality, p. 18.
moved by any agency in abstraction from actual occasions and so becoming must be by the agency of the actual entity itself. Therefore, as Leclerc interprets it, the term actual entity implies an acting entity, the existence of which is constituted by its process of activity.\footnote{Ivor Leclerc, \textit{Whitehead’s Metaphysics: An Introductory Exposition}, (University Press of America, Lanham, 1986), Ch. IV and V.} As Leclerc points out, Whitehead’s concepts of process and becoming raised questions of how he could consistently and coherently account for changelessness and the completed unity that is an individual.\footnote{Ibid, p. 71.} The principle problem is that of the continuity of continuous processes through supersession, leading to an infinite regress. Whitehead’s answer to this problem is twofold. Firstly, he rejects the notion of a continuous process of becoming, or becoming as the continuous unfolding of a continuum. Such extensive continuity is not a feature of actuality but is ‘…constituted by the succession or supersession of individual units of becoming.’\footnote{Ibid, p. 74.} Accordingly, as Leclerc states:

\[\ldots\]Whitehead declares, ‘the ultimate metaphysical truth is atomism. The creatures are atomic’. That is to say, if we hold the doctrine that actuality is a process of becoming, then since there cannot be a continuously extensive process of becoming, actuality must be ‘atomic’, consisting in epochal units of becoming, and the extensive continuity of the universe must be constituted by the succession of the atomic actualities.\footnote{Ibid, p. 75.}

Secondly, in response to the question of why an infinite regress cannot also apply to the epochal units of becoming, Whitehead argues that while an atomic actuality is extensive by virtue of its process of becoming, ‘…that process of becoming is itself one ‘epochal whole’, and is not divided into earlier and later acts of becoming superseding each other continuously.’\footnote{Ibid, p. 77.} As epochal wholes, actual entities do not endure but are processes of becoming and perishing. They are changeless though in the sense of not moving; they are where they are and what they are in actual existence.

Whitehead then, identifies the fundamental constituents of reality as atomistic actual
entities that as epochal wholes are individual processes of becoming and perishing. What though is the nature of the relationship between such atomistic actualities and how do they constitute reality? Cobb provides a relatively simple understanding of Whitehead’s answer to this question in returning to the notion that such actual entities can best be described as durational events in relation, or occasions of experience. He argues that:

…the atomic occasions of experience are analyzable primarily not into attributes but into relations. Consider one occasion of experience of Ms. Smith. That experience is constituted very largely by a continuation of her experience a moment earlier. Perhaps in that moment she was hearing the beginning of a word spoken by Ms. Brown; now she is hearing the end of that word. The fact that she hears it as the end of that word indicates that the previous moment is still alive in the present. This is a very intimate relation indeed! To describe the present occasion of experience apart from this relation would be to falsify it drastically. It is not as though there were a present experience of hearing the end of the word that then, subsequently, relates itself to the previous one in which the beginning of the word was heard. On the contrary, the influence of the previous occasion of experience is fundamentally constitutive of the present occasion. What Ms. Smith hears now is precisely the ending of the word, not a sound subsequently interpreted in that way by relating it to what was heard earlier. This immediate inflowing of the past into the occasion of experience is what Whitehead calls a “physical feeling,” or “physical prehension.”

Perception and Prehensions

The idea of prehensions leads to two important departures of Whitehead’s thought from conventional modernist thought. Firstly, similar to many Eastern philosophies, there is the recognition of an immediate level of perception prior to conscious reflection and not limited to our sense organs. Whitehead refers to this as perception in the mode of causal efficacy, as distinguished from sensory perception in the mode of presentational immediacy. Secondly, such immediate perception must be of the same character on the micro level as the macro level. Ms. Smith’s prehensions are therefore no different in character to the prehensions of sub-atomic actual occasions. This leads to the controversial

view that in the non-human, sub-atomic realm, actual occasions are feeling subjects, or syntheses of prehensions of other events, the same as Ms. Smith. Not quite the same as Ms. Smith though, because Ms. Smith, as constituted by actual occasions, is a compound entity and therefore, according to Whitehead, not actual in the primary sense, reflecting Whitehead’s atomism. It is the idea of feeling subjects at the sub-atomic level that, for Whitehead, dissolves the distinction between mind and matter and makes the world sensible to us, as all actual occasions are constituted by both a physical and mental pole. This is not to say, as Dibben argues, that process thinking ascribes a mind to an atom. According to Cobb and Griffin:

…all actualities experience, but only a few experiences rise to the level of consciousness. Even in experiences in which consciousness is attained, consciousness lights up elements which had [already] been consciously experienced…Further, only a small portion of the experienced ingredients are thus illumined. Consciousness is a selective activity.

In this way, ‘…consciousness presupposes experience, and not experience consciousness.’ In spite of such clarification, it is this idea that perhaps unfortunately labeled Whitehead a panpsychist, or, with his further identification of feeling with experience, a panexperientialist (see Chapter Eight below, page 320ff, for an alternative process perspective on the mind).

Our primary perception of the world then is feeling, or experiencing in the mode of causal efficacy. This causal efficacy is constituted by the syntheses of prehensions of atomic actual occasions in a process of becoming and perishing whereby past objects become subjects of present experience and present subjects become past objects. Therefore, compound entities, such as rocks, or humans with their consciousness and products of their consciousness such as language, must be seen as both derivative of these processes and having their essential nature. In this, with thanks to the discoveries in quantum physics,

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Whitehead was able to resolve many of the problems of metaphysical monism and dualism, as well as reveal the fallacy of the epistemological gap, discussed in Chapter One in relation to Ferré. He was also able to account for the reality of the universe prior to conscious life, with his argument that objects must also be subjects. Whitehead was also concerned with how such processes produced novelty. Here, it is necessary to return to his category of the ultimate, Creativity, that subsumes all other forty four categories. As was argued earlier, Whitehead’s concept of God as an actual entity enters the discussion here, along with his category of eternal object.

**Creativity and the Nature of God**

Ms. Smith, as a syntheses of prehensions, is not only actively receiving past data through physical prehensions, she is deciding on potential, future alternative actions through conceptual prehensions. In other words, while physical prehensions are relations to past occasions, conceptual prehensions are relations to relevant possibilities; the former being determined but the latter implying some level of indeterminacy. Whitehead’s line of reflection here is, as Cobb states:

…”that, if there is something in the present that is not derivative from the past, then the given reality is not exhausted by the past. His hypothesis is that, in addition to the past actual world, there are also possibilities not realized by that world and yet relevant to the occasion of experience as it constitutes itself in the immediate present.”

These unrealized possibilities are what Whitehead calls eternal objects. As Leclerc argues, eternal objects are very similar to Platonic Forms, in fact, Whitehead refers to them as such, except that, consistent with the ontological principle, eternal objects do not exist outside of actual occasions. Rather, as the determinants of the definiteness of the process of acting of actual occasions, they exist as having ingression in actual occasions. As Leclere states:

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84 Ibid, p. 190
They can exist only as ‘ingredients’ in actual entities. Accordingly it must be from the past actualities that the forms have ingression into present actualities, namely those which are in the process of becoming. In other words, forms are ‘given’, and thus become ‘objects’, only by virtue of their existence in antecedent actual entities.\(^{85}\)

Actual occasions are a three-phase process of concrescence consisting of 1) *conformation* of the pre-existent feeling, 2) the *intermediate* introduction of novel content and 3) *anticipation* in respect of the necessities which the occasion lays upon the future to embody it in the concrescence of future occasions.\(^{86}\) Without entering any further into the technical detail of what is said to be involved in each phase, concrescence can be summarized as a:

...temporal process of transition from one actual entity to another, whereby these entities are momentary events which perish immediately upon coming into being...The real occasions of which this temporal process is made are themselves processes...of their own momentary becoming. From the external, temporal point of view they happen all at once; yet at a deeper level they are not to be understood as things that endure through a tiny bit of time unchanged, but as taking that bit of time to become. Only when its process of concrescence is past does that unit of process become a datum, or object for new processes to take into account.\(^{87}\)

Through this temporal process of transition, therefore – and in particular the final phase of anticipation – a pulsation of actuality that is the particular existent occasion constitutes ‘...an original element in the constitutions of other particular existents elicited by repetitions of process.’\(^{88}\) Seen from the ‘external, temporal point of view’ for the sake of simplicity, transition is thus the efficient cause of the immortal past determining concrescence of actual occasions instantiated by a final cause, or subjective aim, which is Creativity. In this process, the past is immortal in that it always exists as objects forprehension. Objects of physical prehension are realized determinants, being data from past actual occasions. Conceptual prehensions however experience data as pure, unrealized

\(^{85}\) Leclerc, *Whitehead’s Metaphysics*, p. 94.
potential for determining. Conceptual prehensions therefore evaluate data ‘…with a view to their compatibility for inclusion in the terminal unity, in accordance with the criterion constituted by the subjective aim.’ Such an evaluation requires decision-making to bring about the satisfaction of becoming an epochal whole, a complex unity that is the ideal of the subjective aim. Decision-making implies self-causation and self-causation implies responsibility, both for becoming the actual entity it becomes as well as for the effects it has on others as an immortal object forprehension. Value for Whitehead is therefore the very essence of the universe. ‘Existence, in its own nature, is the up-holding of value-intensity.’

Where do these values originate though? They emerge in relation to the subjective aim. As has been mentioned, the ultimate for Whitehead is Creativity that is self-generated activity. The aim of such activity is toward novelty and integration into complex wholes. The subjective aim is not activity though, but, data, for the activity of becoming of actual entities. In remaining consistent with Whitehead’s ontological principle, such data must itself be an actual entity. For Whitehead, such an actual entity is God. Whitehead goes to great trouble to avoid his conception of God being regarded as a deus ex machina, as had been conceived by Newton and Descartes. For instance, as an actual entity, God cannot be purely transcendent for God is as much dependent on other actual entities as objects of data, as they are on God. Therefore, consistent with the theistic process view, God is both immanent, in being within creation and interrelated to actual entities and of their character, as well as transcendent in being atemporal in God’s relationship to eternal objects. It is through eternal objects that God is felt. As Leclerc states:

It is clear that God as the ‘principle of concretion’ must have conceptual prehensions of subjective aims relevant to particular actual entities. Now the data of conceptual prehensions are eternal objects. Thus subjective aims – whether in the prehension of the individual actual entities or of God – are analyzable into specific selections of eternal objects. Therefore the various subjective aims, as in God’s conceptual prehension, are eternal objects as potential for actualization by ordinary actual entities. In other words, God

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90 Ibid, 188.
conceives or envisages eternal objects in their relevance for actualization by the actual entities constituting the world.  

Whitehead’s complex notion of God is made clearer by Cobb in his identification of three steps in its development. Firstly, the presence of relevant possibilities for conceptual prehension is the principle of novelty whereby decision-making is genuinely free. While such free decision making leads to a certain amount of chaos, the fact of emergence of complex patterns of order that sustain themselves, suggests the presence of certain ordering constraints correlating decisions. The principle of novelty is therefore also a principle of order. It is this ‘realm of ordered possibility’, that is the source of novelty and order, that should be worshipped as the ‘primordial nature of God’. Secondly, God, being an actual entity, necessarily has a subjective aspect. It is this subjective aspect that is the ‘divine persuasion’, that encourages choices of possibilities in accordance with God’s decision that establishes the order among possibilities that makes possible the growth of value in the world. God’s decision then is one of benefit to creatures, associating freedom and novelty with goodness and love. Thirdly, there is the ‘consequent nature of God’, that relates to God as the conserver of value. The nature of physical prehensions, where the values of the past operate in the present, is such that in the course of events succeeding each other, achievements of value fade. Actual events are only able to encompass a tiny fraction of what has been. This, leads to Whitehead’s view, according to Cobb, that:

God is quite different from the creatures, even though God, like all occasions of experience, is an actual entity. Whereas the human soul, or personality, is a succession of occasions of experience, God is one everlasting process of integrating all that happens with all possibility. God is thus always feeling directly all the creaturely feelings that have ever been. Whereas for us to feel a few of these feelings vividly means to exclude many other feelings, for God such exclusions are not necessary. In contrast to the constant replacements of one set of attainments by another, which characterizes the temporal process, God feels all that has ever been in the fullness of its immediacy. Thus what is past in the world lives eternally in God. What is lost in the world is alive in God.

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91 Ibid, p. 196.
92 Cobb Jr., Alfred North Whitehead, p. 192.
Ultimate reality for Whitehead is therefore God, but not God the actual occasion, but God the process of creative advance that has acquired His character. Whitehead’s God is the God of theistic process philosophy, as exemplified by Schelling and Wilber, that is, both Ascendent as the One, as well as Descendent in its immanence in the Many. If though, as has been argued, theistic process philosophy suffers from Whitehead’s misplaced concreteness, then so does Whitehead. The notion of misplaced concreteness needs to be understood as being relative to particular conceptions of reality. Whitehead’s metaphysics therefore, as a particular conception of reality, while being acknowledged as a major step forward in the history of process thought, can be shown to be in many respects, inferior to both Zen Buddhism and Gare’s concepts.

**Whitehead and Buddhism**

Having now summarized the main themes of Whitehead’s metaphysics, his position and importance in process philosophy can be appreciated. Drawing on new developments in science, Whitehead was able to attack the anti-rationalism of modernity, revealing its incoherence, but like the great process thinkers before him, such as Schelling and Hegel, he was also able to articulate a new basis for human action. This basis, as has been argued, in its theistic overtones, drew conclusions similar to both Schelling and Hegel, with the emphasis on activity, process, creativity, self-causation and an immanent God that is the persuasive influence within a continual evolutionary development. There are further similarities with Wilber’s view of higher developmental levels of yogic practice, that facilitate the encompassing of greater wholes, where the eternal beneath the flux is glimpsed. As Cobb points out, Whitehead’s theism was strongly influenced by Buddhism, evident, for example, in his giving primacy to non-sensory perception. This is also evident in a passage Cobb quotes from ‘Adventures of Ideas’, written in 1933, where Whitehead seems to be referring to meditative practices and the ‘Peace’ that is achieved, ‘…where the ‘self’ has been lost, and interest has been transferred to coordinations wider than personality.’

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However, as Abe argues, there are important differences between Buddhism, understood by Abe as ‘...nontheistic in its basic nature,’ and Whitehead.94 These differences are found in both Whitehead’s idea of the relationship between God and the world and an understanding of the Buddhist idea of dependent co-origination. As has been revealed, for Whitehead, God’s ontological reality is somewhat different to the world. In agreement with this position, Abe, drawing on William Christian’s analysis of Whitehead’s theory of God and the world, concludes that:

...although actual occasions (as superjects) are completely immanent in God, God is not necessarily completely immanent in the world, and...God transcends the world by virtue of his perfection, but the world, though transcending God, is lacking perfection. In short, this indicates that although there is interaction between the world and God, God finally transcends the world. God is more self-creative, more inclusive, and more influential, than any other temporal actual entity. He alone is everlasting.95

Abe contrasts Whitehead’s position with Mahayana Zen Buddhism and its fundamental notion of dependent co-origination that he defines in the following three points:

1. In the Buddhist notion of dependent co-origination, there is nothing whatsoever ‘more real’, (for instance, in terms of transcendence, immanence, or ‘in-between’), which lies beyond or behind the interdependence of everything in the universe.

2. But this ‘nothingness’ should not be taken as nothingness that is distinguished from ‘somethingness’. If so, we are involved in another duality, a duality between ‘nothingness’ and ‘somethingness’. ‘Nothingness’ realized behind the interdependence of everything is not ‘relative nothingness’ in contrast to ‘somethingness’ but the ‘absolute Nothingness’ which is beyond the duality of nothingness and somethingness.

94 Abe, Zen and Western Thought, p. 157.
3. When one says that there is absolutely nothing ‘more real’ behind the interdependence of everything, one means that its interdependence is determined and limited by itself without any outside principle of determination and limitation.\textsuperscript{96}

Abe argues that although Whitehead’s conception of God, like Hegel’s Absolute Spirit, is dynamic in its interacting and interpenetrating of the world, and is therefore not something in a substantial sense, it is nothing in a relative sense. Therefore, ‘…Whitehead is lacking the realization of absolute Nothingness or ‘Emptiness’, a realization which is essential to the Buddhist notion of the interdependence of all things in the universe.’\textsuperscript{97} The implication here is that Whitehead has ultimately failed to make interrelatedness primary reality. Like all of those theistic process thinkers discussed in this chapter, Whitehead has stopped short of realizing what is necessitated by the logic of process argued for in this thesis; that is, that there is nothing behind or outside of ‘nowness’, the specious present or immediate experience, and that all is contained within ‘nowness’. From this perspective, Zen Buddhism’s conception of ‘absolute Nothingness’, is more consistent with the process view and the notion of a ‘groundless ground’ argued for by this author and Gare, than Whitehead. One can gain a sense of this from Abe’s description of nirvana:

…nirvana has relevance to the human understanding of ultimate or universal Reality in that it overcomes the major objections to monistic absolutism…The concept of the one God who is essentially transcendent, self-existing apart from everything relative, is illusory to Buddhism in that God cannot be spoken of without a knower. In Buddhism, mutual relativity or interdependency is the ultimate truth…In nirvana, nothing is independent, self-existing, or permanent; having no permanent selfhood, everything is mutually related to each and every other thing. This is not a fixed relativism simply rejecting absolutes and resulting in a form of scepticism or nihilism, but a dynamic relativism in which even the absolute and the relative, the holy and the secular, the divine and the human, are all totally interrelated. This idea of the total interrelatedness of each and every thing at every moment is also termed ‘dependent co-origination’ in Buddhism, the realization of which is none other than nirvana.\textsuperscript{98}

\textsuperscript{96} Ibid, p. 158.
\textsuperscript{97} Ibid, p. 159.
\textsuperscript{98} Ibid, p. 209.
The Challenge for Process Thought

This discussion of the foundations of process thought and its predominately theistic development in the West, poses a major challenge to current process philosophy; this being how to develop a non-substantialist, groundless metaphysical ground for human action. As Abe argues, the notion of ‘Nothingness’ in Buddhist thought, when understood as an object, or goal, as in Wilber’s position, is often construed nihilistically as providing no basis for goal-directed action, whether individual or social. Also, Buddhism provides little insight into the dynamic structure of interaction. This is because Buddhism is essentially the philosophy of non-being that emphasizes the necessity of individual awakening to the ‘no-self’ ground of one’s subjectivity. From this realization though, ‘Nothingness’ becomes the basis for freedom in removing abstract determinants of human action and opening up possibilities for transformation beyond the constraints of such determinants. In other words, it provides a basis for an open universe and novel emergence. What is required to complement Buddhism’s emphasis on the awakening to ‘no-self’ though, is the development and embodiment of the ‘no-self’ concretely in the world. Abe concedes that in this regard, those such as Hegel and Whitehead have much to contribute.⁹⁹

This is also where Gare has much to contribute. His metaphysical categories challenge both mechanistic materialism and theistic process metaphysics, providing a new synthesis in Western thought. In the tradition of Whitehead, his synthesis seeks to make coherent, more contemporary scientific concepts of the dynamic structure of the world while emphasizing the derivative nature of such concepts. In the tradition of Hegel, he seeks to provide a philosophical basis for goal-directed individual and social action while in the tradition of Zen Buddhism, he seeks a non-theistic, non-substantial and non-Absolutist basis for reality. His categories will now be outlined and discussed with this in mind.

Gare’s Metaphysical Categories

Gare’s categorial scheme follows that of Whitehead’s in its division into four main areas; The Categories of the Ultimate, The Categories of Existence, The Categories of Explanation, and whereas Whitehead’s fourth category is Categoreal Obligations, Gare’s fourth category is that of Ultimate Potentiality. Unlike Whitehead’s forty five categories, Gare lists only eight, because, as he argues, what is important:

...is to define only a sufficient number of concepts as can be easily grasped, kept in mind, and then deployed in any situation to displace those concepts which are at present dominating people’s thinking. The most important concepts to displace, those inherited from the seventeenth century revolution in thought, are space (the receptacle of matter), time (during which matter changes place in space), matter (identified with body and the occupancy of space), and motion (identified with locomotion of matter through space over time). The categories which are proposed to define the nature of the cosmos as a process of creative becoming consisting of a multiplicity of emergent processes, each being in a complex relation to other co-existing processes and having some degree of autonomy from all others, and to define the nature of these emergent processes, are: activity, order and potentiality; process, structure and event; cause; and spatio-temporal position.¹⁰⁰

It is important to remember that these categories are not fixed. Rather, their coherence and adequacy is continually subject to re-formulation through the various dialectics of humanity. The importance of this point cannot be over-emphasized for it is humanity, according to Gare, that ultimately must hold itself accountable for its own continued existence. With this in mind, the eight categories will now be explored in some detail.

The Categories of the Ultimate

As has been discussed at length, the Ultimate in most metaphysical schemes throughout history has been some divine Being or presence, one that is predominately masculine, it

¹⁰⁰ Gare, Nihilism Inc., p. 312.
should be noted. For the ancients it was a transcendent realm or, in Aristotle’s case, the ‘unmoved mover’, behind matter. In the Middle Ages, it was generally a transcendent God, who was either interested, or disinterested in worldly matters. For mechanistic science in the Enlightenment, it was the transcendent, disinterested and masculine God of Newton, who put the grand mechanism into motion. With increasing secularization from the Enlightenment to the present, metaphysical Ultimates have been set aside by positivist science awaiting empirical, reductionist verification. Filling the nihilistic vacuum this has left has been a desperate concoction of mathematics, economics, materialist consumption, mysticism and individualism. For theistic process philosophy, it is the Ascending and Descending God already outlined. With Whitehead though, this position was argued to be more complex as his Category of the Ultimate, ‘Creativity’, is the ‘primordial nature of God’, God being an actual entity and thus part of the Categories of Existence.

For Gare, there are three Categories of the Ultimate; activity, order and potentiality, “…that are required to define the other categories without being presupposed by them.”\(^{101}\) This last point is important in emphasizing the impossibility of precisely specifying fundamental concepts from derivative ones, as Whitehead believed he had done. Where Whitehead’s Ultimate was ‘Creativity’, for Gare, it is ‘activity’. This he equates with an understanding of electro-magnetic energy prior to a relationship to mass where it can then be distinguished between outward activity, or change in position, and inward activity, as in the thermal motion of constituent molecules. Whereas ‘Creativity’ implied a purposeful, goal-oriented activity, ‘activity’ in Gare’s sense is more like the Heraclitean flux; it is the unordered energy released in the ‘Big Bang’ that pervades the universe, the ‘Big Bang’ being our most coherent theory of the origin of the universe so far, according to Hawking, and so our best available starting place.\(^{102}\) Zohar, identifies this flux with the quantum vacuum. She argues that:

In the language of physics, the vacuum is the “ground state” (the “minimum energy” state) of all that is in the universe. “The vacuum, empty space, actually consists of particles and

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\(^{101}\) Ibid, p. 313. Note that these categories are not capitalized to avoid the implication of some anthropomorphic identity.

\(^{102}\) Hawking, *A Brief History of Time*, Ch. 3.
antiparticles being spontaneously created and annihilated. All the quanta that we have
discovered or ever will discover are being created and destroyed in the Armageddon that is
the vacuum. 103

The notion of the quantum vacuum that is an all-pervasive field of potential in which the
universe is written and out of which it emerges has much in common with Gare’s ultimate
categories. However, the concept of a ground state of the universe called the quantum
vacuum, is an objectifying concept, that makes such a ground state a thing, making its
pervasiveness problematic in the same way that Whitehead’s God as actual entity is
problematic. For Gare, ‘activity’, ‘…corresponds more closely to the concept of kinesis, as
it was used by the early Presocratic philosophers, meaning the eternal motion pervading
everything, without this motion being understood, as it came to be after Parmenides, as
something requiring an unchanging being which is active.’ 104 Furthermore, ‘activity’ is not
reducible to a ground state but is present in relation to the other categories.

In relation to ‘activity’, ‘order’ emerges as enduring patterns of activity. Gare argues that
the best way to conceive of ‘order’ is to imagine a complete lack of it. If one imagines the
‘Big Bang’ as producing ‘activity’, then the emergence of order can be understood as the
active constraining of ‘activity’ that differentiates it, ‘…and in so doing makes possible
other types of order.’ 105 This general concept of order, being thus a Category of the
Ultimate, is in sharp contrast to Whitehead’s position that order can only refer to some
definite, specific order that is ‘…bound up with the notion of an actual entity as involving
an attainment which is a specific satisfaction.’ 106 As was mentioned earlier, for Whitehead
the principle of novelty was also the principle of order. Order is therefore ‘bound up with’
the subjective aim and the individual conceptualprehensions of eternal objects of actual
entities. Disorder, in this conception, is identified with lack of satisfaction that does not
create or conserve value. Here it is important to discuss an important difference in Gare’s
and Whitehead’s conceptions, in regard to what Cohen and Stewart refer to as

104 Gare: Nihilism Inc., p. 314.
106 Whitehead, Process and Reality, p. 84.
preformationism. This is the notion that pervades Whitehead’s metaphysics that higher level features of the universe already exist within the atomic constituents; a notion associated with both atomism and scientific reductionism. Whereas Gare sees ‘order’ at a higher level as a general feature of the universe of a constraining of ‘activity’, Whitehead identifies order with the specific satisfactions of the subjective aim of each atom of concrescing actual entities. This is a view that is problematic in relation to the nature of emergence and the role of God. It is also a problem, as will be discussed shortly, in relation to levels of understanding relevant to humanity.

Gare’s third category of the ultimate is ‘potentiality’, that ‘…can be understood as the possibilities – the powers and liabilities for ordering and being ordered which are produced and which can be realized or undermined in the becoming of the world.’ For Gare, ‘potentiality’ is therefore a general term for the real indeterminacy experienced in the world. This is in contrast to Whitehead’s Platonic conception of all possibilities existing, but not yet realized in eternal objects as potential ingredient in atomic actual entities; such realization being constrained by the ordering of the subjective aim.

The Categories of Existence

Gare’s three Categories of Existence are ‘process’, ‘structure’ and ‘event’. As has been discussed, the central tenet of process metaphysics is that actual entities are not inert substances in a state of being, but processes of becoming. The whole basis of the process argument against mechanistic materialism is that mechanistic materialism freezes the world into a series of static snapshots. These abstractions are then taken as primary reality. This then underpins humanity’s obsession with halting change rather than understanding the reality and nature of it, as was argued in Chapter One in relation to enduring patterns of human domination and control. As Bergson argues, this way of thinking may be a natural

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107 This argument is made in relation to a critique of quantum mechanical theories of consciousness, similar to Zohar’s. Cohen and Stewart, *The Collapse of Chaos*, pp. 425-427.
108 Gare, Nihilism Inc., p. 314.
consequence of human consciousness.\textsuperscript{109} One can argue though that such a consequence is related to a level of consciousness that, in referring back to Wilber’s developmental holarchy, is more identified with childhood than maturity. Gare seeks to emphasize, from a more mature perspective, the primacy of active process to counter this way of thought. In this counter-movement, Gare also recognizes the problem of static concepts entering so-called process metaphysical schemes such as those that have been discussed in relation to theistic process thought. Gare’s Categories of Existence seek to avoid this tendency toward stasis while still acknowledging the superior position of process thinkers in general.

According to Leclerc, science in the twentieth century has seen a change in the conception of the physical existent no less radical than that in the seventeenth century. One can argue that this change has almost gone full circle from Aristotle’s notion of potentiality and actuality of substance with three main attributes of quantity, quality and relations, none of which were reducible to the other, to the Neoplatonic emphasis on qualities inherent in unchanging being, to Descartes’ extension and Newton’s matter as inert quantity, analyzable through mathematics, and now, to the realization that Aristotle was perhaps right in the first place. Relativity theory has shown that what science calls ‘matter’, is more accurately networks, or patterns of relations that are irreducible to either quantity, quality, or time and motion.\textsuperscript{110} Such relations are only comprehensible as active processes making the concept of matter redundant. As has been repeatedly argued though, these developments in science have had difficulty displacing previous concepts. It is only in process philosophy, one can argue, that the non-material concept of relations has been fully embraced, as is evident in Whitehead. The basis of Gare’s concept of the physical existent is therefore non-material in emphasizing active process and relations.

\textsuperscript{109} For this argument see Bergson, \textit{Creative Evolution} and Pete A.Y. Gunter, ‘Henri Bergson’: \textit{Founders of Constructive Postmodern Philosophy}, (State University of New York Press, Albany, 1993), Ch. 3.
\textsuperscript{110} Leclerc, \textit{The Philosophy of Nature}, Ch. 11.
Gare’s first Category of Existence is ‘process’:

A process can be defined as an ordering activity which is to some extent (although never entirely) an immanent cause of its own being (or more accurately, becoming), a self-ordering activity in which activity constrains itself and reproduces these constraints. So, to be in the primary sense is to be a process…, and everything else must be understood as a part of or as an aspect of some process or processes, or an aspect of the relationship between processes…A process is that which in Aristotle’s terminology has in it its own source of movement, or in Whitehead’s terminology, that ‘which constitutes its own becoming’…along with Whitehead I wish to stress both the durational nature of this becoming and interdependence of primary beings. But in opposition to Aristotle and Whitehead, the idea that primary beings must be actualized in some completed end is rejected. Rather, primary beings are identified with processes of becoming, whether such becoming completes itself in some definite end, or endures indefinitely, as protons well might.¹¹¹

The argument here is that order in the universe is constraining activity, or the activity of ordering, that consists of durational processes. There is no static, passive, inert matter as in mechanistic materialism. Processes of ordering are both partial causes of their own order and re-producers of order, meaning that they only exist in relationship to a hierarchy of other processes in which they are either constituent processes, or supervening processes. It is this relationship of constituent processes to supervening processes that makes emergence comprehensible. As Gare states:

What is involved in any causal relationship is always additional constraining of activity so that processes relating to other processes are different than processes not relating to these processes. Emergence and hierarchical ordering can then be seen as self-ordering activities coming to be or being involved in further ordering, that is, being further constrained, as parts of higher level processes which are the ordering activity creating and reproducing these, and other, constraints.¹¹²

¹¹¹ Gare, *Nihilism Inc.*: p. 315.
¹¹² Ibid, p. 316.
Emergence therefore is the activity of higher-level, or supervening processes, constraining other processes in such a way that they then constitute the supervening process and act to produce and reproduce these constraints. This is consistent with the concept of medium downward causation discussed earlier in the chapter. For Gare, emergence of order is therefore process, a durational concept that avoids the static implications of ‘primary being’, or ‘actual entity’. This though leads to the problem, identified by Aristotle, Liebniz and Whitehead, of enduring structure and its ontological status. ‘Structures’, for Gare, are: ‘Ordered potentialities for ordering produced and maintained by processes.’\textsuperscript{113}\textsuperscript{114} They are not completed matter but are continually in the process of actively maintaining their integrity, or actuality. The notion of potentiality is introduced here to emphasize that a structure, as a process of becoming, must be understood as the potential for realization as a particular structure and not a state. This is similar to Whitehead’s notion of an extensive continuum where antecedent actual entities become objects of data for concrescing actual entities. For Whitehead though, this potentiality is equated with a Platonic Form, or eternal object, that as data is ingredient in actual entities as influenced by God. In other words, the Form, as object for concrescing actual entities, determines the production and maintenance of a structure. For Gare though, potentiality exists in the relationship between real supervening and constituent processes rather than in problematic, atemporal objects and a distinction is made between ordering and structure to emphasize becoming over the realization of ends.

Structures, as ordered potentialities for ordering derived from ordering activity and processes of potential realization, has a broader application than for Whitehead who saw structures atomistically as compounds, or ‘societies’ of actual entities whose character is derived from actual entities. As Leclerc argues, this atomistic conception implies that ‘…no aggregate can have a character of its own transcending the individual characters of its constituents.’\textsuperscript{114} As has been argued though, emergence produces wholes with characters wholly different from those of their constituents. Gare differs with Whitehead then and agrees with Leclerc that compound actualities, as integrated wholes, can be considered

\textsuperscript{113} Ibid, p. 316  
\textsuperscript{114} Leclerc, The Philosophy of Nature, p. 131.
primary actual entities. Gare disagrees with Leclerc though and agrees with Earley, that Prigogine-style dissipative structures can also be considered primary actual entities.\textsuperscript{115} This avoids the problem of the unique features of individual organisms being reduced to their constituents, as in preformationism. It also gives real ontological status to cognitive structures that order action and experience, as well as higher-level environmental, contextual structures, such as human societies. This position is supported by Maturana and Varela’s theory of autopoietic systems, self-organizing systems that distinguish themselves by creating membranes that constrain the networks of their constituents. They argue that a living system is necessarily an autopoietic system and as such must be regarded as a unity. Such a unity is by their definition:

\begin{quote}
...a network of processes of production (transformation and destruction) of components that produces the components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it...as a concrete unity in the space in which they (the components) exist by specifying the topological domain of its realization as such a network.\textsuperscript{116}
\end{quote}

Any compound actuality that behaves as an autopoietic system therefore, must necessarily be a whole individual, irreducible to its components and ontologically prominent. The nature of such a system’s interrelatedness can be understood in terms of medium downward causation. This will be further addressed in relation to hierarchy theory.

Gare’s final Category of Existence is ‘events’. He describes ‘events’ as:

\begin{quote}
...the coming into being or the destruction of structures and processes, ‘decisions’ by processes to take one path of development rather than another, significant changes within or differentiated activities of processes, and contingent interactions between processes. Events must always be understood in relation to structures and processes, and it is not possible to completely analyze processes into events.
\end{quote}

\textsuperscript{115} Gare, \textit{Nihilism Inc.}, p. 168.
Regularities in the relationship between events should be seen in relation to structures and as manifestations of processes.\textsuperscript{117}

The nature of this concept will become evident in later discussions relating to phase transitions and the field of the ‘specious present’.

\textbf{The Categories of Explanation}

While Whitehead has twenty-seven categories of explanation, all concerned with explaining the various aspects of the concrescing of actual entities through the process of prehension, Gare presents a notion of causation more akin to Aristotle’s. Earlier in this Chapter, Aristotle’s four causes were identified as; the material cause, referring to the matter involved; the efficient cause, or exercise of power; the formal cause, or the form aimed at; and the final cause, or the reason for aiming at this form. If one is making a clay pot, for example, clay would be the material formed by your energy into a pot for the purpose of containing a plant. The mechanistic view from the seventeenth century on is the incoherent one that apriori formal, mathematical principles, or laws, determine that clay becomes pots. The process view, emphasizing causal relations rather than produced effects, seeks to re-introduce the agency of both efficient and final causation into processes. Gare particularly emphasizes immanent causation that is also emphasized in Buddhist notions of dependent co-origination, a concept that avoids problematic notions of apriori laws or Ultimate final causes of God’s determination. He states that:

Where the world is conceived of as a multiplicity of semi-autonomous self-producing processes, causation can best be seen to consist of, firstly, immanent causation (that is, self-creation) consisting of supervening causation whereby constituent processes or activities are constrained, and efficient causation or action on the rest of the world, and secondly, conditional causation (the production of the conditions of any process’s existence) which on the emergence of a process differentiates into environmental causation, the environmental conditions of a process – ultimately extending to the entire past of the universe, and

\textsuperscript{117} Gare, \textit{Nihilism Inc.}, p. 317.
material causation, the maintenance of the constituents of the process (although these are not always entirely separable).\textsuperscript{118}

To conceptualize this view of causation one must again assume a complete absence of order. With no pre-existing order, causal relations can be seen as emerging as order emerges, order that is at least partially self-causing, (dependent co-origination). Therefore, there is no linear notion of cause and effect as a fixed universal law of the universe acting on inert matter as in mechanistic materialism, or a pre-existing order as in theistic philosophy. The very notion of effect is a static one that is seen alternatively in Gare’s process terms as, active response, or appropriation by a process. In this, Gare is again at odds with Whitehead who, as Leclerc argues, turned the generally accepted notion of cause and effect upside down by seeing cause as having lost its activity as a past object and effect, as the activity of receiving data from a past actual entity.\textsuperscript{119} Alternatively, ‘Cause’, in Gare’s concept, is durational activity realizing potentialities, that is, perhaps, the dialogue of emergence between the immanent causation of the emergent process that constrains its constituents, as well as acts on its environment, and the conditional causation of the environment and its constituents, that act upon it. In this concept, causation as durational process must be understood as indivisible in that the final cause is already present in the beginning of an action. Any attempt to isolate discrete instants from a process is abstraction from the whole for which efficient causation acts. Causal relations must also be understood in relation to hierarchical orders, which brings one to the final categories of Ultimate Potentiality.

**The Categories of Ultimate Potentiality**

Gare’s concept of Ultimate Potentiality relates to spatio-temporal position as defined by process thought. As was discussed in Chapter One, space and time for the mechanistic view of those such as Newton, were seen as self-subsistent receptacles for matter. The position of matter could then be plotted as points of intersecting lines from fixed...

\[\text{\textsuperscript{118} Ibid, pp. 317-318.}\]
\[\text{\textsuperscript{119} Leclerc, } The Philosophy of Nature, p. 162.\]
coordinates. As has been pointed out though, this is both mathematical and geometric abstraction from space-time conceived by Einstein to be relational. In relational terms, ‘…position’ can be defined as the set of potential causal relations of an entity to all other entities, while ‘space-time’ can be conceived as emerging or becoming as an order of potential (and actual) relations between such positions.\textsuperscript{120} Again, if an absence of order is imagined, then space-time can be seen to emerge with the emergence of order, such order being a differentiation from the background of unordered activity. In this conception, the idea that time is a separate dimension of space is rejected. As Gare argues:

\begin{quote}
\ldots rather than space being an order of places external to each other, this is an order from which extended places emerge from a dynamic, flowing continuum as emergent processes differentiate themselves and achieve some degree of autonomy. Space-time can then be defined as an order of potentialities for independence (space) and interaction (time) which becomes or emerges from a process of becoming with the emergence of semi-autonomous sub-processes. It is the order of potentialities for co-existence and interaction between these emergent processes, or the structures and events associated with them, and is continually produced and reproduced with the becoming of both the supervening and the emergent processes. The past is what a process, structure or event, can be causally influenced by and the future is the realm of what it can causally affect.\textsuperscript{121}
\end{quote}

This relational view of space-time makes coherent the emergence of a multiplicity of spatio-temporal orders, or domains. In other words, there is no Absolute space-time that has exclusive relevance, but multiple spatio-temporal orders that are both, constituents of the supervening spatio-temporal order of the universe and themselves, constituents and supervening spatio-temporal orders relative to other spatio-temporal orders.

Thus while galaxies must be seen as co-existing and interacting within cosmic space-time, the nature and co-existence of stars can only be fully understood in

\textsuperscript{120}Arran Gare, \textit{Nihilism Inc.}, p. 319.
\textsuperscript{121}Ibid, p. 319.
In the following chapter, the ways in which these categories make sensible new developments and understandings in science since Whitehead’s time will be discussed as well as their implications for conceiving of health.

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FOUR

PROCESS METAPHYSICS, POSTMODERN SCIENCE AND HEALTH

Gare’s process metaphysical categories and their historical antecedents have now been broadly outlined. It is now necessary to discuss some current major influences and their implications for a process definition of health. Whereas all other metaphysical systems drew on the available scientific knowledge of their time, so Gare draws on what Best describes as postmodern science.¹ This is to be distinguished from nihilistic postmodern social theory such as Deconstructionism, and is more identified with Constructive Postmodernism, minus the problematic theism that dominates this field. Gare goes beyond relativity and quantum theory that were available to and influenced Whitehead, to more recent ideas in complexity, chaos, thermodynamic and hierarchy theory; ideas that were introduced in the previous Chapter in regard to evolution, such as Cohen and Stewart’s theory of complicity. Best summarizes the general themes of this new scientific paradigm:

In science, postmodernism emerges as a break from the mechanistic, objectivist and deterministic worldview of modern science. Advocates of postmodern science claim that the modern scientific paradigm – informed by Galileo, Bacon, Descartes and Newton – is giving way in the twentieth century to a new paradigm based on principles of indeterminacy, chaos and evolution. Like postmodern social theory, postmodern science sees modernity and modern reason as inherently repressive. Consequently, theorists of postmodern science define the new science as an ecological science that seeks a

‘reenchantment of nature’. Postmodern science rejects the crippling dualistic outlook of modern thought; instead it sees nature, human beings, and the relation between human beings and nature in holistic terms.  

Like Whitehead and Leclerc, Gare’s concern is to provide a metaphysical scheme that accounts for and makes coherent new knowledge derived from science, a project that provides the necessary complement to Buddhist metaphysics, discussed earlier. By grounding his epistemology in dialectics, as was discussed at the beginning of the Chapter, Gare sees metaphysical categories themselves as subject to change in relation to humanity’s debates over changes in the knowledge base. That is why Gare’s metaphysical scheme firstly seeks to account for change in his emphasis on activity, potentiality and process. This, then, becomes the basis for the continual formulation and re-formulation of narratives and metaphors that underpin human action. In what ways then do Gare’s categories account for the ‘new developments’ in science?

From Physics to Ecology

Firstly, there is the idea suggested by Best that the new science is an ecological science. Both Leclerc and Ferré argue from a Whiteheadian perspective that ecology must replace physics as the basis for science. The non-materialist understanding advanced by Liebniz, Schelling, Whitehead and Abe, that the universe is not composed of bits of matter but relational processes, means that physics, which has dominated science as the study of matter, is no longer as relevant. For Ferré, ecology:

…is the science of relations. It studies relations between organisms and other organisms, as well as between organisms and their inorganic settings. Its central subject matter is systems, and systems of systems. It uses modern tools of analysis; it is in no way backward-looking when it comes to utilizing the advances of modernity in chemistry or physics or mathematics; but these tools are put to work in the interest of understanding whole systems in their complex networks of mutual influence.

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2 Ibid, p. 189.
He further argues that ecology as a science is not value-free, that it recognizes natural final causation while not confusing teleology with pre-modern notions of purpose and that it breaks through the modern alienation between what is known and the human knower. It reverses the trend to ever-increasing specialization being ‘…essentially interdisciplinary, team-dependent, and long-term.’\(^4\) Similarly, Gare sees ecology as the science of the future. Particularly human ecology which he describes as ‘…the discipline charged with comprehending the relationship between the dynamics of societies and the rest of nature.’\(^5\) Ecology though, like other scientific disciplines, has aspects to it that he identifies as tending toward reductionism, such as the two main strands that have emerged being the ‘process-functionalist approach’ and ‘population-community approach’. The first, he argues, ‘…led to a form of systems theory which abstracts from the complexity of interacting species, the heterogeneity of populations and the complexities of competition and symbiosis, mutualism and predation. The second led via a fusion with the orthodox synthetic theory of evolution to socio-biology.’\(^6\) A better characterization of Gare’s position within ecology is that of Levins and Lewontin’s dialectical materialism from which they criticize both reductionism and what they term, ‘obscurantist holism’. Levins and Lewontin argue that:

> Unlike the idealist holism which sees the whole as the embodiment of some ideal organizing principle, dialectical materialism views the whole as a contingent structure in reciprocal interaction with its own parts and with the greater whole of which it is a part. Whole and part do not completely determine each other.\(^7\)

Gare’s categories then, in emphasizing relations, processes and contingency, can be understood as providing a metaphysical basis for developing ecology into the supervening

\(^4\) Ibid, p. 272.


science, a basis that provides for a non-reductionist complementarity between different strands and disciplines.

**Hierarchy Theory**

Following on from Gare’s Categories of Ultimate Potentiality, as well as Levins and Lewontin’s notion of the relationship of parts to wholes, Gare’s metaphysics can be seen to make coherent a theory that has developed within ecology, hierarchy theory. Explicit in Gare’s categories is the notion of supervening and constituent processes ordering a natural hierarchy. All existents are processes in causal relationships. All processes exist in particular spatio-temporal domains. Such spatio-temporal domains as processes can be characterized as having a certain scale (space) and rate (time). All of the particular spatio-temporal domains referred to previously by Gare, for example, have different scales and rates. Galaxies are bigger and slower than solar systems that are bigger and slower than geological processes on planets that are bigger and slower than human societies that are bigger and slower than micro-organisms. This understanding of hierarchical order, deriving from ecologists such as Allen and Starr, is consistent with Gare’s concept of order as constraint, a notion that also applies to medium downward causation and Varela’s concept of evolution as ‘natural drift’. In hierarchy theory, large, slow processes constrain small, fast ones. As Allen and Starr argue:

> Ordered systems are so, not because of what the components do, but rather because of what they are not allowed to do. The emergent properties of nerves are so full of positive achievement that it is hard to remember that they work only because of restrictions placed on the position and movement of sodium and potassium ions. It is what sodium and potassium in the nerve cannot do that supports the emergent property of nerve reaction.\(^8\)

Fundamental to this understanding of the relationship between spatio-temporal domains, or what Allen and Starr term ‘holons’, drawing on Arthur Koestler’s definition of biological

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entities with the dual tendencies of self-assertiveness and integration, is the nature of communication between holons. On a vertical hierarchical scale, the greater the distance between holons, the less influential on each other they become, or the less they communicate. In other words, the behaviour of the galaxy is largely irrelevant to human behaviour, as are quantum wave packets, due to massive asymmetry in their temporal organization, lending further weight to the irrelevance of much of both theistic and reductionist views. What are relevant are those levels in close proximity to humanity’s levels that provide the immediate context of our larger and slower environmental constraints, as well as the content of those smaller and faster levels that humanity constrains. Immanent and conditional causation, therefore, relate to scale and rate, as does the ‘specious present’ where such concepts are experienced. Relevance, is in the communication of signals that indicate human action, such as thunder signaling the presence of lightning, indicating that it might be advisable to go indoors, or nausea and vomiting, indicating the presence of harmful bacteria in the stomach. It is on this basis, one can argue, that humanity’s immediate perception of the world should be understood, rather than through notions of panpsychism. Signals from holons are not directly prehended, but pass through scale filters such that reception, at the human level, is not to be identified with the transmission, and vice versa. As Allen and Starr argue:

When we study holons scaled very differently from ourselves, something is lost in translation to the human scale. When using a microscope, it is hard to remember that a Paramecium does not see a bacterium with light-sensitive senses any better than do microscopists. We detect readily only ecological phenomena that work in a time-scale with a lower limit of seconds and an upper limit of about three score years and ten, and at most the generation time of long-lived trees.9

As Ahl and Allen argue, this view focuses on the observer/observed interface and ‘…gives insights into a new class of solutions based on the pragmatic assessment of the limits of understanding rather than on ritual or tight control within a limited problem domain.’10

Gare argues that such a notion of hierarchy is not to be construed as negative, nor should it be confused with views of evolution, such as were discussed in Chapter One, that sees large powerful structures reducing smaller ones to instruments for their domination and control. Hierarchy theory is concerned with that which is essential to life flourishing. As Gare argues:

…the higher levels of a dissipative structure are associated with slower rates. They act as constraints on lower levels not by reducing lower levels to instruments of the higher levels, but by limiting the possibilities open to the lower levels. In ecosystems, far from this being domination of the lower levels, such limitations enable external environmental factors to be incorporated to provide environments more favourable to the flourishing of life. The emergence of these higher-level processes with slower rates creates new environmental niches which provide the conditions for the emergence of new organisms, that is, processes characterized by faster rates. That is, there tends to be co-evolution of processes with slower and faster rates.11

Such co-evolution requires relationships of connectedness that provide the necessary stability in constraining levels. If a system is strongly connected in many dimensions, then change will occur at a pace too fast for constraining signals to have an effect. A good example is the accelerating growth of the internet before governments could impose any form of legal constraint on content. Alternatively, an underconnected system may be too fragmented for constraining signals to have any unifying effect. An example would be the impact of central governments on widely separated, remote outback stations. In both cases, systems become unstable. Overconnected systems, if not corrected, will eventually fail catastrophically, while underconnected systems may dissolve through disconnection. Stability in systems then, requires a balanced level of connectedness, where change can occur within appropriate constraints. This balance can be understood in terms of the capacity relationships have for facilitating the flourishing of life, a capacity that gives such

11 Gare, ‘Is It Possible to Create an Ecologically Sustainable World Order’, p. 284.
relationships a relatively superior quality. Such a quality, in Allen and Starr’s view on evolution, may be understood as being anticipated by organisms, a point that will be discussed further in Chapter Five in relation to intentionality.\textsuperscript{12}

The superior nature of this quality can be related to the evolutionary dynamics of what Goodwin terms, ‘life at the edge of chaos’. In his ‘science of qualities’, Goodwin explores a perspective on biology that sees relational fields as primary and the study of whole organisms as the key to understanding such fields. Fundamental, in Goodwin’s view, is an understanding of how patterns of order emerge spontaneously from the complex, chaotic dynamics of life. He argues that novelty emerges from oscillations between order and chaos, or rest and play, in which symmetries are broken and new patterns of order created. Such oscillations can also be understood as relationships with a quality for facilitating the flourishing of life. Goodwin argues that:

For complex nonlinear dynamic systems with rich networks of interacting elements, there is an attractor that lies between one region of chaotic behaviour and one that is “frozen” in the ordered regime, with little spontaneous activity. Any such system, be it a developing organism, a brain, an insect colony, or an ecosystem, will tend to settle dynamically at the edge of chaos. If it moves into the chaotic region, it will come out again of its own accord; if it strays too far into the ordered regime, it will tend to “melt” back into dynamic fluidity where there is rich but labile order.\textsuperscript{13}

Order in the universe then is constituted by a hierarchically organized multiplicity of oscillating spatio-temporal orders with varying intensities of communicative relations depending largely on proximity. In referring to dissipative structure, Gare introduces non-linear, or far-from-equilibrium thermodynamics into the hierarchy. Living systems are then, spatio-temporally ordered, dissipative structures. That is, processes of ordered potentiality for ordering negative entropy into entropy in far-from-equilibrium conditions. Structures, as such ordered potentialities for ordering can then be seen to both emerge from disorder, as well as generating disorder at the edge of chaos, giving indeterminacy to future

\textsuperscript{12} Allen and Starr, \textit{Hierarchy}, Ch. 11.
processes. This is the basis of chaos theory where the initial conditions of living systems are too complex to be determined, therefore making prediction problematic. Such systems are open, and as was discussed earlier in the chapter, continue to evolve away from their initial conditions. In terms of complexity theory, this means that both the initial conditions of an evolving living system and its future are ‘fuzzy’. To use an analogy, a living system’s lens is able to focus within a range in close proximity to its spatio-temporal domain. Beyond that, everything begins to go out of focus. Each lived experience in the field of the ‘specious present’ has this character as the distant future and receding past become fuzzier. Of course, humanity has extended its lens somewhat with technology, but ultimately such devices will discover greater complexity with receding relevance. The further implication here is that what is always out of focus and chaotic for living systems, is the future. As ordered potentialities for ordering though, living systems generate both order and chaos, making them autopoietic systems, and as such, are able to influence the future.

Process and the Nature of Humanity

This conception of the universe and life as co-evolutionary, emergent processes, makes coherent Gare’s ontological view of humanity as self-creative participants in the becoming of nature and society. He contends that:

…humanity must be understood as an emergent process or complex of processes within nature, as part of the biosphere, the complex of dissipative structures which has emerged in the thermodynamically far from equilibrium situation maintained on earth by the sun. Living entities are processes which define their environments as their worlds, worlds in which they are then sensuously engaged – attracted and repulsed by it, taking it in, incorporating it and excreting it, transforming it and being transformed by it. This characterizes both human individuals and human societies.\(^1^4\)

This view of Gare has influences and implications, not only in the natural sciences, but also in the human, or social sciences. The most important of these, as Best also argues, is the

\(^1^4\) Arran Gare, *Nihilism Inc.*, pp. 350-351.
The rejection of the ‘...dualism between the objective ‘explanation’ of the natural sciences and the subjective ‘understanding’ or interpretation of the social sciences, and their awareness of the hermeneutical nature of all intellectual activity.’ This development can be understood through Gare’s concept of humanity as self-creative participants in the becoming of nature and society and as existing within particular, shared spatio-temporal domains, as being a recognition of what forms of knowledge perception and communication are relevant to our level of understanding. Humans, as social organisms, have a shared means of perceiving the world, the contents of which are expressed through signs, the truth of which are determined through evaluating interpretations through a dialectical process. This applies equally, ontologically, to two scientists interpreting the image from an electron microscope and two friends discussing the merits of a motion picture. This is because, in Gare’s conception, as in Whitehead’s and Abe’s, ontological primacy is given to our immediate engagement, or relationship with the world, rather than to abstractions that mediate such relationships which must be seen as derivative abstractions such as language.

An important influence in the development of this idea is Maurice Merleau-Ponty and his argument from phenomenological psychology for the primacy of perception. He argues that perception is not an intellectual synthesis that interprets, deciphers, or orders sensible matter according to an ideal law that a subject’s consciousness possesses. It is, rather, the activity of the direct ‘grasping’ of the real world through our body’s relationship to the world, from which, an intellectual synthesis is derived. According to Merleau-Ponty:

> We observe at once that it is impossible, as has often been said, to decompose a perception, to make it into a collection of sensations, because in it the whole is prior to the parts – and this whole is not an ideal whole. The meaning which I ultimately discover is not of the conceptual order. If it were a concept, the question would be how I can recognize it in the sense data, and it would be necessary for me to interpose between the concept and the sense data certain intermediaries, and then other intermediaries between these intermediaries, and so on. It is necessary that meaning and signs, the form and matter of perception, be related

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15 Steven Best, *Chaos and Entropy*, p. 203.
from the beginning and that, as we say, the matter of perception be “pregnant with its form”.16

The nature of embodied immediate experience, developed by Merleau-Ponty, is also the basis of Lakoff and Johnson’s work in second-generation, cognitive science that was introduced in the previous chapter. In this view, emphasizing embodiment, language can be understood to be derived from direct perception of the world, through the sensori-motor system. The content of such perceptions are then expressed largely as metaphors, relating to perception of movement, such as ‘up’, ‘down’, ‘forward’, ‘back’. Human language is therefore structured by and bound to, embodied experience, rather than any disembodied, atemporal or ahistorical realm. Lakoff and Johnson provide a good example, in relation to causation, of how derivative abstractions in science are often at odds with such embodied perception:

One important thing that cognitive science has revealed clearly is that we have multiple conceptual means for understanding and thinking about situations. What we take as “true” depends on how we conceptualize the situation at hand. From the perspective of our ordinary visual experience, the sun does rise; it does move up from behind the horizon. From the perspective of our scientific knowledge, it does not. Similarly, when we lift an object, we experience ourselves exerting a force to overcome a force pulling the object down. From the standpoint of our basic-level experience, the force of gravity does exist, no matter what the general theory of relativity says. But if we are physicists concerned with calculating how light will move in the presence of a large mass, then it is advantageous to take the perspective of general relativity, in which there is no gravitational force.17

The unbroken wholeness of embodied consciousness, particularly at the primary perception level, described phenomenologically by both Merleau-Ponty and Lakoff and Johnson, cannot be accounted for in mechanistic terms that see such a unity as consisting of separate, interacting parts. Consciousness can only begin to be understood in Gare’s process terms,

17 Lakoff and Johnson, Philosophy in the Flesh, pp. 231-232.
as an emergent whole that is a supervening process constrained by higher level processes. This concept is supported by the work of those such as Ricoeur who stress the primacy of narrative as the language structure that has a reciprocal relationship to temporality.\textsuperscript{18} In other words, human beings are story-tellers, whose consciousness is to be found, not in the individual parts of language, but in their embodied experience expressed within the context of a narrative plot. Movement related metaphors such as ‘up’ and ‘back’, for example, are meaningless unless understood within the context of sentences such as; ‘I am going up to the shop to bring back some bread.’ Such a narrative plot is understood, in Ricoeur’s terms as being ‘within time’, another metaphor suggesting containment. Contained within the ‘going to the shop’ narrative is a time-frame based on previous experience of how long it takes to go to the shop and back. If the person does not return from the shop within that time-frame, they have, perhaps, ‘lost the plot’.

This implies though that there is someone else who was told the story, understood the plot, and shared the temporal expectation. Here one must return to the primacy of relations and the reciprocity that this entails. A story cannot exist unless there is someone else to tell it to, whether physically present or not. The independent existence of language and its parts, suggested by mechanistic approaches, is therefore absurd. Language exists and is comprehensible to human beings at the supervening level of narrative that is a constituent of cultural processes that are derivative of dialectical relations. As Honneth argues, such dialectical relations are essential to human self-realization, or, ‘…the process of realizing, without coercion, one’s self-chosen life-goals.’\textsuperscript{19} Interpreting Hegel’s dialectic of recognition, Honneth emphasizes the intersubjective nature of ego formation. He argues that:

The connection between the experience of recognition and one’s relation-to-self stems from the intersubjective structure of personal identity. The only way in which individuals are constituted as persons is by learning to refer to themselves, from the perspective of an


approvers of encouraging others, as beings with certain positive traits and abilities. The scope of such traits – and hence the extent of one’s positive relation-to-self – increases with each new form of recognition that individuals are able to apply to themselves as subjects. In this way, the prospect of basic self-confidence is inherent in the experience of love; the prospect of self-respect, in the prospect of legal recognition; and finally the prospect of self-esteem, in the experience of solidarity. 20

Recognition, for Honneth, is the basis for humanity’s ongoing struggle for freedom. The intersubjective nature of this struggle though, reveals freedom, not as the unconstrained, autonomous Kantian self, armed with a universal morality and free of external influence, but conditioned by constraints of various intersubjective, spatio-temporal levels of processes, both internal and external.

The ‘ethical life’ then, for Honneth, is achieved through internal processes of positive self-formation and the external constraints that are the intersubjective conditions for such formation. Such an ‘ethical life’ reveals process thought that has emerged in individuals with positive self-formation within intersubjective conditions, enabling transcendence of more ego-centred relations. As is evident in the history of process thought, this is not necessarily characteristic of any one historical period. This relation-centred view is only comprehensible through Gare’s process metaphysics that sees a hierarchy of processes in multiple spatio-temporal domains in which there is both immanent and conditional causation. Narrative, language and morality then, can be understood as having emerged with culture from the evolving relationships of human beings who are partially autonomous ordered potentialities for ordering.

This conception of language and reciprocity refers back to Hegel’s three dialectics of culture, referred to earlier; these being labour, representation and recognition. Gare re-formulates Hegel’s dialectics in to dialectical patterns of power, orientation and recognition. In this formulation, power refers to the capacity to order and the ordering of the flow-through of usable energy and materials by complex dissipative structures, that are

human beings and their various social structures. Orientation refers to the ways in which
human beings orient themselves to the world by communicating through systems of signs,
each in relation to particular spatio-temporal domains, as has just been discussed in relation
to narratives. Recognition refers to the process of individuation and the dependence of this
process on the recognition and affirmation of others. An anti-reductionist analysis of
humanity therefore, requires situating humanity in relation to all three. This applies to
methodology within disciplines understood as autopoietic systems and so cannot be
satisfied with the mere aggregation of disciplines as monological atoms, as is typified by
the biopsychosocial model of health discussed in Chapter One. The claims of various
atomic disciplines to epistemological closure can therefore be understood as the incoherent
‘grasping’ for recognition from a monological perspective that denies reciprocity.  
Alternatively, Gare argues that:

…dialectical activity carries with it the possibility of critical reflection and transcendence.
To be participating in these dialectical patterns is to be at least provisionally committing
oneself to certain evaluative stances within these patterns, and to be at least tacitly aware
that such stances are incompatible with other possible stances, and that one’s own stance is
therefore questionable. So as Hegel saw, the dialectic of representation carries with it the
tendency for people to transcend limited, one-sided forms of thinking and replace them with
forms of thinking which come nearer to grasping the whole in its complex diversity, the
dialectic of recognition tends to reciprocity, carrying with it a tendency to generate social
relations which extend recognition and respect to more and more people, and the dialectic
of labour tends to generate more effective technologies and organizations.

In articulating the nature of these processes, he argues that:

These patterns are dialectical because they are based on people as conscious agents creating
themselves. As such, they cannot be understood simply in terms of individuals, nor as
emergent processes transcending individuals, but must be understood as processes through

21 A good argument for complexity making hopeless the attempts at epistemological closure by particular
disciplines, can be found in C. Dyke, ‘Complexity and Closure’: Evolution at a Crossroads: The New Biology
pp. 97-131.
22 Gare, Nihilism Inc., pp. 354-355.
which individuals emerge to become semi-autonomous participants in the on-going creative becoming of these patterns, which are semi-autonomous from these individuals. Furthermore, individuals are struggling for goals which are neither final ends nor simply potentialities for achieving these, but are simultaneously both ends desired and potentialities for pursuing further ends. Orientation, recognition and power thus have, as Derrida has noted in relation to desire in general, a deferred quality; it is never possible to actually achieve these as final states, as final resting points.\textsuperscript{23}

**Dialectics, the Quality of Relationships and Health**

This last point has important implications for any process definition of health that sees states as abstractions from the reality of process. More importantly though, at this time, is the understanding gained from such a dialectical approach of the complexity of human health and the possibilities for its analysis, or adequate definition. Gare’s metaphysics reveal that no particular discipline or profession is privileged in the epistemology of health. Ecology, particularly human ecology as Gare conceives it as the science of relations, is privileged ontologically as a supervening science that constrains other disciplines to a humanly relevant and coherent level of understanding; that being the dialectic. All human endeavor in gaining knowledge then is primarily a conversation, whether it be physics, sociology or literature studies. In MacIntyre’s terms, it is the comparative evaluations of narrative traditions.\textsuperscript{24} The implication here is that the privileging of biomedicine and perhaps sociology and psychology, particularly in their reductionist forms, as having exclusive access to the truth of human health is wrong. Human health is primarily about humanly relevant relationships and the quality of those relationships. All means for acquiring knowledge that enhances the quality of relationships, and therefore health, are valid. What are not valid, are means that serve to undermine relationships, such as the privileging of particular disciplines at the expense of others.

\textsuperscript{23} Ibid, p. 354.
\textsuperscript{24} This argument is in Alisdair MacIntyre, ‘Epistemological Crises, Dramatic Narrative and the Philosophy of Science’, *Monist*, 60, (1977), pp. 453-472.
It is in the sense of improving the quality of relationships that Gare sees possibilities for cultural development, rather than just through technological innovation. Such development requires moving away from the obsession with controlling the energy flows of the world through power relations, a reduction predominant in Neoliberalism, and giving equal weight to the dialectics of both recognition and orientation. He argues that:

These...two dialectical patterns are at least as important as the dialectic of labour in human history. It is through the ability of humans to achieve a reciprocity of recognition and to establish their identities through this that complex forms of cooperative organization and enduring institutions are possible, and because such identities require reciprocal recognition, there has been an impetus through history for the recognition to become more adequate. That is, the dialectic of recognition has engendered the quest for and provided the impetus to achieve justice, and the advance of justice has made possible more complex forms of human enterprise.\(^{25}\)

The facilitation of such development though will involve both immanent and conditional causation at humanly relevant spatio-temporal levels that acknowledges natural and ethical constraints as well as takes responsibility for constituent processes. In other words, cultural development and human health are linked through the actions of partially autonomous human agents in creating and maintaining the conditions, both natural and cultural, in which a mutual self-realization can occur. Such actions will be expressed by human beings in the form of narratives in which individuals, communities, nations and global citizens can situate themselves. Such narratives can be understood as constituent of and constrained by, a supervening narrative stemming from the process tradition of thought. Therefore, the mechanistic materialist world-view must be rejected as one that seeks to undermine justice, and therefore health, through creating the conditions in which natural and ethical constraints are obliterated, and constituent processes abused, in the pursuit and preservation of power by a few, made possible by the non-reciprocal relationship to the many as means toward these ends. In other words, process metaphysics underpins the advancement of human freedom and health through the improvement of the quality of relationships.

\(^{25}\) Gare, *Is it Possible to Create an Ecologically Sustainable World Order?* p. 287.
Mechanistic materialism destroys human freedom and health through the deterioration of the quality of relationships.

**HEALTH: Toward a Process Definition**

An attempt will now be made to apply process metaphysics to the formulation of a process definition of health. In seeking understanding at a metaphysical level, one can see that there are two major ontologies of relations pervading human history. The mechanistic materialist position where relationships are derivative of a primary reality of atomic, material substance, and the process position that sees structure as derivative of the primary reality of relational processes. The dominant mechanistic materialist position has underpinned the narrow definition of health through reductionist and mechanistic medical science. The incoherence of this narrow view with human experience has seen efforts to broaden the view by adding psychological and social concerns, hence the emergence of the biopsychosocial model. Such a model though is still consistent with mechanistic materialism, in that it is merely the addition of other privileged disciplines, hierarchically ordered below medical science. Each atomistically addresses its own concerns without acknowledging their interrelatedness. Each also, with its roots in Logical Positivism, privileges empirical and reductionist epistemology while denying any relevance to metaphysics. The consequence has been the disempowering of individuals and communities and the degradation of human’s own intuitive relationship to their health. In respect of health then, humanity as a whole are like children, or perhaps religious fundamentalists, subject to the dictates of a particular omniscient authority and as such are the means to preserving this authority. In other words, relationships are secondary to the reified mechanistic health science hegemony.

Cooper, Stevenson and Hale support this human degradation. They argue that:

…a biopsychosocial model reduces the person to constituent parts. Each of the parts is treated by particular professionals as, what Wittgenstein labelled, a ‘fixed language game’.
In a fixed language game, the rules of the game are re-constituted in playing the game.\textsuperscript{26} Wittgenstein’s notion of a fixed language game is better understood in process terms through Bakhtin’s concept of monologic narratives, or narratives from the perspective of a single, authoritarian and dogmatic voice that stifles other voices. These are narratives that do not seek dialogue.\textsuperscript{27} Alternatively, a process definition of health must be one that puts relationships first; relationships that have been shown to be ontologically dialogic, to use another of Bakhtin’s terms. Therefore, the abstractions that currently define health must be re-defined in relation to their impact on relations. What is being argued here is that health can be defined broadly and in process terms, as the development and maintenance of quality relationships, relationships with the capacity for facilitating the flourishing of life. The impact on health of emergent processes can then be evaluated as to whether they are causational in developing and maintaining quality relationships, or whether they are causational in degrading or destroying quality relationships.

Such causation is both immanent and conditional and relates to a multiplicity of spatio-temporal domains. Reciprocity is scale and rate mediated. In regard to human health, those spatio-temporal domains that are most relevant are those in closest proximity. This means that human beings relationship with the universe or the quantum vacuum is of little consequence and involves little reciprocity. Of greater relevance are more immediate relationships with the contextual processes of our environment, including our social world, ecosystems and biosphere as well as constituent processes of our internal systems. Communication between levels is filtered such that signals from constraining levels are speeded up and signals from constituent levels, slowed down. Reception and interpretation of signals is thus within the human domain and therefore expressed in human terms. Paradoxically, an understanding of hierarchy is therefore counter-intuitive and has only been made necessary, one can argue, through our increasing technological capability to intrude into other levels, or break through constraints. Such intrusions can now be understood as dysfunctional relationships of humanity’s making, through intentional

\textsuperscript{26} Cooper, Stevenson and Hale, \textit{Integrating Perspectives on Health}, p. 154.

perturbations of balances of connectedness. Such perturbations can also be understood as upsetting oscillations between order and chaos and retarding creativity.

**Requirements for Human Health**

In a style typical of the Public Health discourse, Wiesner lists what she considers the basic requirements for human health. These include a suitable diet, decent shelter, companionship, an adequate income and a healthy environment. These requirements, among some others, can also be found in the World Health Organization’s qualities of a healthy city, listed in Chapter One. A mechanistic materialist view treats each of these requirements as isolated components with knowledge of each being confined to particular specialized disciplines. A requirement such as companionship therefore becomes the concern of psychology, diet, the concern of nutritionists, shelter, the concern of engineering, income, the concern of economics and environment, a matter for the physical sciences. Overarching this would be medical science concerned with the provision of medical services for the already sick. This view reduces networks of interrelatedness and thus, complexity.

Alternatively, under a process definition of health, all of these separate requirements can be understood as conditioned by the quality of relationships. A healthy environment would then not be seen as an addition to the atomic list, but as the supervening processes that relate to humanity as environmental constraints; firstly, on nutrition, or our relationship to the context of agriculture and the content of the energy requirements of our constituent processes; secondly, shelter, or our relationship to structure and the requirements of our homeorhetic systems and the contextual potentialities of material and efficient causation; thirdly, income, or our relationship to the labour process and requirements for self-realization and finally, companionship, or our relationship to each other. The basic requirement for health can therefore be re-conceptualized as relationships of a quality that

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maintain integrity and develop complexity. Such relationships are understood as existing between autopoietic systems and as such are partially self-created.

Wiesner’s notion that health is a resource for life and not the object of living is therefore rejected. Health is an end in itself that is tied to the integrity, dignity and self-realization of a human life as a process in its entirety. Just as a narrative or a piece of music are indivisible, so is a life. Therefore, health, in this conceptualization, is not quantitatively measurable, but qualitatively interpretable. Also, as McGann argues, health ‘…is never static; it is either improving or declining.’ In thermodynamic terms, one is either becoming more complex or less. In regard to health in process terms though, complexity relates to quality of relationships. As physical complexity reduces in old age, for instance, or the quality of the relationship of the whole to its constituent processes deteriorates, complexity can still be developed and thus a contribution made to developing complexity, through developing the quality of other relationships. Examples would be participation in education, development of new friendships or the strengthening of family relationships. Death can also be seen as contributing to complexity, and therefore meaningful, by creating the conditions for the proliferation of new life, making the obsessive search for immortality a potential destroyer of complexity. With relations and complexity, health can also be linked to growth and the developmental psychology of those such as Wilber that requires the development of larger and wider networks of relationships.

**Defining the Healthy Person**

With this in mind, the question can now be asked; what makes a healthy person? From a process perspective two ideas become both relevant and complementary; a very old idea, Aristotle’s concept of the ‘mean’, and a new idea, Goodwin’s concept of ‘participation’. There is an old expression in regard to health that moderation in all things is the key, an expression that is often used by practitioners within the Fitness Industry. It is an expression though, one can argue, that seems to contradict the messages of personal achievement,

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growth and consumption associated with success in the current highly competitive Neoliberal world. However, through these particular concepts of Aristotle and Goodwin, this expression is given a strong philosophical basis.

Aristotle, in the ‘Nicomachean Ethics’, argues that virtue can be equated with what is intermediate between excess and defect. He argues that:

If it is thus, then, that every art does its work well – by looking to the intermediate and judging its works by this standard (so that we often say of good works of art that it is not possible either to take away or to add anything, implying that excess and defect destroy the goodness of works of art, while the mean preserves it; and good artists, as we say, look to this in their work), and if, further, virtue is more exact and better than any art, as nature also is, then virtue must have the quality of aiming at the intermediate.  

He further argues that:

Virtue, then, is a state of character concerned with choice, lying in a mean, i.e. the mean relative to us, this being determined by a rational principle, and by that principle by which the man of practical wisdom would determine it. Now it is a mean between two vices, that which depends on excess and that which depends on defect; and again it is a mean because the vices respectively fall short of or exceed what is right in both passions and actions, while virtue both finds and chooses that which is intermediate. Hence in respect of its substance and the definition which states its essence virtue is a mean, with regard to what is best and right an extreme.

A requirement for good health, in Aristotelian terms, is to be virtuous, or acting in a just and temperate manner. Being virtuous requires the act of choosing or aiming at the ‘mean’. For Aristotle, therefore, the ‘mean’, or intermediate position, is a positive, rational concept of the goal one should achieve; a goal that is the extreme of what is best and right. This is very different to the values of today’s Neoliberal capitalist world discussed in Chapter One.

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31 Ibid, Chapter 7, p. 959.
and the goals of the Fitness Industry discussed in Chapter Two. Conversely, these goals were shown to be aimed at excess, together with an acceptance of the natural necessity of its counterpart, deficiency, as evident in the maintaining of dichotomies such as hedonism and asceticism. In this world, one is morally justified in balancing hedonism with asceticism, or going from one extreme to another, such as going to the gym as a counter-balance to over-consumption. The demands of consumption driven capitalist economies require the exclusion of the intermediate as well as its disparagement.

Another point of Aristotle’s is that the ‘mean’ is relative to each human’s art and not absolute. Presumably based on his own intuition and the shared understandings within his own culture, Aristotle identifies the ‘mean’ as one of three dispositions (excess and deficiency being the other two that are vices) in relation to various arts and life situations. For example, in relation to money, liberality is the ‘mean’, prodigality excess and meanness, defect. In each situation in life, one must recognize and aim for the ‘mean’ based on one’s experience and using one’s practical wisdom. One can argue that in a mechanistic materialist world the notion of practical wisdom has little currency. The notion that one can develop an intuition of the ‘mean’ has no place in mechanistic science in that it is not some thing that is quantifiably objective. However, there is a framework in which Aristotle’s concept of the ‘mean’ can be considered scientific, that of Goodwin’s ‘science of qualities’.

Goodwin, in a similar vain to this thesis, is critical of the mechanistic development of science since Galileo that confines itself to those properties that can be measured and expressed in terms of mathematical relationships. This necessarily excludes the so-called secondary properties of experience, or qualia. However, as Goodwin argues, science is primarily not mechanistic and reductionist because it cannot exclude such properties from what is inherently a creative process. Therefore, the experience of qualia examined within

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32 Ibid, Chapter 8, p. 962.
33 The concept of a science of qualities is in Goodwin, How the Leopard Changed Its Spots, Chapter 7.
a science of qualities needs to complement analytical approaches.\textsuperscript{34} This has become clear to Goodwin from his investigations into complexity and his subsequent understanding of the non-linear, dynamic nature of emergence. This has given him an insight into the limitations of mechanistic and reductionist approaches.

An important insight of Goodwin’s, mentioned earlier, relates to emergence being the ordering of chaos at a level of interaction at which a phase transition takes place. In complexity theory, this phase transition, or attractor, is referred to as ‘the edge of chaos’.\textsuperscript{35} This is not a point but a field of relations in which patterns of oscillations, between order and chaos, emerge. Solé and Goodwin refer to examples of such oscillations in systems as diverse as heart beat rhythms and ant colonies. The heart beat example is particularly pertinent. Solé and Goodwin refer to studies involving non-linear analysis and complexity theory that reveal noticeable, unpredictable irregularities within inter-beat intervals in children and ‘healthy’ adults. In contrast, those with heart disease or at advanced ages have much more ordered patterns within narrow frequency ranges.\textsuperscript{36} From this, Solé and Goodwin conclude that:

The analysis reveals the presence of long-range correlations in heart dynamics that appear to be an emergent property of complex physiology. The resulting balance or coherence is subtle, but it means that the heart avoids getting locked into any dominant frequency that might prevail under particular patterns of the individual’s behaviour. The different influences that act on the heart operate over many different time scales: millisecond intervals from neural impulses, which include emotional changes; seconds from respiratory demands; minutes from hormonal signals; hours from behaviour patterns such as sleeping or sitting or walking; daily rhythms…; monthly hormonal patterns; and annual changes of season and habit. The heart rate can get locked into any one of these that happens to

\textsuperscript{34} This is in a paper by Goodwin that further develops the science of qualities concept. Brian Goodwin, ‘From Control to Participation Via a Science of Qualities’, \textit{Control to Participation} (Schumacher College, 1999), <file://C:\WINDOWS\Temporary%20Internet%20Files\Content.IE5:6JDTPZIM\particip.htm>, (3 May 2002), pp. 1-10.

\textsuperscript{35} Goodwin, \textit{How the Leopard Changed Its Spots}, p. 183.

\textsuperscript{36} This is in Ricard Solé and Brian Goodwin, \textit{Signs of Life: How Complexity Pervades Biology}, (Basic Books, New York, 2000), pp. 109-117.
For Solé and Goodwin, using the predominant scientific language of weak downward causation, ‘the edge of chaos’ is an attractor that they otherwise refer to as health. However, in process terms, it can be understood as a constraint on all living, dissipative, autopoietic processes, within a multitude of spatio-temporal domains. A constraint that enables such processes to maintain integrity in the face of uncertainty. There is another term that can be applied to ‘the edge of chaos’ though; that is, the ‘mean’. ‘The edge of chaos’ can be understood within the human spatio-temporal domain as the intermediate position between excess and defect that maintains the moral integrity of human beings in the face of uncertainty. The healthy development of a human being is one that leads to such moral integrity. Therefore, through the modern tools of complexity research, Goodwin can be understood to be complementing the profound intuitive insights of Aristotle. Further to this, the argument can be made that it is at ‘the edge of chaos’ that quality relationships are created that enable a system to be both, partially autonomous and open to novel relational pathways, creating a complementary link between Aristotle, Solé and Goodwin and a process definition of health.

The study of complexity leads Goodwin to further argue:

Now that we have learned just how subtle nature is in its principles of creative emergence, a reasonable strategy is to learn to be equally subtle in our engagement with natural processes. This implies that we cultivate not just our analytic intellects in understanding the intelligible aspects of nature; but that we cultivate also our intuitions as the vehicles of understanding and participating in the emergent creativity of natural processes, which include our own creativity.\textsuperscript{38}

Goodwin is critical of the goal of mechanistic science to control and manipulate nature. Such a view reveals either ignorance of or a disregard for complexity and creative

\textsuperscript{37} Ibid, p. 116.
\textsuperscript{38} Goodwin, \textit{From Control to Participation Via a Science of Qualities}, p. 8.
emergence. According to Goodwin an ‘…exploitative, manipulative attitude to nature makes us sick and alienated from our ecological roots, just as an exploitative, manipulative attitude to other people makes us sick in our human relationships.’\(^3^9\) In other words, seeking to control nature results in a deterioration in the quality of relationships leading to, either, the over-constraining of relational pathways (too much order), or chaos. Alternatively, Goodwin argues that an understanding of complexity and creative emergence makes appropriate participation in nature the goal. An understanding of the interrelated nature of processes carries with it a responsibility not to upset the delicate balance of interrelationships in other systems through our own interactions, such as breaking through constraints. This is developed through complementing one’s understanding of the nature of other spatio-temporal domains with the experience of one’s own domain. Participation, therefore, can be understood in terms of a process definition of health, as an intermediate position within one’s spatio-temporal domain that is both respectful of and responsible toward constraining and constituent processes.

Participation can now also be understood as the ‘mean’, with control being excess and perhaps indifference, being defect. A healthy person can be defined, therefore, as one who participates in nature, rather than seeks to control it or is indifferent to it. The conditions for participation are found at ‘the edge of chaos’ where quality relationships are created, relationships that maintain integrity in the face of uncertainty. If one wants to be healthy, one must aim at the ‘mean’.

**Integrating Process, Holism and Personhood**

Finally, it is a broad definition such as this process definition of health, from a metaphysical level and within a metaphysical tradition, that must underpin the numerous efforts to make the understanding and practice of health, ‘holistic’. Cooper, Stevenson and Hale, for example, seek to ground the integration of the biopsychosocial model in a notion of ‘holism’ that they describe as, the context in which ‘personhood’ emerges, an emergent

\(^3^9\) Ibid, p. 8.
whole that is’…the totality of a person’s being, embedded in his or her social world.\textsuperscript{40} In Bakhtin’s terms, integration requires dialogical relations that pertain to polyphonic narratives, or narratives that allow many voices. The integration of the biopsychosocial model then can only be achieved within conditions that allow many stories to participate equally. The establishment of conditions for participation require more than ambiguous notions of ‘holism’, they require action from within a unified metaphysical system of thought that can underpin the formation of alternative socio-political institutions that condition such dialogic relations.

For Cooper, Stevenson and Hale, their process perspective is implicit. However, like most social scientists, they shy away from the language of metaphysics. In doing this, they fail to appreciate that their notion of ‘personhood’ is only made coherent through the tradition of process thought. The mechanistic and atomistic ontology that underpins the biopsychosocial model conditions the conception of human beings as fully determined and thus predictable reflections of distinct aspects of the world. This then provides the conditions for intradisciplinary objectification, vivisection and manipulation of human beings. Alternatively, process metaphysics underpins an ontology of processes, potentialities and relations that identifies ‘personhood’ with the concept of humans as ordered potentialities for ordering, as autopoietic, culturally constituted creative agents participating within nature. Human health, from this perspective, becomes a process involving immanent and conditional causation in which the integrity of the whole is maintained through the recognition and maintenance of natural constraining processes and the active creation and recognition of social constraining processes, as well as a recognition and responsibility toward the integrity of constituent processes and each other. Therefore, adopting a process definition of health can improve the quality of relations such that a unified process perspective can be articulated that in turn, improves human health.

Later in this thesis, this process definition of health will be further developed by examining the metaphysical basis of the particular disciplines of science that underpin both the physical inactivity related Public Health field and the Fitness Industry; these being exercise

\textsuperscript{40} Cooper, Stevenson and Hale: \textit{Integrating Perspectives on Health}, p. 154.
science, nutritional science and sport psychology and sociology. The argument will be that these disciplines are subsumed by the epistemological dominance of mechanistic science and Logical Empiricism underpinned by mechanistic materialism. In the next chapter, a process epistemology will be developed and contrasted with Logical Empiricism leading to a re-evaluation of notions of truth and knowing. The various scientific claims to truth and knowledge that underpin Public Health programs and the practices of the Fitness Industry can then be evaluated.
FIVE

EPISTEMOLOGICAL IMPLICATIONS OF PROCESS METAPHYSICS

The process metaphysics articulated in Chapter Three has strong implications for theories of knowledge and truth. The ‘groundless ground’ of non-theistic process metaphysics provides a basis for conceiving an open, indeterminate universe, one in which novelty continually emerges so long as far-from-equilibrium thermodynamic conditions exist. Within this conception, life cycles can be conceived, using Gare’s metaphor, as multiple spatio-temporal levels of interrelated spirals rather than autonomous closed loops. Within this conception structures are ordered potentialities for ordering in processes of becoming rather than completed objects. It is from within an active complex of interrelated processes that living structures such as human beings seek to order their spatio-temporal domain. It is from this process of ordering that knowledge emerges that conditions our present and future actions. It is in this sense in relation to hierarchy theory that knowledge itself can be understood as an emergent structure that constrains the activity of knowers. However, it is a structure that needs to be understood as being always embodied and situated within contexts that embodied knowers are trying to grasp. Knowing, therefore, is better understood in process terms as situated understanding that is primarily the embodied, dynamic activity of situated knowers endeavouring to make sense of multiple patterns of relations. As has been argued in relation to Gare and concepts of dependent co-origination, this is understood as a creative process as the co-dependent processes of ordering condition anticipations of an indeterminate future.

Process metaphysics gives coherence to those theories that see knowledge as being continually generated while revealing as problematic those theories that see knowledge as fixed. Dynamic concepts of knowledge generation then reveal its embodied, situated nature
in contrast to theories of disembodied, absolute and atemporal knowledge. Another implication is that metaphysics constrains epistemology. It is no accident that a metaphysical system has been articulated prior to discussing epistemology in this thesis. Theories of knowledge imply concepts of primary existence and one cannot exist without the other, a point that is too often ignored or denied. As Gare argues:

The problem with most theories of knowledge is that they presuppose and assume the validity of a particular metaphysical theory. They do this not only by the criteria they present for judging the validity of claims to knowledge, but also by the very conception of knowledge they take for granted. This tendency arises from the nature of metaphysical systems which must be total perspectives on the world and must therefore include theories of knowledge as part of their domain. Theories of knowledge therefore must be able to be explained by the metaphysical systems which are legitimated by them.¹

A process metaphysical system seeks to dissolve dichotomies by revealing the ontological nature of interrelatedness. This then gives coherence to those theories of knowledge that also seek to dissolve dichotomies within epistemology and propose alternative middle ways. For Bernstein, dichotomies are only intelligible if one implicitly accepts some version of Cartesianism, what he terms the ‘Cartesian Anxiety’, the ‘…belief that there are or must be some fixed, permanent constraints to which we can appeal and which are secure and stable…’² It is this ontological anxiety and its effect in producing either/or positions that needs to be exorcised. Within a process perspective, those thinkers are identified who seek to go beyond traditional dichotomies by revealing in their own ways their generative and derivative nature. As Gare argues, the concern here is not ‘…to specify the eternal criteria for what is to count as knowledge and valid inference, …but to address the more fundamental issue of what knowledge is…’³ In other words, knowledge cannot be the starting point of epistemological inquiry but a structure that emerges from creative processes. In agreement with Gare, the concept that will be argued for in this chapter that

¹ Gare, Nihilism Inc., p. 284.
³ Gare, Nihilism Inc., p. 285.
best characterizes the general process that creates the conditions for knowledge to emerge, is that of dialectics. Gare defines dialectics in the following:

Dialectics first and foremost implies dialogue, although it also implies other things, notably the absence of any element of experience, knowledge or reasoning which can be taken as the absolute foundation on which all knowledge is built or in terms of which it can be judged. It implies that the advance of understanding can only be achieved through the critical examination, confrontation and appreciation of the different points of view of people who are engaged in the world trying to make sense of it without any absolute reference points. Dialectics is opposed to both the attempt to reduce the development of knowledge to the mechanical application of a method and to relativism, since both of these exclude dialogue – methodologism by denying the assumptions underlying any method, and relativism by denying the possibility of mediating between ways of thinking and living based on different assumptions.  

What will be defended in this chapter, therefore, is the position of Gare and other process thinkers that the generation of knowledge within individuals and different fields is primarily dialectic in nature, a position made coherent by process metaphysics. This will be shown subsequently to have important ramifications for how knowledge and truth are understood both in Public Health and the Fitness Industry.

**Truth and Mechanistic Science**

In relation to the notion of truth, it was revealed in Chapter One how the epistemology that emerged with mechanistic materialist metaphysics insisted on authentic knowing having the character of certainty, necessity, universality, perfection and timelessness. The history of mechanistic materialism can therefore be seen as having been punctuated by several supposed breakthroughs toward achieving this ideal. This has underpinned changes through history in how the meaning of truth has been interpreted. If one traces the etymology of the word ‘truth’, its roots can be found prior to the fourteenth century in

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qualitative concepts of a person’s character and their propensity for faithfulness, loyalty, fidelity, constancy, allegiance and integrity. The word ‘troth’ is an important link here that sees truth interpreted as an asseveration of the above qualities. It is after the fourteenth century that more references begin to appear interpreting truth as conformity with fact, reality, accuracy, certainty, actual existence and agreement with a standard or rule.\(^5\) This coincides with the development and emerging dominance of scientific thought, particularly from the Renaissance on that emphasized the undeniable proofs of mathematical quantification. This development has already been traced back to the Ancient Greeks, through the Middle Ages and up to the Renaissance and Enlightenment emphasizing the impact of such figures as Plato and Aristotle, Augustine, Galileo, Descartes, Newton and Kant.

What is perhaps of more contemporary interest is the emergence of Logical Empiricism and its influence today on how authentic knowing is defined solely through mechanistic science.\(^6\) It is mechanistic science, according to Gare, that is now the one ‘officially sanctioned view of the world’ and scientific experts ‘…have gained the status of a priesthood with a virtual monopoly of power to adjudicate on questions of truth and falsity on all but minor issues.’\(^7\) This monopoly of power has been strengthened through the ability of mechanistic science to attract funding through its being conducive to being applied to the production of commodifiable technologies. Russo and Cove, for example, in discussing how free today’s scientists are, put forward a modern parable of a fictional Dr. Jane Smith’s tortured route to obtaining funding for plant research that may only serve to satisfy a curiosity. As they argue: ‘Jane will be well advised to play down her fascination with plant tropisms, and instead to argue persuasively that understanding tropisms will allow us to make crops that are able to recover more quickly from hail storms.’\(^8\) This commodification of science as merely an innovator of technologies rather than a seeker of

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6 As in previous chapters, the term Logical Empiricism is understood here in Gare’s sense as the general ongoing project to affirm physics based science as the only means toward achieving absolute, universal, objective knowledge and the only valid test of truth.

7 Gare, *Nihilism Inc.*, p. 164.

truth has led, according to Gare, to the devaluation of truth. This devaluation he links to the domination of empiricist philosophies of science:

The empiricism which developed with mechanistic science was designed for the most part to justify its claims to knowledge and invalidate rival claims, while being consistent with the view of humans as complex machines. In the twentieth century logical empiricists attempted to buttress empiricism by a revived and greatly developed tradition of logic, continuing the effort to account for knowledge mechanistically. Fused with pragmatism, operationalism and more recently, mainstream North American philosophy of language and evolutionary epistemology, this has produced a one dimensional intellectual world. Science, promoted by logical empiricists as the only worthwhile intellectual pursuit, was represented by them as the accumulation of objective knowledge verified by observation and experiment, formulated into mathematically describable laws enabling predictions to be made from one observation to another.9

Evidence of this ‘one dimensional intellectual world’ can be found in fields of particular relevance to physical activity and the Fitness industry, such as physical education. Logical Empiricism dominates this field with curricula, according to Kretchmar, becoming ‘top-heavy’ in mechanistic science based sub-disciplines from which technologies are derived, such as physiology, biomechanics, motor learning and sport psychology, at the expense of philosophy, literature and history. Much of this development he attributes to the influence of John Dewey and ‘…his pragmatic, test-it-first orientation to truth and falsity.’10 For Gadamer, these developments mark a transition in the concept of experience from the sense, prior to the seventeenth century, in which it was the starting point of knowledge, to the sense of ‘experiment’, ‘...a tribunal of verification before which the validity of mathematically projected laws could be confirmed or refuted.’11 Rather than knowledge as ‘know-how’ being related to the experience of concrete, practical engagement with the world, scientific knowledge now exists in a novel relationship to practice of constructive

9 Gare, op. cit., p. 165.
projection and application. The power of making technology therefore lies in the improved ability to isolate and abstract individual causal relationships; a practical application of knowledge that is not to be confused with the pre-modern notion of science as ‘…the totality of the knowledge of the world and of humankind, which Greek philosophy, whether as philosophy of nature or as practical philosophy, had elaborated and articulated in the communicative form of language.’ This narrowing application of science to technology development therefore delimits science in what it can know of the world, closing off networks of possible relationships. Before articulating a process epistemology, the historical developments of these trends need to be further explored.

**Hobbes, Descartes and the Vienna Circle**

Ferré, more broadly summarizes the historical path towards this ‘one dimensional intellectual world’ that has seen the epistemological gap, between the knower and the known, remain entrenched. It is the persistence of this epistemological gap that has led to the privileging of the abstract “whatness” of experience over ‘…direct awareness of the “thisness” of real objects.’ Pre-modern thought, he argues, generally took for granted the existence of a changing, persisting and interacting world independent of human perception. Aristotle’s general model of external objects, existing in their own right, causally bringing about percepts in humans’ essentially passive receptors, held general favour among both Epicureans and Stoics. Early in the Middle Ages this view held sway, particularly among the ‘Realists’ in debates over the ontological nature of universals. It was later, with the emergence of ‘Nominalism’ and the ‘Ockhamist Movement’ in the fourteenth century and later still with the Modern philosophers that arguments were developed that seriously cast

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12 Ibid, p. 5.
14 Copleston argues that the view that ‘…generic and specific concepts correspond to a reality existing extramentially in objects…’, was the first solution put forward by the mediaevals to the problem of universals. Frederick Copleston, S.J., *A History of Philosophy*, Book 1, Volume II, ‘Augustine to Scotus’, (Image Books Edition, New York, 1985), Ch. XIV.
doubt on the knowability of independent objects, in themselves. These arguments opened
the way for the reification of abstract ‘whatness’.

For Ferré, the modernist agenda, that was to both widen and petrify the epistemological
gap, was initially set by the debate between Hobbes and Descartes in the overlap of their
work throughout the middle part of the seventeenth century. Ferré points to the
significance of both their differences and similarities. In regard to difference he argues
that:

The most glaring difference between them is the thoroughgoing monistic materialism of
Hobbes and the equally complete mind-matter dualism of Descartes. These are
metaphysical positions, of course...But these are metaphysical commitments with
enormous epistemological import since Hobbes’ materialism required him to account for
thinking, knowing – all mental phenomena – as activities solely of unthinking matter in
motion; while, conversely, Descartes’ dualism gave him the problem of accounting for the
evident but mysterious connections between physical stimuli and mental receptions, mental
intentions and bodily actions.

Both men questioned the nature of an idea. For Descartes, an idea was anything perceived
by the non-spatial mind. While we intuit a world external to us, the mind is capable of
intuiting more than localized or visualized images. Universals, such as God and
mathematics, for example, are such things that the mind has access to without reference to
the world and as such are ‘pure intellection’. Such pure intellection though effectively cuts
us off from the world producing the problems for Descartes, referred to by Ferré, of the
nature of physical existence. For Hobbes, as he is generally understood, all ideas are
images produced by the reverberations of basically inert matter. This conforms to what
Tuck argues was Hobbes’ metaphysical position that ‘...nothing can move itself.’

Perceptions are caused by external material objects bombarding one’s senses, setting up

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15 Copleston emphasizes the importance of William of Ockham’s attack on traditional metaphysics in
establishing the Nominalist tradition, one that would underpin the development of science from the
Renaissance on. Ibid, Vol. III, Ch. IX.
16 Ferré, Knowing and Value, p. 114.
resonances inside one’s brain. From this, Hobbes applies deductive logic and geometry to argue that all ideas are particular and stem from a chain of reverberations set in motion by the impact of objects on our senses. Ideas are therefore impressed upon us through the presence of objects, then decay, like billiard balls crashing into each other then gradually coming to rest. This atomistic materialism though, as Ferré points out, fails to account for the rich complexity of our mental lives that may produce, for example, vivid images from events well in the past and forget what happened two minutes ago.\(^\text{18}\)

As a development toward Logical Empiricism, it is their similarities that are perhaps more important, the major similarity being, according to Ferré:

\[\text{…Hobbes’ and Descartes’ strong insistence on absolute certainty as the primary hallmark of genuine knowing…there can be no question that the Fathers of modern philosophy were united in this ideal. After them, certainty, absolute indubitability, clarity, distinctness, and coercive persuasive power have been the standard epistemic norms of modern philosophy.}^{19}\]

These norms were underpinned by both Descartes’ and Hobbes’ belief in external reality being knowable only through mathematically treatable features, the difference being, according to Skinner, that where Descartes began with indubitable intuitions, Hobbes began with unambiguous definitions.\(^\text{20}\) From these deductive analysis could be made, dividing problems into smaller and simpler parts that, in Descartes’ case, could not be doubted, and in Hobbes’ case, were derivable from clear grounds in sense perception. With this, both men rejected Aristotelianism and believed that a ‘Golden Age’ of scientific rationality was to come. As was discussed in Chapter One, this ‘Golden Age’ did come, for mechanistic materialism, with the science of Newton and philosophical arguments ‘…reducing the so-called world of independent substantial objects to constructs made up entirely of sense experiences.’\(^\text{21}\) As Gare argues, Descartes’ and Hobbes’ influence in opening this epistemological gap where the problem emerges as to how spatially enclosed mechanical

\(^{18}\) Ferré, Knowing and Value, pp. 114-118.

\(^{19}\) Ibid, p. 118.


\(^{21}\) Ferré, op. cit., p. 165.
bodies can attain knowledge of the external world, was in the replacing of medieval notions of intentionality with the notion of knowledge as representation. This then underpinned Modern moves toward Empiricism. He argues that:

Locke’s representational realism according to which knowledge is conceived of as ‘ideas’ of primary qualities in the mind which actually represent the external world, the subjective idealism proposed by Berkeley and worked out consistently by Hume according to which we can only talk about such ideas (or sense impressions), their copies and their relationships, and Kant’s transcendentalism according to which sensations are ordered by imagination, the forms of intuition and categories of the understanding, are all proposed solutions to this problem.\(^{22}\)

While all of these thinkers developed arguments that denied the possibility of directly knowing the external world, what Kant referred to as the noumenal world behind our sense perceptions, Ferré argues that all could not shake the intuition of ‘something there’. It was not that a noumenal world did not exist or was not important in some sense, but that it was unknowable. It was with the emergence of Positivism through the work of Auguste Comte and Ernst Mach that the existence of causes, behind positive experience, was denied any relevance. Comte, rejected metaphysical thinking as an immature stage between primitive theological thinking and what he referred to as positive thinking. Inspired by Newton’s rejection of hypothesis, Comte saw the new scientific thought that abandoned references to a hidden reality in favour of explanation of actual or possible phenomena, as humanity reaching maturity. Also for Comte, as Ferré interprets him:

Knowing is for the sake of predicting. In this, the intermediary functions of any such “causes” as may somehow lurk in the background of the perceptible world simply fall out of relevance. Once we know the laws of covariation among variables, we are able to anticipate, predict and retrodict at will. Savoir, pour prévoir (“Know, in order to predict”) is the goal. Once our cognitive interests in foreseeing events, based on constant rules of

\(^{22}\) Gare, *Nihilism Inc.*, p. 284.
conjunction, are satisfied, it would show a morally reprehensible lack of maturity to seek more.\(^{23}\)

Drawing on the work of Hume and Berkeley that reduced knowing to descriptions of ideas and impressions in the mind, Ernst Mach developed his radical empiricist philosophy that reduced scientific work to the analysis and description of sensations verified by immediate experience. Mach, totally rejected metaphysical notions of different orders of being as well as scientific verification through theory, including mathematics. As Ferré states:

> Mathematical physicists,’ Mach warned, ‘…courted the fallacy of “misplaced rigor.” Certainty, however, was still available to science…It was the certainty of sense perception. The high standards of Plato or Descartes for “genuine knowing” could be retained, he insisted, but only when cleansed of the apriorism of such rationalists. Certainty should be sought, but in the assurance that what one experiences in a sensation cannot be wrong, at least insofar as it is simply experienced as a sensation. One may be wrong, of course, if one’s sensation is interpreted so as to make further claims, such as, about existence or…about future experiences. But the job of the empirical scientist is to build carefully from the foundation of private certainty to the confirmed inductive lawfulness of a shared world.\(^{24}\)

Mach’s radical empiricism and downgrading of theory was, in the early part of the twentieth century when exciting theories such as Einstein’s were challenging Newtonian physics, to provide the impetus for the work of the Vienna Circle to systematically repair the breach between Mach and mathematical theory. First, Moritz Schlick liberated science from the apriorism of German rationalist philosophy by rejecting the necessity of Kant’s synthetic apriori propositions as they related to Newtonian science. This saw the distinction in science between analytically necessary logic and mathematics and empirically informative perception. Second, Schlick and the Vienna Circle adopted Wittgenstein’s truth-functional philosophy of language in which propositions were to be reduced to atomic elements of meaning, or atomic facts. In this, propositions are considered empty and mere

\(^{23}\) Ferré, *Knowing and Value*, p. 171.
\(^{24}\) Ibid, pp. 175-176.
tautologies if devoid of, or not constituted by, independently true or false atomic facts, understood by the Vienna Circle to relate to empirical information. Third, A. J Ayer, drawing on Wittgenstein, was to provide a logical argument for positivism termed the ‘verification principle’. This would combine sensationalist interpretation of atomic facts with truth-functional analysis of informative propositions such that significant propositions could be verified by a selection of atomic ‘protocol sentences’. Ferré gives the example of the proposition that: ‘An apple is on the table.’ Verification will then depend on enough true assertions being made such as: ‘Red there’ and ‘Round there’ and ‘Apple smell there.’

The project of the Vienna Circle was therefore to reduce the truth verification of empirical data to mathematicized propositional logic. This owed some credit to the work of Gottlob Frege. According to Gadamer, Wittgenstein’s early work on propositional logic, from his Tractatus in 1921, that was to influence the Vienna Circle, was influenced by Frege. Frege, living in the same period as Mach, is credited with making the distinction between sense and reference as it applied to propositions in his attempt to ground mathematics in logic. As Ricoeur explains it, according to Frege: ‘…meaning…is not an idea which someone has in mind; it is not a mental content but an ideal object which can be identified and reidentified, by different individuals in different periods, as being one and the same object.’ This distinction of an ideal sense from the context of a proposition allowed Frege to apply his second-order predicate calculus to a ‘function-argument’ analysis of propositions, freeing logicians, such as those in the Vienna Circle, from the limitations of the ‘subject-predicate’ analysis of Aristotelian logic. The meaning of empirical data could therefore be reduced to ideal and atemporal mathematical propositional logic that provided a fixed, objective ground for establishing proofs. As Ricoeur argues, this development led

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25 Ferré also describes protocol sentences as referring to the immediate transcripts taken by stenographers in court proceedings. Ibid, pp. 177-182.
to a wave of anti-historicism that sought to suspend the reality of language as becoming in a process of development. 28

The combining of empiricism with mathematics, reduced to a logical scheme for expressing laws generalizing on observed regularities, saw Positivism become ‘Logical Positivism’ that would, by denying validity to metaphysics and other forms of knowing, lay the epistemological ground for science in the twentieth century, consequently reifying the epistemological gap. The belief, stemming from this development that certain knowledge could be gained from the accumulation of certain atomic facts mathematically expressible as more certain generalities, led to the privileging of observation from controlled experiment. Like the mind’s representations, controlled experiments, considered independent of any subjective input from the experimenter, are thought to correspond to reality. Reality, therefore, is seen as something external to the scientist who is a passive observer of phenomena observable through human sense perception extended into observing and measuring machines. Like such machines, external, objectified living entities, are necessarily treated as basically inert mechanisms comprised of atomic parts. Valid knowing for Logical Positivism/Empiricism therefore, involves primarily locating and observing matter, either stationary or in motion, with the relationships between such atomic entities being secondary.

Logical Empiricism and Objectivism

Johnson argues that the logical Empiricist project is based on the assumption that physics represents humanity’s highest achievement in rational inquiry. Investigating the rationality of physics based science should therefore reveal the path toward genuine knowing. That which is thought to distinguish physics based science from other modes of inquiry is its logical rigor and its empirical grounding. Logical Empiricism therefore, argues Johnson:

…was thus faced with two tasks necessary for a defense of scientific objectivity. (I) It had to show that the rationality of science could be analyzed in terms of mathematical logic,

since logic was regarded as the essence of rationality. (ii) It had to show that scientific theories were grounded in, and testable against, objective, theory-independent empirical data. In other words, Objectivist assumptions could be defended by showing that science was firmly rooted in the soil of empirical evidence and that its theories and laws were connected to that empirical ground via logically correct relations.  

Logical Empiricism failed in both tasks. It failed to establish correspondence between its logical constructs and reality and it failed to establish the reality of neutral data. As Gare reveals:

Frege’s effort to ground arithmetic in logic which inspired later efforts to conceive all knowledge as a logical structure was shown by Russell to be flawed. It implied that there is a class of all classes which are not members of themselves, which if it is not a member of itself, must be, and if it is a member of itself, cannot be. This is Russell’s paradox. Gödel then showed that a non-trivial formalized system necessarily includes propositions the truth of which cannot be demonstrated in terms of the system, and that it is impossible to demonstrate the non-contradictory nature of such a system within the terms of that same system.  

The power of these arguments has led to a general view that Logical Empiricism in its original form is philosophically dead. However, despite this, Johnson argues in agreement with Gare, that Logical Empiricism’s basic tenets still provide the primary context in which most popular theories of meaning and rationality are articulated. Much of this he attributes to Frege’s impact on epistemology based contemporary semantics and philosophy of language. According to Johnson, Frege’s rigid separation of the sense and reference of a sign from any associated ideas is still a major influence in these disciplines. The consequence of this, Johnson argues, is the domination within these disciplines of an ‘Objectivist’ view of meaning.  

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30 Gare, *Nihilism Inc.*, p. 293.  
31 The general sense in which ‘Objectivism’ is understood in this thesis is perhaps best defined by Bernstein as ‘...the basic conviction that there is or must be some permanent, ahistorical matrix or framework to which we can ultimately appeal in determining the nature of rationality, knowledge, truth, reality, goodness, or rightness.’ Bernstein, *Beyond Objectivism and Relativism*, p. 8.
...Frege treats meaning and rationality as though they were entirely independent of human imagination and structures of bodily experience. There is the sign, the sense, and the reference in a direct linkage from word to world. Human cognition and understanding are bypassed as irrelevant to objective meaning relations. All mental processes (ideas, images, imaginative projections) that might explain how it is that a sign could come to connect up with the world, and with other signs, are excluded from consideration. This is the Objectivist view of meaning in its purest form.32

Johnson outlines three contemporary programs in semantics and the philosophy of language that reveal, in their Fregean themes, the dominance of ‘Objectivism’. The first, is ‘model-theoretic semantics’ that seeks to give a precise account of how meaning can be attached to abstract symbols by virtue of their correspondence to things in the world. According to Johnson:

The view takes from mathematics the notion of a model as a set-theoretical structure consisting entirely of entities and sets built out of those entities. Model-theoretic semantics assumes that the actual world (as well as any possible world) can be placed in one-to-one correspondence with such a model. This is made possible by a set of metaphysical assumptions about the nature of reality: the world consists of entities that have properties and stand in definite relations to one another at any given instant; properties are placed in one-to-one correspondence with the set of entities having those properties...On these assumptions, there would have to be a correct model of the actual world (or any possible worlds) as consisting only of entities or sets of entities.33

In this view, the goal is to construct reality independent of human experience and understanding. On the assumption that the model corresponds to reality, abstract symbols used to describe such a model derive meaning from their correspondence to the entities that constitute the model. This program in semantics borrows from the predominant program in science that has grown with the development of computers. As Gare argues, even research

33 Ibid, p. xxxi-xxxii.
groups such as the Santa Fe Institute, who study complexity theory, rely almost entirely on reductionist and abstract computer modelling of reality with the assumption of correspondence to the real world of such models.\(^{34}\)

The second program Johnson discusses is ‘situation semantics’ that seeks to identify a number of situation types with which sentences can be associated. This involves treating descriptions of situations as objective realities. The meaning of a sentence is derived from the objective relation between utterances and described situations. This view emphasizes the external significance of language and conceptual rather than pre-conceptual elements.

The third program that Johnson refers to is ‘Davidsonian semantics’ based on the work of Donald Davidson to equate meaning with truth. As Johnson argues:

> In one powerful move Davidson turns the search for a theory of meaning into the task of constructing an adequate theory of truth. Such a theory would involve a “set of axioms that entail, for every sentence in the language, a statement of the conditions under which it is true.” According to Davidson, what is required is a recursive theory that shows how larger truth-preserving units can be built up from the concatenation of smaller units (the parts) that have truth conditions. Davidson’s theory is Objectivist in spirit, if not in all its details. It is concerned only with meaning as an abstract relation between sentences and described conditions of the world.\(^{35}\)

According to Johnson, all of these Fregean based, ‘Objectivist’ programs, continue to dominate despite the failure of both Frege’s theories and the Logical Empiricist project. He argues that this situation persists because of the polarization of those seeking certain, value-free, objective, truth and those who argue that truth is essentially historically evolving, value-laden and goal-directed. One is viewed as representing absolute, universal, objective order and the other, foundationless, particular, subjective, anarchic relativism. Using Johnson’s own argument though, in relation to ‘model-theoretic semantics’, this dichotomy is ‘made possible by a set of metaphysical assumptions about the nature of reality.’ Logical

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Empiricism and ‘Objectivism’ are based on the metaphysical assumption that primary reality consists of eternal, immutable, autonomous atomic objects that somehow interrelate. Such a dichotomy therefore, is associated with the metaphysics of mechanistic materialism that, as will be argued, makes understanding such relationships impossible. It is from within the world-view of mechanistic materialism that critics can be simply labeled relativists, so closing off further relationships. Implicit in Johnson’s argument that the epistemological gap can be dissolved through his theory of embodied understanding that gives a central role to non-propositional and figurative structures of embodied imagination, is a metaphysics that acknowledges the primacy of active, evolving and embodied constraints on human understanding. Johnson’s views situate him within the tradition of process thought. The validity of such a metaphysical argument though is denied by Logical Empiricists/Objectivists, necessitating the need to put forward a process view of knowing and truth, which affirms metaphysics.

**Knowledge, Truth and Process Epistemology**

For Descartes and other thinkers associated with mechanistic materialism, knowing the truth involved stripping away layers of obscurations to reveal an underlying simplicity and clarity. Similarly, Logical Empiricism seeks to establish exclusive access to truth that then becomes necessarily both universal and immutable. Research then involves the further accumulation of empirical data (atomic facts) and further refinement of the method. As was argued in Chapter Three, this then necessarily excludes all other avenues toward knowing. One can see the impact of this on the quality of relationships. In a universe that is evolving through ‘natural drift’ in co-dependent processes of creative emergence, as is argued for in this thesis, Logical Empiricists have closed the door on evolution as well as other ways of knowing that have emerged. What is lost is what empirical science leaves out, networks of relationships and the potential to establish further relationships; relationships that Polanyi argues are the boundary conditions that are the structural and operational principles that are the deepest level of reality and give meaning to reality. In other words, the continual accumulation of atomic facts is like finding and identifying the parts of a watch and their separate functions but then having no idea, as well as no interest
in, how they work as a system. This absurd situation, stemming from the dominance of Logical Empiricism, argues Polanyi, replaces meaningful world-views of whole systems with meaningless ones of unrelated parts, leading to nihilism.\footnote{For these arguments see Michael Polanyi, ‘On the Modern Mind: Scientific Thought and Social Reality: Essays by Michael Polanyi’, ed. Fred Schwartz, \textit{Psychological Issues}, Vol. viii, No. 4, (International Universities Press, Inc., New York, 1974).} It is in addressing the nihilistic implications of Logical Empiricism that process thought has applied itself.

**Process Thought, Perception and Nihilism**

Perhaps the key area in relation to truth and knowledge that process philosophy has illuminated is the nature of perception. Process thinkers have challenged the notion of the epistemological gap that sees the world as corresponding to mental representations, either derived a priori or via sensations, and have argued for the primacy of direct perception of a world in which one is integral. In this view, reflexivity is secondary to what Heidegger referred to as ‘being-in-the-world’, a return to the pre-modern view of intentionality. A pivotal development here, according to Nishitani, was the transition from Idealism to Nihilism.\footnote{Nishitani Keiji, \textit{The Self-Overcoming of Nihilism}, trans. Graham Parkes with Setsuko Aihara, (State University of New York Press, Albany, 1990), Ch 1 & 2.} While British Empiricists were busy trying to remove themselves from metaphysical speculation, momentous metaphysical debates over the nature of ‘Being’ were taking place in Europe. These debates were a reaction to the rise of Modernity and the new scientific rationality that eroded the ground beneath traditional life. As Nishitani argues:

> The worldview that had supported the spiritual life of Europe for more than two thousand years was all at once thrown into question. Faith in God and the eternal world and their accompanying conceptions became no more than historically conditioned ideas. What had once been considered transhistorical now began to be seen as products of history. With this an abyssal nihilility opened up at the ground of history and self-being, and everything turned into a question mark.\footnote{Ibid, p. 6}
This focus on history, as was argued in Chapter Three, owed much to Hegel’s unification of ontology and historical consciousness. But Hegel’s metaphysics, though historically concrete, was still fundamentally transhistorical in the notion of Absolute Spirit, meaning that the metaphysical ground of history could not become genuinely historical. Therefore, as Nishitani argues, it was after Hegel that ‘…there began the rapid collapse of metaphysics and moralities based on God or a world of “true Being”.’\(^{39}\) This collapse came from the critiques of Hegel’s Absolute Idealism by ‘radical realists’ such as Schopenhauer, Kierkegaard, Feuerbach and Marx. All sought to subvert Hegel’s Absolute Idealism by revealing that the Platonic metaphysics of reason and the communion in Spirit between God and humanity, established by Christianity, was based on irrational and non-spiritual ordinary and earthly things, thereby collapsing the highest and most profound foundations of Absolute Idealism into simple reality. Unlike scientific positivism though, process oriented thinkers sought to situate humanity within this reality rather than stand forever outside it.

Schopenhauer, for example, rejected what he regarded as Hegel’s reduction of reality to abstract concepts by arguing, similarly to Kant, for a clear distinction between the ideal and the real. For Schopenhauer, ultimate reality was the blind ‘will to life’ and things the visible manifestation of this will through time and space. Everything ultimately becomes nothing. Existence is finite and conditioned by the will that produces continual dissatisfaction. Brief moments of satisfaction produce boredom that reveals the essentially void nature of existence. In a move that has its roots in Buddhism, the condition of boredom can be the ground for the negation of the will and the liberation of the intellect in the direction of ideality. Therefore, for Schopenhauer, we can know the thing-in-itself as the will to life and we must know it as the condition for the transcendence of the intellect; an intellect that ceases to exist at death. Similarly, Kierkegaard believed that one could only escape the nihility of life, the reality of existence, through radical engagement with it. With the removal of God from the centre, existence is dissipated; ‘…life, which has become pure boredom, “distracts” itself among “excentric” (that is, peripheral) pleasures. This distraction of the mind is at ground pure boredom; what evades the void is itself.

\(^{39}\) Ibid, p. 6.
void.’\textsuperscript{40} It is at the edge of the ‘abyss of nihility’ where the anxiety of the freedom of a life of possibility is found. In this sense, existence, is knowing the real, and Absolute Idealism becomes a distraction, one stemming from an abstracted moment in ‘aesthetic existence’ that breaks the temporality of being.

There was an irony in these critiques of Hegel highlighted by Feuerbach in his acknowledgement that Hegel made reality an issue despite eventually completely idealizing the real as abstract ‘Concept’. In this sense ‘radical realism’ became the natural consequence of Hegelian philosophy in being the negation of Hegel’s negation. The metaphysical basis of such dialectics though for Feuerbach was not in Hegel’s theological view of God as Absolute Spirit, ‘…the supreme essence of all things, and of the essence of the human as spirit corresponding to that of God,’\textsuperscript{41} but man’s humanity as the internal supreme essence. As Nishitani argues:

\begin{quote}
\textquoteleft\textquoteleft for Feuerbach, to call the Concept the essence of things is tantamount to saying that “the skeleton has more reality than the living human being,” that blood and flesh are superfluous additions. But it is this living flesh that is the true essence of human beings, primordially sensuous beings that we are. Even if we say that reason regulates sensation, it does so only according to the prescriptions laid down in advance by sensation; the ground of the unity of reason and sensation is itself sensuous.\textquoteright\textquoteright
\end{quote}

Gare points out the influence Feuerbach’s critique of religion had on Marx’s conception of humanity as the creative agents of history.\textsuperscript{43} But while Feuerbach’s anthropology made man the subject and God the predicate, with the emphasis on particular individual self-consciousness and sensation, Marx located the reality of human existence ‘…not in sensation but in the “totality of the variety of social relationships”’.\textsuperscript{44} As Marx argues in his ‘\textit{Theses on Feuerbach}’:

\begin{quote}
\textit{\textbf{Nihilism Inc.}}, p. 222.
\end{quote}
Feuerbach resolves the religious essence into the human essence. But the human essence is no abstraction inherent in each single individual. In its reality it is the ensemble of the social relations. Feuerbach, who does not enter upon a criticism of this real essence, is consequently compelled:

1. To abstract from the historical process and to fix the religious sentiment as something by itself and to presuppose an abstract – isolated – human individual.

2. Essence, therefore, can be comprehended only as ‘genus’, as an internal, dumb generality which naturally unites the many individuals.

Feuerbach, consequently, does not see that the ‘religious sentiment’ is itself a social product, and that the abstract individual whom he analyzes belongs to a particular form of society.⁴⁵

It was Marx’s dissolving of the individual into social relations that was at odds with Existentialists, such as Kierkegaard and Nietzsche, who saw such relations as abstracting from primary individual existence. What these thinkers had in common though was the way in which they addressed the post-Hegelian crisis of reason by arguing the reality and knowability of something other than conscious reason. However, as Bowie argues, they failed to adequately ground reason, leaving the door open for Nietzsche’s totalizing critique that sought to leave knowledge groundless. Their failure, and Nietzsche’s, stemmed from their articulating of totalities that were not self-related, therefore claiming immediate access to what can only be known reflexively. In this regard, Bowie quotes Habermas:

Feuerbach stresses the primacy of the objective…Marx sees spirit as rooted in material production…Kierkegaard opposes the facticity of one’s own existence …to a chimerical Reason in history. All these arguments reclaim the finitude of spirit against the self-related-totalizing thinking of the dialectic…Admittedly all the Young Hegelians were themselves

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It is in the question of the ground of knowledge though, that a stark contrast is evident between post-Idealist German philosophy and Logical Empiricism. As was argued earlier, Positivism grounded knowledge in sense experience, including observed regularities in the form of mathematically expressible laws. The theories and concepts of Logical Empiricism therefore assigned both knowledge and truth to science, effectively shutting the door on metaphysical speculation. Where though do theories and concepts come from? The argument being made here is that only process thought has continued to seriously address this question and provide a coherent response. The grounding of existence by the process oriented radical realists in Nihilism and their consequent misplaced concreteness proves problematic though, as was revealed prior to these thinkers by Schelling.

**Schelling and the Unprethinkable Being**

Schelling’s importance to process philosophy was revealed in Chapter Three through his understanding of the merits and limitations of Idealist philosophy. It was also argued that Schelling’s theism weakened his position in relation to both Gare and Zen Buddhism, through his emphasis on Being and his eventual objectification of ultimate reality as ‘oneness’. Schelling’s earlier work though, on his philosophy of nature, written around the beginning of the nineteenth century, produced a conception of the metaphysical ground of knowledge that challenged the nihilism of the radical realists. Prior to the thinkers just discussed, all of whom were influenced by him, Schelling tackled the crisis of reason stemming from Modern thought, the problem of the subject’s relation to the objects of nature. As quoted in Bowie, Schelling states that:

> The whole world lies, so to speak, in the nets of the understanding or of reason, but the question is how exactly it got into those nets, as there is obviously something other and
something more than mere reason in the world, indeed there is something which strives beyond these barriers.  

For Hegel, the Absolute was ultimately knowable through self-conscious reflection. While re-conceiving Hegel’s notion of the Absolute and providing for greater human agency, the radical realists ultimately still privileged conscious reflection. For Schelling though, consciousness could not be understood from the point of its highest potential, the point at which it had always supposedly existed, but must be traced back to a ground from which it emerged; a ground in which consciousness does not exist. This absolute ground therefore, could not be known through conscious reflection. Schelling argued, against Hegel, that the particularity of the world must emerge from unity rather than converge towards unity. Difference can only be known in relation to sameness. Conscious reflection is already particular in being both subject and object. Therefore, consciousness must have emerged from a ground where subject and object were identical. From this ground of identity, one that is understood in this thesis as being itself groundless, consciousness, subjectivity and all other particularity in the world, is in the process of becoming; what Schelling terms ‘productivity’. For human consciousness, a genetic process has developed to the point where subjectivity has the ability to grasp nature theoretically. But such theoretical knowing of the world is limited to the perception of finite objects through the constraining of processes. Therefore, empirical knowledge is only particular knowledge of an objectified world, or ‘products’.  

According to Bowie:  

Schelling’s basic strategy is...to cut the Gordian knot by insisting that all of nature be thought of in inherently dynamic terms, as ‘productivity’. What we encounter in empirical nature are ‘products’. The particular sciences deal with these ‘products’, which appear fixed and can be subsumed under rules. Naturphilosophie, which cannot, therefore, be subsumed into the sciences, deals with the ground of appearances, which does not appear as itself because it is not a fixed object determined by a reflexive relationship to its other, the

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48 It must be stressed here that ‘particular’ in this sense is understood to also include general concepts, a view that challenges the idea that concepts derived within the human spatio-temporal domain can claim the title of ‘universal’.
subject: “As the object is never absolute (unbedingt) then something per se non-objective must be posited in nature; this absolutely non-objective postulate is precisely the original productivity of nature”. The primary concern is, therefore, not the mechanical laws of nature and nature as object.\textsuperscript{49}

In Chapter One, the activity of social scientists was seen to involve analyzing static snapshots abstracted from the underlying flux. Schelling provides a metaphysical argument for the primacy of the flux and the consequent limitations of scientific knowledge. He is understood here as not arguing that empirical knowledge as particular knowledge precludes general concepts, but rather that conscious reflection and analysis involve objectification that produces particularities, including general concepts. This is because from Schelling’s ‘ground’ both matter and concepts are ‘identical’. His own reflection and analysis has produced two powerful metaphors, ‘productivity’ and ‘product’, that enhance one’s conceptual understanding of the generative nature of knowledge. His notion of productivity as the ‘unprethinkable Being’, reveals at the same time the existence and nature of the universe-in-itself and our inability to completely grasp it through its products.\textsuperscript{50}

His theory of identity, stripped of its theistic overtones, reveals both, the possibility of particularity and its necessary interrelatedness, making coherent the emergence of complexity. It is Schelling’s notion of the ‘unprethinkable Being’ that has been an influence on Gare in his attempts to characterize, through his metaphysical categories of the ultimate and of existence, the primacy of activity and relational process. What then are the implications of such a concept for both knowing and truth?

As Bowie argues, Schelling’s arguments led him to the conception of natural science as hermeneutic.\textsuperscript{51} As Wachterhauser defines it, hermeneutics is the position that ‘…all human thought involves “interpretation”, that all human thought is in some way relative to a contingent context of cognitive, rhetorical, practical, and aesthetic considerations…’\textsuperscript{52} It is

\textsuperscript{49} Ibid, pp. 35-36.
\textsuperscript{50} Gare in footnote 39, p. 291 of Nihilism Inc., argues that the notion of the ‘unprethinkable Being’ (‘unvordenkliches Sein’) was shared by existentialists such as Kierkegaard as well as Whitehead, Heidegger and Merleau-Ponty.
\textsuperscript{51} Bowie, Schelling and Modern European Philosophy, p. 39.
important to stress here that such contingent contexts are both conscious and unconscious. According to Schelling, all conscious reflection produces particularities, or ‘products’, from ‘productivity’. Therefore, knowledge, deriving from conscious reflection, is particular knowledge abstracted from the flux. This then has implications for inductive claims to universal truth made by empirical science because what is universal, according to Schelling, is ‘productivity’. All conscious knowledge being particular suggests that it is relative to contingent contexts, the implication being that claims to absolute knowledge or universal truths are themselves relative to contingent contexts and therefore relative to particular interpretation. This is where the unconscious assumes primary importance. Schelling argues, according to Bowie, that while we cannot know the ‘productivity’ directly through conscious means, we intuit it through ways in which it reveals itself to us. For Schelling this revelation, or disclosure, is manifested in a work of art. As Bowie states:

What makes an object a work of art has nothing to do with the art-object’s status as a natural object bound by natural laws. As natural object it is determined by its negative relationship to other objects and means nothing in itself. As a work of art it cannot be finally determined: a work of art is not art because it shares the same attributes as other objects or can be defined in relation to them, but rather because it reveals the world in a way which only it can. There can thus be no science of art. The production of such an object at the level of technique is under the conscious control of the artist; the result, though, is not, because the motivation for that production, the ‘drive’, is unconscious.53

Schelling’s significance is in his revelation that the meaning of a work of art is inexhaustible as opposed to natural science’s determination of objects that excludes other possibilities. The identity of ‘productivity’, of conscious and unconscious, subject and object, is therefore disclosed already in art as indeterminate object, whereas disclosure in science is an endless task. Schelling therefore reveals that the goal of determining objects, of fixing their meaning, stems from misplaced concreteness. By starting with the processes that generate meanings rather than meanings themselves as objects, Schelling reveals that science, like art, is hermeneutic and that the objects of science are as open to interpretation

53 Bowie, Schelling and Modern European Philosophy, p. 52.
as a work of art. This position challenged the view, stemming from Kant, that the appreciation of art as a judgement of taste was fundamentally different from the rationality of natural science or pure practical reason. For Kant, as Bernstein argues, the ‘pure work of art’ stands out as a consequence of the apriori, subjective aesthetic judgement that is a lesser form of judgement in having no relationship to truth or falsity. The consequence of this has been the devaluing of any claims to truth outside of scientific method. Gadamer’s arguments against this Kantian legacy, discussed by Bernstein, can be understood as defending Schelling’s position.\textsuperscript{54}

As Bowie argues, Schelling’s view has profoundly influenced views within opposing philosophical disciplines:

> The growing conviction in certain areas of both analytical and European philosophy that representational, or correspondence theories, which underlie scientistic views of truth, are failing to give an adequate account of our relationship to internal and external nature is leading in many places to the suspicion that both scientific and aesthetic revelations of truth are only different aspects of the same language-embodied process.\textsuperscript{55}

However, what is stressed in this thesis is that such convictions and suspicions only have coherence within a metaphysics of process, as Schelling also revealed.

**Merleau-Ponty and Immediate Perception**

One whose ideas cohere with a metaphysics of process is Merleau-Ponty.\textsuperscript{56} Merleau-Ponty’s work in existential phenomenology, seeks, through a critique of behavioural psychology and Sartre’s opposition of ‘for-itself’ and ‘in-itself’, to unite subject and object through an understanding of the relationship of consciousness to the world. He argues that behaviour, for example, must be explained dialectically rather than analytically. Analytic

\textsuperscript{54} Gadamer’s arguments against Kant in relation to art are discussed in Bernstein, *Beyond Objectivism and Relativism*, pp. 118-125.

\textsuperscript{55} Ibid, p. 54.

explanation is reductive and results in the attempt to understand the whole as a combination of its parts, a position typical of Logical Empiricism. For Merleau-Ponty though, behaviour patterns are structured wholes that are irreducible to the effects of a constellation of contexts. Therefore, as Descombes states:

A behaviour pattern is not the reaction to a stimulus, but rather the response elicited by a situation. The faculty of apprehending the situation as a question to which it will reply must thus be ascribed to the organism whose behaviour is under observation…Beings in nature are not wholly in exteriority: they have an interior. Or again, behaviour is no longer the effect of a milieu, but a relation between thing and milieu which Merleau-Ponty sees as dialectical. Behaviour patterns, he says, ‘have a meaning’; they correspond to the living significance of situations. There is therefore meaning and dialogue in nature.  

While this sounds like panexperientialism in the Whiteheadian sense, it differs in Merleau-Ponty’s ‘philosophy of structure’ having a hierarchy of degrees of integration from the inanimate to the human, a view in line with current hierarchy theory. What it importantly reveals is that like Schelling and Whitehead, Merleau-Ponty acknowledges a level of perception that is antecedent of conscious sense perception. In other words, Descartes’ ‘I think’, that had primacy in Idealism, must have something to think about. Therefore, prior to conscious reflection, one must have an immediate perception of the world via the body’s immersion in it. What though is the nature of this perception? It is perception of the ‘productivity’. The body, as a relational process, is immersed in a sea of relational processes. Drawing on Gestalt theory, processes disclose themselves as patterns of relationships of varying proximities. The human being is porous; that is, nature is impinging on us and we are impinging on it. This is apparent from Suzuki’s description of how air and water continually cross the boundaries of our bodies; air and water that has crossed the boundaries of other living organisms and inanimate structures, or Wakeford’s description of the problematic nature of species differentiation when accounting for symbiotic relationships between bacteria and hosts. 

Merleau-Ponty conceives this as a

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57 Ibid, p. 57-58.
dialectic between nature and the embodied human; a dialectic that is then interpreted though a hermeneutic process, unconsciously. 59

This notion is supported by the convergence of both Varela, in his concept of ‘autopoiesis’, and Sharov in his concept of ‘autocatalysis’. For both, the point at which an organism distinguishes itself through a process of boundary formation, is also the point at which self-referencing, or semantic enclosure, occur. This then creates the conditions for interpreting perturbations from outside the system. 60 For example, Suzuki describes the process of keeping the concentration of salts and blood volume balanced in the body through water intake and excretion. This process can be understood as a dialectic between autopoietic, semantically closed constituent and contextual processes. Through a hermeneutic process, interpretation may reveal dehydration eliciting further dialectical processes in the hypothalamus to alert the supervening organism to drink. Of course, the human being, being itself a semi-autonomous autopoietic system, may, despite a dry mouth and deteriorating condition, be unable or choose not to drink, making the process indeterminate.

Before a conscious interpretation of the symptoms of dehydration though, unconscious dialectical and hermeneutic processes have taken place through one’s immediate perception. Similarly, Merleau-Ponty describes the act of gesturing to a friend as a ‘plunge into action’:

The plunge into action is, from the subject’s point of view, an original way of relating himself to the object, and is on the same footing as perception. Light is thus thrown upon the distinction between abstract and concrete movement: the background to concrete movement is the world as given, whereas the background to abstract movement is built up. When I motion my friend to come nearer, my intention is not a thought prepared within me and I do not perceive the signal in my body. I beckon across the world, I beckon over there, where my friend is; the distance between us, his consent or refusal are immediately read in

59 Descombes points out in footnote 25, that Merleau-Ponty rejected the Freudian unconscious in favour of the term ‘ambiguous perception’. Descombes, Modern French Philosophy.
my gesture; there is not a perception followed by a movement, for both form a system which varies as a whole.\(^{61}\)

The embodied human’s immediate dialectic with the world, including other humans as relational processes, is therefore a whole system, as is Schelling’s ‘productivity’. An abstract act involves blocking out the world to become conscious of a particular gesture and its various phases as an end in itself, against a projected, virtual background. Science is comprised of just such abstract acts. What Merleau-Ponty is suggesting is that such an abstract act, or:

…the life of consciousness – cognitive life, the life of desire or perceptual life – is subtended by an ‘intentional arc’ which projects round about us our past, our future, our human setting, our physical, ideological and moral situation, or rather which results in our being situated in all these respects. It is this intentional arc which brings about the unity of the senses, of intelligence, of sensibility and motility.\(^{62}\)

**Bourdieu and the Metaphysics of Emergence**

It is from this notion of an ‘intentional arc’, that further concepts can be derived, such as Bourdieu’s ‘habitus’ and ‘field’. Bourdieu critiques the representational objectivism of positivist materialism as that which ‘…constitutes the social world as a spectacle offered to an observer who takes up a ‘point of view’ on the action and who, putting into the object the principles of his relation to the object, proceeds as if it were intended solely for knowledge and as if all the interactions within it were purely symbolic exchanges.’\(^{63}\) He argues that knowledge is constructed from within the practice of living, rather than passively recorded, but that the principle of such construction is the system of structured, structuring dispositions he terms the ‘habitus’. Like the ‘intentional arc’, the ‘habitus’ describes the ‘productivity’, or the constantly evolving unconscious conditions of our practical engagement in the world derived from our genetic and social conditions and our

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\(^{62}\) Ibid, p. 136.

historical experience. When one enters a ‘field’, such as exercise science for example, one is within one’s ‘habitus’ that is both structured by and structures the ‘field’. In this way it is both generative and constraining. For Bourdieu, it is the ‘habitus’ that makes intelligible the ‘…’regulated” or “regular” without being in any way the product of obedience to rules, they can be collectively orchestrated without being the product of the organizing action of a conductor.”

In Bourdieu’s conception, fields are emergent, hierarchically ordered and semi-autonomous; that is, they have relative autonomy:

In analytic terms, a field may be defined as a network, or a configuration, of objective relations between positions. These positions are objectively defined, in their existence and in the determinations they impose upon their occupants, agents or institutions, by their present and potential situation in the structure of the distribution of species of power (or capital) whose possession commands access to the specific profits that are at stake in the field, as well as by their objective relation to other positions (domination, subordination, homology, etc.).

The greater the autonomy of a field, the more symbolic capital, or the more power a field has. For example, one could argue that in Western culture, the Neoliberal based economic field has subsumed all fields. In other words, no matter what particular skill or knowledge base structures a field, it is considered worthless unless it can be effectively applied to achieving economic growth. Therefore, the economic field has greater autonomy relative to other fields giving it the symbolic capital to dominate the political agendas of all Western nations. The same can be said of the autonomy of the scientific field in relation to fields such as philosophy and literature that know the world in different ways. The implication here for truth, is that those fields that command the greatest symbolic capital determine it. Such truth-determining powerful fields though are not produced and reproduced solely through conscious will and weight of evidence, but largely through the

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64 Ibid, p. 53.
unconscious activity of the ‘habitus’, tying the notion of truth to notions of power, immediate perception and historicity.

The concepts of Schelling, Merleau-Ponty and Bourdieu, make intelligible the notion of emergence; the process of complex wholes self-organizing from the interactions of simpler parts discussed in Chapter Three. According to Steven Johnson it is the shapes of emergent patterns that will define the future of science. It was the recognition of a consistency in pattern formation within many diverse contexts that has instigated the new interest in self-organizing systems.\(^66\) This recognition though requires a gestalt switch from matter to relational processes, something that Schelling achieved two hundred years earlier that is now recognized by those such as Bickhard and Campbell who argue that the notion of downward causation, integral to the ontological reality of emergence but denied by reductionist physics, is only made intelligible within a metaphysics of process.\(^67\)

The concept of emergence could not have emerged from within the constraints of Logical Empiricism. Emergent patterns are incomprehensible from the perspective of an epistemology that seeks to determine an absolute ground of knowledge from that that which has emerged. Emergent patterns are better understood as ‘productivity’ that reveals itself as art. For example, an exercise scientist is an emergent evolving pattern, or ‘habitus’. Within his field he is both structured and structurer, contributing to both the stability of the field and its evolution. His immediate relationship with the field is local, but he shares in the global dynamic. The field of exercise science as a whole is an emergent, evolving pattern that is both structured by and structures those individuals that make it up and other fields it is subsumed by and interacts with. Scientific analysis of the exercise science field will involve determining it as a particular ‘product’ that, while isolated, is somehow related to other ‘products’ including mathematical abstractions and time. Alternatively, in process terms, the exercise science field is a dialectical pattern of processes both generative of interpretation as well as constrained whose nature is therefore revealed as art.


\(^{67}\) This argument is in a paper by Mark H. Bickhard and Donald T. Campbell, *Emergence*, (Lehigh University),<http://www.lehigh.edu/~mhb0/emergence.html>, (9 April 2002), pp. 1-16.
Hermeneutics, Narratology and the Post-Positivist Critique of Objectivism

From Schelling and Merleau-Ponty, have emerged two necessarily abstract and therefore ironic concepts. One, ‘the unprethinkable Being’, stripped of its theistic Absolutism, relates to the primary reality of the activity of relational processes from which particularity emerges, and the other, ‘intentional arc’, relates to the understanding of an organism’s mode of immediate perception of primary reality. The relationship of both to a common groundless ground reveals the error of trying to separate metaphysics from epistemology. As that ‘…which is before all thought and presupposed by all thought and all enquiry’,\(^6\) notions such as the ‘unprethinkable Being’ reveal that empirical knowledge is derivative. It is therefore the role of metaphysics to reveal what empirical knowledge is derivative of. For example, Gare discusses the origin of theories, on which science is based. Theories, he argues, rather than representing reality, are a means for making sense of the world.\(^9\) Scientists, observing experiments, are not representing what they see. Subtending their every action, are metaphorical concepts derived from their bodily engagement with the world and others; their intentional arc, or ‘habitus’. Their interpretations of their design and observations are largely determined by these concepts; that is, it is a hermeneutic process. Their evaluations and judgements then emerge from within a dialectical process. It is these arguments that have been made in different ways by post-positivist philosophers of science and language such as Merleau-Ponty and Bourdieu, Polanyi, Kuhn, Gadamer and Ricoeur, as well as Gare.

For example, Polanyi rejects science’s claim to objectivity and its avowed purpose ‘…to establish complete intellectual control over experience in terms of precise rules that can be formally set out and empirically tested.’\(^7\) He introduces the concept of ‘personal’ or ‘tacit knowledge’ to describe a level of rationality that is inarticulate but predominates in

\(^6\) Gare, *Nihilism Inc.*, p. 291.
heuristic processes of scientific theory formulation. In Gestalt terms, this ‘tacit knowledge’ conditions what comes to the foreground for the scientist. Kuhn advocates the abandonment of the traditional assumption that scientific progress is about getting closer to the truth and draws parallels between scientific and political development. Broadening the personal to the sociological, he argues that currently accepted science emerges from the dialectic between established paradigms and new challengers, a process removed from scientific method.71 Gadamer is also critical of science’s obsession with objective, repeatable method. Drawing on Heidegger’s conception of truth as ‘unconcealment’, Gadamer argues that such a univocal approach curtails what can emerge from a truth claim. Science therefore is not about truth, but certainty. He is particularly critical of those areas of philosophy related to Logical Empiricism that endeavour to mathematically formalize language in a way to produce certainty. For Gadamer, every proposition is motivated. Every proposition has presuppositions that it does not express.72 Similarly, Ricoeur argues against the formal and atemporal treatment of language by Logical Empiricists such as Carl Hempel, arguing from his emergent theory of metaphor that language and the construction of meaning are continual creative processes. The immanent pattern of human discourse is narrative that he extends to both written and spoken texts as well as human action. Such narratives refer to the contexts in which they are uttered blurring the distinction between empirical accounts and fictional ones.73

In relation to hermeneutics, it was Gadamer, as well as Heidegger, according to Bernstein, who brought hermeneutics to prominence, at least in Continental philosophy, by arguing that hermeneutics is ontological. Bernstein traces the development of hermeneutics from a method for interpreting biblical texts to that which constitutes practical engagement in the world. Hermeneutics developed in Germany in the nineteenth century through Schleiermacher and Dilthey as a reaction against ‘…the growth of positivism, inductivism, and the type of scientism that claimed that it is the natural sciences alone that provide the

model and the standards for what is to count as genuine knowledge.\textsuperscript{74} Its sources were most probably diverse coming from Vico and the tradition of mediaeval rhetoric, practical philosophy based on Aristotle’s notions of \textit{praxis} and \textit{phronesis}, legal history and jurisprudence, Renaissance humanism and biblical interpretation. The major advance in hermeneutics came from the phenomenological movement in the early twentieth century, particularly Heidegger’s work ‘Being and Time’, that laid claim to both the ontological and universal significance of hermeneutics. From this period on, according to Bernstein:

Hermeneutics is no longer conceived of as a subdiscipline of humanistic studies or even as the characteristic Method of the Geisteswissenschaften, but rather as pertaining to questions concerning what human beings are. We are “thrown” into the world as beings who understand and interpret – so if we are to understand what it is to be human beings, we must seek to understand understanding itself, in its rich, full, and complex dimensions. Furthermore, understanding is not one type of activity, to be contrasted with other human activities…Understanding is universal and may properly be said to underlie and pervade all activities.\textsuperscript{75}

A key concept in hermeneutics is the ‘hermeneutical circle’. Bernstein reveals how Heidegger, Gadamer and Taylor transformed this notion from one that was concerned with the objective relations between parts and wholes to the idea that interpretation and understanding is ultimately self-referential. As Bernstein argues, a typical objection of Logical Empiricists is that the ‘hermeneutical circle’ is a ‘vicious circle’, one that ‘…demands some clear procedure, some method that can break out of the circle of interpretations and serve as a touchstone for determining which interpretations or readings are correct and which are not.’\textsuperscript{76} It was Taylor, according to Bernstein, who suggested that such objections are only seen as such ‘…when judged by the mistaken and unwarranted epistemological demands for empirical verification – the appeal to some “brute data”’.\textsuperscript{77} In other words, the Logical Empiricist position is itself a particular interpretation and way of understanding that is within the ‘hermeneutical circle’. This shifted the focus from the

\textsuperscript{74} Bernstein, \textit{Beyond Objectivism and Relativism}, p. 112.
\textsuperscript{75} Ibid, pp. 113-114.
\textsuperscript{76} Ibid, p. 134.
\textsuperscript{77} Ibid, p. 134.
objects to be interpreted to the role of the interpreter. It was this shift that then revealed the ontological nature of interpretation and understanding and the interrelated nature of theory and practice. Interpreters could not develop theories removed from the pre-dispositions and prejudices derived through their embodied practical engagement in the world. This linking of interpretation with practical choice then makes problematic any notion of a value and moral free science.

This then leads to arguments that science, like other human activity, is primarily concerned with the realm of meaning. For example, it is the nature of human experience that is the primary concern of fields such as exercise science. Exercise science does not deal with inert matter but with humans conceived in this thesis ‘…as culturally constituted creative agents within nature.’ Exercise science, like nutrition, psychology and sociology, is therefore a human science. As Polkinghorne argues, it is therefore necessarily engaged in the realm of meaning as a primary concern. Meaning, according to Polkinghorne, is derived from the emergent phenomena of narrative knowing:

…narrative is a scheme by means of which human beings give meaning to their experience of temporality and personal actions. Narrative meaning functions to give form to the understanding of a purpose to life and to join everyday actions and events into episodic units. It provides a framework for understanding the past events of one’s life and for planning future actions. It is the primary scheme by means of which human existence is rendered meaningful. Thus, the study of human beings by the human sciences needs to focus on the realm of meaning in general, and on narrative meaning in particular.

The point being made by Polkinghorne is that atomic, empirical facts, derived from the limited contexts of scientific experiment, are in isolation, meaningless. Meaning is derived from the weaving together of atomic facts into coherent narratives. Meaning is not pre-linguistic as Logical Empiricists would have one believe but within the means of human expression. It is narratives that give wholeness to the analytical fragmentation of scientific

78 Gare, Nihilism Inc., p. 350.
79 Polkinghorne discusses the nature of the realm of meaning in the Introduction to Donald E. Polkinghorne, Narrative Knowing and the Human Sciences, (State University of New York Press, Albany, 1988).
80 Ibid, p. 11.
practice. Such wholes are to be understood as being emergent phenomena and are therefore more than the sum of their parts and therefore not reducible to their parts. One cannot distinguish between the physical and human sciences as being essentially different in how knowledge is derived. From a process perspective such a distinction becomes a false dichotomy as both seek to understand the nature of relational processes and both necessarily structure their activities as narratives. What does distinguish the human and physical sciences, as Polkinghorne rightly implies, are the particular proximities of spatio-temporal domains on which they focus. 81

A good example of this is the problem of ‘deep time’, identified by Gee. Gee argues as a paleontologist, that the discovery of fossils millions of years old, from spatio-temporal domains that existed within ‘deep time’, can never give us accurate pictures of the sequence of evolution. His argument is based on the reality of co-evolution. Fossil fragments provide little information as to the complex network of relationships that may have existed in the period of a species emergence, development and extinction. All humans can do with such fossils is construct and compare narratives based on present experience of the world and the organisms within it. One, therefore, has a collection of atomic facts in the form of fossils that may be dated millions of years apart. According to Gee, constructing meaning from these facts generally involves linking these fossils together into a story of linear development that reduces the complexities of ‘deep time’ to a ‘day-in-the-life’ of a species. Recognizing this, Gee is critical of reductionist and teleological theories in evolutionary science that he argues are based on prejudiced narratives rather than scientific truth. 82

Leaving aside Gee’s own Objectivist belief that ‘Cladistics’ provides a method for transcending narrative, he supports two key points in this chapter. One is the hermeneutic, narrative structure of scientific theory and two is the provisional nature of knowledge and truth in relation to ‘deep time’. Gee supports the view that knowledge is generated within immediate experience in processes of dependent co-origination in arguing that knowledge is provisional in being particular to the ‘now’ of human spatio-temporal domains. One can

81 Ibid, pp. 157-161.
never be certain of what happened millions of years in the past but only, through narratives, construct wholes as best one can. This process of construction of wholes must be understood as involving intentionality and is therefore very different to the notion of representation that dominates mechanistic materialist based science. It is this difference that will now be discussed.

**Intentionality and the Specious Present**

The argument was made earlier in this chapter that through the influence of Descartes and Hobbes and with the emergence of Empiricism there was a shift from the medieval notion of intentionality to the notion of knowledge as representation. It was the separation of the knower from the world that necessitated this shift facilitating, for example, mathematical representation of reality. According to Varela, the notion of representation still dominates scientific theory through the dominance of scientific realism that continues to regard the knower as objective and disengaged from a world that exists independently.\(^3\) This representationist attitude has led to the treatment of context-dependent know-how ‘…as a residual artifact that can be progressively eliminated through the discovery of more sophisticated rules.’\(^4\) Alternatively, there is the view that such context-dependent know-how is the very essence of creative cognition, an insight that, according to Varela, derives mainly from Continental philosophers such as Husserl, Heidegger, Gadamer and Merleau-Ponty. In relation to this alternative view, Varela argues that:

The central insight of this non-objectivist orientation is the view that knowledge is the result of an ongoing interpretation that emerges from our capacities of understanding. These capacities are rooted in the structures of our biological embodiment but are lived and experienced within a domain of consensual action and cultural history. They enable us to

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\(^3\) While those such as Restivo argue that this notion of realism as reality independent of human beings is naïve realism, a view that is no longer widely adhered to, but ‘…what we usually have in mind when we consider realism’ in other than a trivial sense, radical phenomenologists, such as Varela, see this notion of realism as one that remains influential. Restivo, *The Social Relations of Physics, Mysticism, and Mathematics*, pp. 145-147.

\(^4\) Varela (et. al.), *The Embodied Mind*, Ch. 8.
make sense of our world; or in more phenomenological language, they are the structures by which we exist in the manner of "having a world". 85

One can argue that the most damaging effect of Objectivism and scientific realism has been the degradation of the role of human capacities for understanding, or consciousness, in the process of accumulating facts. Facts, in this view, are not to be corrupted by subjective assessments. Alternatively, all of those thinkers identified in this chapter with process thought have a common link in understanding human perception and consciousness as being intrinsic to how the world is constituted. Phenomenology, for example, most notably associated with Edmund Husserl and later, Heidegger and Merleau-Ponty, makes the understanding of perception and consciousness primary. The general theme of phenomenology is intentionality that Føllesdal defines as ‘...the peculiarity of consciousness to be conscious of something.’ 86 It was Husserl’s teacher, Brentano, who reintroduced this concept in the nineteenth century, one that was common among scholastics in the Middle Ages, where one acts in reference to a content, or direction upon an object. As intuitively obvious as this notion sounds, it has been consistently supplanted by Objectivist notions that divide human consciousness from the world, the logical implication being that humans cannot act or be conscious of the world directly or directly affect the world’s autonomous development.

A key concept of phenomenology, deriving from Husserl’s work, is the notion of the living present. Husserl, in investigating the structure of the lived present, what Varela terms the ‘specious present’, revealed the existence and nature of the interface between consciousness and the world, an interface that reveals the deep flaws in Objectivism and scientific realism. Varela builds on the work of Husserl by introducing recent developments in cognitive science that particularly reveal the role of smaller and faster spatio-temporal levels. Through this, Varela attempts to explore the world-creating structure of the ‘specious present’, the ‘transparent web of time’ in which human autopoietic unities exist. These processes, he argues, are ones involving intentionality rather than representation and

85 Ibid, pp. 149-150.
involve an experience of time quite different from the linear time of classical physics. He describes the experience of the ‘specious present’ in what follows. This is derived from his application of the Husserlian method of phenomenological reduction that, like Zen Buddhism, attempts to suspend habitual attitudes:

To start with, it does present itself as a linear sequence but as having a complex texture (hence specious, it is not a “knife edge” present), and its fullness is so outstanding that it dominates our existence to an important degree. In a first approximation this texture can be described as follows: There is always a centre, the now moment with a focused intentional content… This centre is bounded by a horizon or fringe that is already past…and it projects towards an intended next moment…These horizons are mobile: this very moment which was present…slips towards an immediately past present. Then it plunges further out of view: I do not hold it just as immediately, and I need an added depth to keep it at hand.\(^87\)

In this, Varela describes what he conceives as the three-part structure of temporality containing the ‘now moment’, the horizon of the ‘just-past’ and the horizon of ‘protention’, or the seeking of future threads. Within this structure, time ‘…never appears detached but as temporal object-events which are the correlates or the intentional focus of the temporal consciousness.’\(^88\) Following Husserl, Varela also recognizes the double aspect of such temporal object-events in having aspects of duration and unity. In other words, one experiences unity in the coming to the foreground of distinct, individual wholes that have a certain span, and duration in the continuous process of such wholes emerging and decaying in succession. Varela locates the basis for such temporality in the concept of perception as a self-activating, sensory-motor, interdependence, that is integral to embodied living systems. The coupling of cognitive agents with their environments mediated by sensorimotor activities as well as the autonomous activities of agents whose identities are based on emerging, endogenous configurations of self-organizing patterns of neuronal activity, forms the basis for his ‘enaction’ theory of the dynamics of temporality. He argues that:

\(^87\) Francisco Varela, *The Specious Present*, p. 3.
\(^88\) Ibid, p. 3.
From an enactive viewpoint, any mental act is characterized by the concurrent participation of several functionally distinct and topographically distributed regions of the brain and their sensori-motor embodiment. It is the complex task of relating and integrating these different components that is at the root of temporality... A central idea pursued here is that these various components require a frame or window of simultaneity which corresponds to the duration of lived present. In this view, the constant stream of sensory activation and motor consequence is incorporated within the framework of an endogenous dynamics, (not informational or computational), which gives it its depth or incompressibility... These endogenously constituted integrative frameworks account for perceived time as discretized and not linear, since the nature of this discreteness is a horizon of integration rather than a string of temporal “quanta”. At this point it is important to introduce three scales of duration to understand the temporal horizon as just introduced: (1) basic or elementary events, (the ‘1/10’ scale); (2) relaxation time for large-scale integration, (the ‘1’ scale); (3) descriptive-narrative assessments, (the ‘10’ scale). This recursive structuring of temporal scales composes a unified whole, and it only makes sense in relation to object-events. It addresses the question of how something temporally extended can show up as present but also reach far into my temporal horizon.  

In this conception, the structure of temporality is constituted by three integrated, emergent spatio-temporal levels from the inherently unstable, non-linear activity of coupled oscillators at the scale of milliseconds, or the ‘1/10’ scale, to the temporally extended activity of narrative construction and self-identity at the ‘10’ scale. It is at the ‘1’ scale, he hypothesizes, where there is synchronous coupling of neuronal assemblies, that the field of the ‘specious present’ can be found; an incompressible duration in which a cognitive act can be completed. Each cognitive act at the ‘1’ scale is an emergent, particular cell assembly. Each cognitive act contains the three-part structure of the intentional centre, the ‘just-past’ and protention toward the future that ‘...transforms an intentional content into a temporal extension.’ Underlying each spatio-temporal level is an inherent dynamic instability so that there is always a relaxation period leading to a new emergent phase. In this conception, the ‘just-past’ is not memory but retention. The ‘just-past’ is the preceding emergent assembly still present in the succeeding one that bifurcates from it, a phenomenon...
that reveals similarities to Whitehead’s notion of ‘actual occasions’ but without the atomism. 91 The constant emergence of new assemblies form trajectories that are constrained by the order parameters of the system defined by an organism’s embodiment. Retention arises from these trajectories enfolding ‘…both the current arising and its sources of origin in one synthetic whole as they appear phenomenally. 92

Protention, the seeking of future threads, is similar to retention but not symmetrical. It is anticipation conditioned by the non-linear self-motion or generic instability of the system that gives the system its temporal flow. This immanent temporal flow together with one’s inseparable awareness of it, conditions the experience that ‘something will come.’ Varela argues though that what will come is structurally indeterminate:

There are at least two main sources of evidence to conclude that protention is generically not symmetrical to retention. The first is, precisely, that the new is always suffused with affect and emotional tone that accompanies the flow. In fact, protention is not a kind of expectation that we can understand as “predictable”, but an openness which is capable of self-movement, an indeterminate that is about to manifest. In this quality it provides the natural link into affection, or, more aptly with some form of self-affectedness. The second is that retention has the structure of a continuum, but protention can only be a bounded domain, since we cannot anticipate an anticipation that is yet to come. While the threads of retention set the stage for protention, it cannot modify the retentional threads retroactively. 93

Important here is the notion of the present as a disposition for future action. Particular to human consciousness is the highly developed experience of an ego-self that is simultaneously aware of permanence and change, what Husserl called ‘double intentionality’. The ego-self emerges from the affect of what consciousness is conscious of, a primordial process. It is ‘affect’, according to Varela, that drives the temporal flow

91 This similarity can be found in Chapter Three where it was argued that in Whitehead’s concept, ‘causal efficacy is constituted by the syntheses of prehensions of atomic occasions in a process of becoming and perishing whereby past objects become subjects of present experience and present subjects become past objects.’
and conditions the experience of alterity, in which, one, experiences a difference in the identity of the present. Constituting ‘affect’, according to Varela, is emotional-tone that accompanies each intentional act, such as the surprise one may feel when there is a phase transition while observing changing perspectives of a ‘Necker Cube’. Drawing on Heidegger, Varela applies the notions of ‘affect’ and ‘emotional-tone’ to the notion of ‘transparency’ within the embodied phenomenon of ‘immediate coping’. According to Heidegger, ‘being-in-the-world’ is primarily being absorbed in a non-thematic ‘transparency’. Entities come to the fore in consciousness as a result of irruption in the flow of action, such as a hammer striking a thumb. Varela likens ‘transparency’ to a disposition for action, or, one could argue, Merleau-Ponty’s ‘intentional arc’ or Bourdieu’s ‘habitus’. These are trajectories of ongoing action-behaviours that, within a mixture of immediate coping and secondary activities such as language and mental life, condition our expectations of how the world will show itself. Breaks, or shifts in transparency of varying degrees are accompanied by emotional-tone that is constrained by the broader dispositional orientation of ‘affect’.  

Varela distinguishes three emergent scales of ‘affect’ that, he argues, are homologous but not isomorphic to his three scales of temporality. At the ‘1/10’ scale are emotions, or, ‘…the awareness of a tonal shift that is constitutive of the living present’; at the ‘1’ scale is ‘affect’, ‘…a dispositional trend proper to a coherent sequence of embodied actions’; and at the ‘10’ scale is ‘mood’, ‘…the scale of narrative description over more or less long duration.’  

Varela therefore, combines three spatio-temporal levels comprising a biological basis in elementary events, human experience of the present and narrative history, into a structure of protention that, in his terms, ‘sculpts a dynamical landscape’. He argues that:

Homologically, we can say that the experience of time has a biological base in elementary events (1/10-scale), but this basis is enfolded with other structures of temporalization into the specious present that is our theme. To deny that such a deeply rooted biological basis

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95 Ibid, p. 21.
plays a role in the appearance of temporality is fruitless. Similarly, I am not reducing emotions to their empirical correlate in a reductionistic move. As considered here, emotions are an integral part of an ontological readiness. However, this should not obscure the fact that such an ontological constitution has roots in basic emotional dispositions inseparable from our history as living beings and minute events in brain physiology...In saying ‘I expect to see’ I also provide exogenous, additional order parameters that alter the geometry of the phase space. This process of “sculpting” a dynamical landscape is intrinsically distinct from the trajectories that move within it, but form an inseparable unity.96

Varela’s concept of the ‘specious present’ can be understood as one that accords with a process view. The ‘specious present’ can now be understood as an emergent structure involving medium downward causation. It has emerged from lower level constituents at the ‘1/10’ scale and now constrains those constituents while being itself constrained by narrative history and ego-self at the ’10’ scale. Knowledge of the world is continually generated within this structure of ‘nowness’ driven by ‘emotional-tone’ and ‘affect’. It is ‘emotional-tone’ and ‘affect’, according to Varela, that provides the evidence for a mutual bootstrap between a phase space landscape and the particular trajectories that move within it, or what he refers to as ‘embodied coupling’. In other words, knowing is a dynamic, embodied, emotional process where direct perception and past experience fuse to pre-figure, or ‘sculpt’ each step into what is necessarily an indeterminate future, but one that is co-dependent.

**Characterizing Process Epistemology**

What distinguishes all of those process thinkers discussed in this chapter, is that all are concerned to reveal in their own way that which precedes conscious thought and action and in doing so, dissolve false dichotomies. The history of mechanistic materialist thought has involved the continual privileging of humans highly developed level of self-consciousness as the starting point for determining knowing as a purely conscious activity. As well as

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producing an unbridgeable gap between human knowers and the world, this mode of thought begins with knowledge and truth as completed objects rather than with the processes of their generation. From within this logic, change in what one knows and believes to be true is unintelligible. This is because a universe that is constituted by completed objects is more akin to a mechanism than an organism. A mechanism can be reduced to its component parts and each part can be analyzed, independently of others, from outside the mechanism. It is the highly abstract logic of the mechanism that then provides the conditions for the Logical Empiricist concept of verification. This is the nature of the relationship between mechanistic science and Logical Empiricism. It is a relationship that in seeking to objectify, quantify and petrify knowledge closes off development of possible relational pathways.

Alternatively, process metaphysics underpins concepts that understand knowledge as being continually generated. Varela, for example, provides a concept of the structure in which knowledge is continually generated, the ‘specious present’, a structure that is itself comprised of co-dependent, hierarchically interrelated processes. This concept hypothesizes how knowledge is created within the temporal field of the ‘now’ of immediate experience and how constituent and constraining spatio-temporal levels inform this process. The implication is that knowledge does not exist before or beyond the ‘specious present’ in which it is generated. Nor does it exist transcendentally or objectively external to embodied knowers who are themselves processes. In other words, it is groundless. It is to embodied knowers, therefore, that one must turn to understand how and where knowledge is generated rather than any atemporal realm or abstract entity.

Knowers exist as ‘autopoietic’, semi-autonomous systems interrelated with all other spatio-temporal levels. Such systems can be characterized as fields, in Bourdieu’s sense, that are ontologically real emergents that constrain their constituents. Human knowledge is generated within emergent fields within the human spatio-temporal domain of the ‘specious present’. This generation can be by either individuals or organized groups of individuals, such as scientific fields or communities. Relevant knowledge for humans is derived from the proximity of those spatio-temporal levels that come to the foreground within the human
spatio-temporal domain in processes of dependent co-origination within the ‘specious present’. Knowledge therefore, does not derive from representations that correspond to any pre-existing reality but from the continual intentional process of world creation. The process of world creation is always constrained by the ‘habitus’, or ‘intentional arc’ that informs the present with past experience and conditions anticipation of the future.

Within the human spatio-temporal domain, these generative concepts of knowledge are perhaps best characterized by the concept of the dialectic. This concept redefines knowledge as a process of understanding, or grasping the world by continually asking questions. Humans learn through the heuristic process of question and answer with the answers becoming the conditions for our future anticipations. As a process view implies, this activity is never completed but is a continual mode of engagement with the world conditioned by an ontologically hermeneutic disposition. Within the human domain, language has become the primary medium for dialogue. It is therefore toward language that both Logical Empiricists and process thinkers have turned. However, while Logical Empiricists seek to determine meanings in language as foundations that preclude further questioning, the dialectic in process thought is an open, indeterminate process that continually generates questions and meanings. Just as far-from-equilibrium thermodynamic conditions are the conditions for life, so a diversity of ideas and opinions are the conditions for knowledge generation. Knowledge as understanding is therefore generated by dialectical conflict at various levels of human cultural practice through conversation involving the questioning of others ideas and the seeking of new syntheses. It is in this sense that dialectics implies relational co-dependence and diverse ideas can be seen as complementary.

A process conception of truth makes change intelligible by acknowledging the generative processes, such as the dialectical and hermeneutic processes that seek new syntheses that open up new possibilities. Such new syntheses are seen as provisional truths that require the constant reformulation of narratives in synchronization with the changing patterns of processes. Truth in this sense becomes a unifying process developing new relationships and polyphonic narratives, therefore enriching experience rather than closing it off. It is
more akin to the notion of ‘troth’, discussed at the beginning of this chapter, in being a qualitative concept interlaced with emotional tone, affect and narrative mood. Truth in this sense is not an object or product, but refers to the ‘unconcealment’ of ‘productivity.

It is from a process conception of knowledge and truth that Gare suggests the goal of scientific inquiry should not be unprovisional truth that enables prediction, but understanding that enriches experience. Rather than existing within the determinations of mechanistic and reductionist science, such understanding emerges from what science, like art, reveals as counter-intuitive; the paradoxes and contradictions that emerge from static determinations in relation to the underlying reality of activity and process. Therefore, experience is enriched not through what mechanistic and reductionist science can freeze, but through what it cannot. The enrichment of experience requires the development and maintenance of quality relationships through participation in processes of mean intentionality, the condition for good health argued for in Chapter Four. Science that enriches experience, must be underpinned by a metaphysics and epistemology that enhances the quality of relationships and conditions mean intentionality; that being, as has been argued, process metaphysics and epistemology. With this in mind, the nature of the relationship between the physical inactivity/obesity problem and Logical Empiricism and Neoliberalism can now be revealed. Of particular focus will be the sciences underpinning the commercial practices of the Fitness Industry; the Fitness Industry being understood as the field in which physical activity/obesity related mechanistic and Logical Empiricist based research, the Public Health field and Neoliberal capitalism, overlap.

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97 Gare, Nihilism Inc., p. 289.
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PHYSICAL INACTIVITY, OBESITY AND EXERCISE SCIENCE

Having now outlined a process definition of health and a process conception of knowledge and truth, some fields that are argued to be implicit in the emergence and continued co-creation of the physical inactivity/obesity problem can now be examined in relation to them. Of particular concern in this and the following two chapters will be the nature and practices of the Fitness Industry. The emergence and development of this Industry was discussed in Chapter Two. It is a field in which the ideologies and epistemic strategies of Logical Empiricism and Neoliberalism come together. It is a field engaged in finding solutions to physical inactivity and obesity that overlaps with mechanistic science, Public Health promotion and the economic imperatives of late-capitalism. It therefore provides an example of the relationship between many current public health concerns and the subsumption of all human activity by the ends of economic growth.

The Fitness Industry seeks to address physical inactivity by providing services in three main areas; endurance/strength training, nutrition, and psycho-social motivation. Like all modern industries, these services are underpinned by science; endurance/strength training by exercise science, nutrition by nutritional science and psycho-social motivation by psychology and sociology. It is also these scientific fields, subsumed by bio-medical science, that are primarily engaged in physical activity related Public Health research. The Fitness Industry, being predominately commercial in nature, reveals the relationship between such research and capitalism. It is this relationship that reveals the deep
assumptions that provide the link between the problem of physical inactivity and obesity, the ways in which it is being addressed and mechanistic materialism.

The three scientific fields underpinning the Fitness Industry have produced significant dichotomies that are all of a similar nature; that is, they all relate to the philosophical problem of the universal versus the particular, or what can now be understood from a process perspective as particular general principles versus particular individual requirements. Exercise science, for example, is grappling with the problem of establishing universal principles of strength training from competing theories. Nutritional science is grappling with the issue of highly individualized nutritional planning versus broad nutritional guidelines. Psychology and sociology are still grappling with the problem they have had since their beginnings, the relative importance of individual agency and social constraint. From the Industry’s perspective, these arguments are important solely in relation to finding effective applications as means toward commercial ends, necessitating the exclusion of the middle in such arguments. This then becomes the prime motivation behind the various interpreters of science within the Industry whose forums are the many commercially based magazines, conferences and internet sites, some of which will be drawn on in this chapter.

The argument in this and the following two chapters is that these dichotomies reveal the two main ideological links between physical inactivity/obesity and mechanistic materialism, Logical Empiricism and Neoliberalism. A symbiotic relationship exists between these two ideologies within the relationship between commercial industries in late-capitalism and the sciences that inform them. Therefore, it is this relationship that needs to be examined to uncover the source of these dichotomies and ideologies within the unhealthy roots of mechanistic materialism. This examination will reveal that what is common to these ideologies and what sustains them is a fear of self-organization. This then makes them complicit in the increasing tendency towards ‘McDonaldization’, the replacement of heuristic practices and tradition with rule-based control systems, both in the Fitness Industry and in Public Health approaches. This is evident in the information, or propaganda, that is generated by the Fitness Industry. This information is disseminated
through two main vehicles, either directly through fitness professionals and practitioners or, as previously mentioned, via the many popular fitness media products such as quasi-journals, magazines, television programs and websites. Magazines are particularly revealing of the dominant sciences underpinning the Industry and their nature. All include content divided into the three main topics just discussed. The relationships examined in this chapter will focus on current practices of physical conditioning service provision.

The Fitness Industry and Exercise Science

The services provided by the Fitness Industry in physical conditioning are underpinned by the discipline of exercise science and its various sub-disciplines. Of particular focus in this section will be the activity of strength training, arguably the foundation on which the Fitness Industry has been built. The gym, with its cluttered collection of weight equipment, is still perhaps the most common image people have of the Fitness Industry. Until the ‘Aerobic’ revolution in the nineteen seventies, bodybuilding was what the fledgling Industry mainly had to offer. Since the ‘Aerobic’ revolution, services such as aerobic classes, circuits and aerobic training equipment have become as important. Although one could argue that most are capable of walking, running or cycling, without need of specialized services, strength training is generally believed to require specialized advice, equipment and facilities. Langford, for example, in her editorial in an Australian Fitness Network magazine, argues that strength training, particularly in its application to an aging population, is the future of the Fitness Industry because: ‘After all, we have the venues, the equipment and qualified personnel.’ As was discussed in Chapter Two, this perception is vital as the relevance and power of any service profession or industry relates to the perception that a service is being offered that people cannot provide for themselves. This is

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1 The ‘Aerobic’ revolution is often credited to the pioneering work of Dr. Kenneth Cooper on the benefits of aerobic exercise emerging from the Cooper Institute for Aerobic Research in Dallas, Texas. On the emergence of the gym industry from its basis in weight training, Frederick Hatfield argues the role of the development of a symbiotic relationship between bodybuilders and powerlifters and equipment designers and manufacturers. Frederick C. Hatfield, ‘Stand and Deliver: The Lost Art and Science of Weight Training’, Dr. Squat.com, (2001), <http://www.drsquat.com/index.cfm?action=viewarticle&articleID=45>, (8 June 2003).

also consistent with the highly specialized, atomistic nature of work and education in late-capitalism argued for in Chapter One. It is in this context, as well as that of increasing body fat percentages and aging populations in industrialized and developing countries, that the current debate over the best way to develop muscle hypertrophy must be seen. In other words, not only is it in the best interests of the population at large, it also strikes at the continued credibility of the Fitness Industry and its practitioners. Therefore, strength training must be promoted as being simple enough to appeal to the general public but complex enough to require special facilities and skilled supervision.

Another context in which this debate must be situated is in the conditions of the profit imperative of commercial enterprise. Science has become more and more the instrument for the development of novel products for industries, such as the Fitness Industry. Science has therefore been subsumed by capitalism’s insatiable appetite for new technology, blurring any distinction that may have existed between scientific knowledge and technology development. This mutually supportive relationship between science and capitalism has contributed to the dominance of Logical Empiricism. As Gadamer argues:

> This essence of modern science defines our whole life. The ideal of verification, the limiting of knowing to what can be verified, finds its fulfillment in imitation. The whole world of planning and technology grows out of modern science with its step-by-step law. The problem of our civilization and the trouble technologization causes is not due to the lack of a mediation court between knowledge and practical application. It is precisely that the manner of knowing in science itself makes such a court impossible. Science itself is technology.\(^3\)

Mindful of these contexts then, what can be said about the relationship between exercise science and the Fitness Industry? Already, as was argued in the previous chapter, it can be seen that there are many conditions on claims to truth beyond the simple data of science. What becomes accepted as true, in the Fitness Industry, is far more complex than Logical Empiricists would have one believe. Current debates in exercise science related to strength

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training provide relevant insights in this regard. If one examines the assumptions underpinning these debates, one can reveal the epistemological dominance of Logical Empiricism, the world-view of Neoliberalism as well as the contradictory nature of human experience. Before looking at a particular debate though, it is important to reveal how strength has come to be defined by exercise science.

**Exercise Science and Definitions of Strength**

As has been argued, Logical Empiricism underpins an epistemology in which propositions are true by virtue of being verified by an accumulation of empirical, atomic facts. From this position, the reality of higher level structures exists within their components rather than in the structures themselves. By quantifying facts and expressing their relationships mathematically one can derive analytic truths that provide a certain foundation for knowledge. This view emerged to support the position that scientific method provides the only source of correct knowledge of reality. All branches of science therefore, including exercise science, have a vested interest in maintaining this framework. From the perspective of Logical Empiricism meanings are understood to be capable of being determined and to correspond to reality. Determination though requires reducing meaning to narrow parameters. The goal is to remove ambiguity by defining terms as narrowly and statically as possible with complicating issues such as time being treated as a separate variable. As Schelling argues, science determines reality as ‘products’ abstracted from ‘productivity’. With this in mind, one can clearly see reflected in the following definition of strength by Heyward, the Logical Empiricist position:

Strength is defined as the ability of a muscle group to develop maximal contractile force against a resistance in a single contraction. The force generated by a muscle or muscle group, however, is highly dependent on the velocity of movement. Maximal force is produced when the limb is not rotating (i.e. zero velocity). As the speed of joint rotation increases, the muscular force decreases. Thus, strength for dynamic movements is defined
as the maximal force generated in a single contraction at a specified velocity. Muscular endurance is the ability of a muscle group to exert submaximal force for extended periods.⁴ Implicit in this definition is the goal to determine the meaning of strength by defining it as narrowly and statically as possible, effectively abstracting it from all other relationships. This definition reveals a reductionist program in exercise science to reduce complex problems to tightly controlled contexts; a definition that ignores all those contexts mentioned earlier. It is this narrow definition that gives coherence to the reductionist concept of the Repetition Maximum, or RM. One Repetition Maximum, or 1RM, is a measurement of the maximum weight that can be lifted for one complete repetition of a dynamic movement. As Haycock argues, it is this abstract concept of the 1RM that has historically become the standard for load setting with submaximal loads being expressed as percentages of one’s 1RM.⁵ Haycock details some of this history in the following:

As far back as 1940, MacFadden was making recommendations about loading. He felt that the load should not exceed 90% of the 1RM. Later DeLorme recommended that the load should progressively increase from 50% to 100% of the individuals “ten” RM over three sets. For example, the first set is begun with 50% of your 1RM for ten reps, the second set is increased to 75% of your 1Rm for ten reps, then the final set, which is considered the “work set”, is a full 100% of your 10RM. This three set routine has since been used as a standard to compare the effectiveness of many different loading configurations.⁶

From the abstract concept of the 1RM was derived the abstract concept of three sets of repetitions involving differing percentages of the 1RM, a concept that has been instrumental in reducing strength training to an issue of quantity. Interestingly, Heyward argues that establishing one’s 1RM is a heuristic process involving warming up, stretching, completing warm-up sets and then attempting several single repetitions with three to five minute rest intervals until the maximum is achieved.⁷ By Heyward’s admission, heuristic

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⁷ Heyward, op. cit., p. 110.
processes underpin the whole concept of the 1RM, an important point that will be shown later to support the argument in this chapter.

Haycock argues that the history of exercise science in relation to strength training since 1940, has been one of continual comparison with DeLorme to establish the optimum configuration of intensity, volume and frequency. For example, Zinovieff, in 1951, proposed the ‘Oxford’ method where after completion of a 10RM set, the load would be progressively lowered relative to fatigue; what are known today as ‘drop’ sets. In 1961, Barney and Bangerter compared to DeLorme, regimes doing three sets of ten at the same load and doing sets of increasing load from a 10RM to a 1RM. From 1962 to 1965, Berger conducted studies into evaluating differing regimes. His initial work, comparing nine different combinations using the bench press exercise, revealed approximately what Keipen concluded in 1956, that three sets of five or six repetitions is optimum when performed at maximum load for the number of sets; or 5-6RM. In 1965 however, Berger evaluated the effectiveness of one set of one repetition training per week using the ‘squat’ exercise. The conclusion was that strength gains could be achieved as long as a 1RM was performed. One can argue that there has been little advance on these ideas as these combinations are still applied today in gyms worldwide. What is of particular interest though, is the apparent ambiguous and contradictory results derived from this research. Siff and Verkoshansky summarize the conclusions that can be drawn from these historical developments, as follows:

1. Training with submaximal weights (75% or more of your 1RM) twice a week and with maximal weights once a week is as effective for developing strength as training with maximal weights three times per week.

2. The increase in strength resulting from training with 75% maximum twice a week and with 95-100% maximum on the third workout is mainly due to training with 95-100% 1RM on the third workout.

3. To obtain the optimal increase in strength with three workouts per week, the load per set should be between your 3RM and your 10RM.
4. Training once per week with your 1RM for one set will significantly increase strength for up to 6 weeks.

5. Training twice per week using your 10RM is as effective as training 3 times per week with your 10RM.

6. If your 10RM is used for one set, any additional sets with less than your 10RM have no training value for developing strength.¹

These results support the current orthodox view in exercise science that there is no one best way of developing strength but only variations on a theme of increasing one’s 1RM. Importantly, Haycock reveals that these studies generally involved observing untrained individuals who will apparently respond to virtually any method involving increased resistance over the first three months. For this reason, he argues that any short-term study (less than six months) involving untrained individuals should be interpreted with caution. As learning and development reach a stagnation point after approximately five months, there is greater complexity involved in the production of further gains that cannot be accounted for in these studies. He also reveals a contextual element here, arguing that studies conform to the typical length of academic semesters.⁹ This lends support to the position of process thinkers, such as Gare and Gadamer, that the pedagogical structure of science determines limited access to knowledge.

In relation to the structure of the field, exercise science clearly conforms to the Logical


⁹ A typical example of Haycock’s argument is in a recent study by Faigenbaum, et. al. in which 44 boys and 22 girls, untrained and aged between 5.2 and 11.8 years were subjected to three different training protocols with one control group. Conclusions were that higher repetition, moderate load groups achieved strength gains compared to the control group. Faigenbaum et. al., ‘Effects of Different Resistance Training Protocols on Upper-Body Strength and Endurance Development in Children’; *Journal of Strength and Conditioning Research*, Vol. 15, No. 4, (National Strength and Conditioning Association 2001), pp. 459-465. In a more recent issue, Vol. 24, No. 1, (2002), a research summary of resistance exercise by L. Perry Koziris, reveals several contradictory studies on high and low volume training all conducted over periods of three, six and twelve months. pp. 31-32.
Empiricist standard of seeking certainty and control over a limited domain. Thomas and Nelson, for example, reveal the distinction made between what they refer to as ‘unscientific’ and ‘scientific’ methods of problem solving in exercise science.\textsuperscript{10} ‘Unscientific’ refers to methods for acquiring knowledge such as tenacity, intuition, authority, rationalist and empirical. Tenacity is described as the clinging to certain beliefs despite lack of supporting evidence. Intuition is regarded as common sense or self-evident knowledge without any substantiating factual evidence. Authority is knowledge gained from referring, or deferring, to predecessors or superiors that Thomas and Nelson argue is not necessarily invalid, ‘…but it does depend on the authority and on the rigidity of adherence.’\textsuperscript{11} The rationalistic method is defined as conscious, deductive reasoning that Thomas and Nelson argue is fundamental to scientific method but not valid on its own in determining the truth of premises. Finally, there is the empirical method, or experience and data gathering, that is also fundamental to science but cannot be relied on if based too heavily on one’s own experience.

Contrasted with these is the ‘scientific’ method that Thomas and Nelson argue does not lack the objectivity and control of ‘unscientific’ methods. They describe this method as having four fundamental steps: developing the problem, formulating the hypothesis, gathering the data and analyzing and interpreting the results.\textsuperscript{12} Developing a problem requires the researcher to be very specific about what is to be studied and to what extent. Essential is the identification of the ‘independent variable’, or what is being manipulated, and the ‘dependent variable’, or the effect of the ‘independent variable’. Therefore, ‘…the researcher must define exactly what will be studied and what will be the measured effect.’\textsuperscript{13} In formulating the hypothesis, the researcher outlines the anticipated solution, or expected result of a study. Thomas and Nelson emphasize that a hypothesis must be testable; that is, able to be supported or refuted. It can therefore not rely on ‘unscientific’ methods or be a

\textsuperscript{11} Ibid, p. 11.
\textsuperscript{12} Ibid, pp. 12-14.
\textsuperscript{13} Ibid, p. 13.
value judgement, an abstract phenomenon that cannot be observed. Once the problem has been developed and the hypothesis formulated, the data can be gathered. Here, the reliability of the measuring instruments, the controls that are employed, and the overall objectivity and precision of the data-gathering process are crucial.\(^{14}\) According to Thomas and Nelson, ‘good’ methods seek to maximize both the ‘internal validity’, or the control of all other variables, and ‘external validity’, or generalizability and applicability to the ‘real world’. Finally, there is the analysis and interpretation of results described by Thomas and Nelson as the most challenging step requiring statistical analysis, knowledge, experience and insight. Here is where results must be interpreted and related to other studies and inductive reasoning employed to synthesize, develop and substantiate a theory.\(^{15}\)

It is toward successfully accomplishing this analytic and reductionist ‘scientific’ method, the paradigm of exercise science, that Thomas and Nelson devote their book. While attention is given to both Kuhn and Polanyi’s arguments against normal science and several chapters are devoted to other forms of research, including historical and philosophical, the dominance of Logical Empiricism is clearly evident, not only in the emphasis on objectively obtaining sufficient atomic facts, but also in the initial distinction, just described, between ‘unscientific’ and ‘scientific’ knowledge. The assertion is continually made that the ‘scientific’ method is objective and precludes the ‘unscientific’ and is therefore determinate of valid knowledge of reality (it is perhaps for this reason that one paragraph is devoted to metaphysics, while one chapter is devoted to quantifiable meta-analysis). As has been argued though, such ‘scientific’ methods are conditioned by assumptions that can only come from, apparently, ‘unscientific’ sources. The ‘scientific’ method, described by Thomas and Nelson, is understood in this thesis to be primarily a dialectical and hermeneutic process, one though that is aimed at a narrow and certain closure. Science is unavoidably subtended by prejudices with labels such as tenacity, intuition or authority. Furthermore, relationships between facts obtained through the ‘scientific’ method can only be made sense of in the human spatio-temporal domain by

\(^{14}\) Ibid, p. 13.

\(^{15}\) Ibid, p.14.
being woven into narratives, an ‘unscientific’ act by Thomas and Nelson’s definition. The attempt, therefore, to portray a particular method as being capable of objectivity and therefore precluding the ‘unscientific’, amounts to committing the fallacy of misplaced concreteness.

Thomas and Nelson’s work is typical of much current literature on exercise science originating from within science itself. The objective, controlled ‘scientific’ method of obtaining knowledge is first defended, then the attempt is made, in this case due to the force of Kuhn and Polanyi’s arguments, to account for other forms of knowledge and their relationship, or lack of it. There is also a political context made explicit through Thomas and Nelson’s constant urging to students that if one wants to be published and successful, then stick to the ‘scientific’ method. Alternatively, what is being argued in this chapter is the process metaphysical position that one cannot sensibly account for the relationship between particulars by starting from the particular. One must first start from the groundless ground of relational process to understand how particulars emerge. From a basis of relational process, objectivity and the access to truth of a particular method through exclusion of what are considered lesser forms of knowing, is incoherent. In process terms, knowing is primarily an embodied, intentional process of ordering patterns of relations into coherent wholes; an open dialectical hermeneutic process that is within existing relations while seeking to develop new networks of relations. Mechanistic exercise science degrades the quality of relationships by seeking to close off possible relational networks from a position of ontological isolation in a particularity, a symptom of mechanistic materialism.

Several contradictory and incoherent consequences emerge from this. One relates to the concept of internal and external validity and the belief that the more one abstracts a problem from reality the more applicable to reality it becomes. Another is the necessary distinction between those who do science and those who interpret and apply it, despite Thomas and Nelson emphasizing the importance of interpretation in the ‘scientific’ method itself. The Logical Empiricist position, underpinned by mechanistic materialism, divides scientists who produce disinterested facts from practitioners and even philosophers, who interpret and apply them. Polkinghorne characterizes this distinction as scientists who
divide up a problem and practitioners who restore its wholeness.\textsuperscript{16} This though once again commits the fallacy of misplaced concreteness. Such distinctions were revealed in the previous chapter to be ontologically secondary. The distinction between science and interpretation is a creation of mechanistic science. Primarily, practitioners and scientists are not mechanistic but ‘grasp’ the world the same way with both seeking to restore wholeness. The problem is, however, that those who are leading research and debates over strength training methods insist on making the secondary distinction, primary. What will be revealed in this debate, therefore, is the way in which dichotomies are generated through the error of basing arguments in abstractions.

**The Strength Training Debate**

A particular debate has recently emerged in relation to strength training that reveals the problematic links between exercise science and the Fitness Industry. This debate is specifically about whether muscle hypertrophy is best achieved doing high volumes of multiple sets and repetitions frequently, three times per week for example, or doing low volumes infrequently, one set once per week for example, at very high intensities. According to Siff and Verkhoshansky’s conclusions, the data gained from research following the ‘scientific’ method appears ambiguous with hypertrophy gains being achieved using multiple combinations. A consequence of this, as Hedrick argues, is that despite there having been ‘…a tremendous amount of research completed in the area of sport science, we are not at a point where we can point to one specific training method and say with absolute certainty that this is the best way to train an athlete.’\textsuperscript{17} One can discern a theme that intensity is a key to strength and muscle mass gains and that there are levels of diminishing returns, but the crucial point is exercise sciences’ starting point based on an abstraction; that of Delorme’s interpretation. If one is making comparisons to DeLorme, then one will either be narrowly arguing for more or less, a quantitative position.

\textsuperscript{16} Polkinghorne, *Narrative Knowing and the Human Sciences*, Ch. VII.

necessitated by the narrow focus of Logical Empiricist based exercise science. The argument being made here is that this amounts to abstractions deriving from an abstraction.

The ambiguous and contradictory nature of the scientific facts, suggests that any polarization is not directly derived from such facts but from the dogmatic claims of those interpreting the facts within the Fitness Industry who are at one extreme or the other; those such as Charles Staley and Mike Mentzer. Both these men are involved in the debate at its most extreme level, that of developing extreme muscle mass in bodybuilding, or extreme athletic performance. As Haycock revealed, untrained individuals will respond in the short term to almost any training method. It is where plateaus are reached and extra incremental gains are sought that arguments develop. Already, therefore, a problem emerges of internal and external validity. One can argue that current exercise science has most relevance at extreme levels and that scientific data and interpretation, related to this level, has little relevance to those seeking more moderate levels of strength and size. This is similar to arguments made in Chapter Three that research into distant spatio-temporal levels such as deep astronomy, or quantum physics has little concrete relevance to human life. When human beings are attempting to push the boundaries of there spatio-temporal domain, such as shaving one tenth of a second off a one hundred metre sprint time, or developing disproportionate muscle size, science’s incursion into other spatio-temporal domains assumes significance. However, the Fitness Industry, for commercial reasons, gives such extreme research relevance by applying such notions derived from extreme levels to those seeking more moderate results.\textsuperscript{18} As was argued earlier, when debates enter the field of the Fitness Industry, the middle ground is generally excluded due to the perception that ambiguity does not sell product. Extreme outcomes provide marketers with unambiguous examples of the return one can expect for their dollar. However, in process terms, as will be argued, this can be understood as a wrongful incursion into an inappropriate spatio-temporal domain, or a breaking through of constraints.

\textsuperscript{18} In March 2001, the Victorian Sports Medicine Conference contained a debate over single set versus multiple set training partly motivated by the growth in Victorian fitness centres of single set training for the untrained through the McEvoy Systemized Personal Training program. Interestingly, the current Business Development Manager for Vicfit, Mr. Ian Martin, argued in favour of such programs while an exercise scientist argued against.
Staley versus Mentzer

The first thing to be said in relation to Staley and Mentzer, therefore, is that they are both attempting to generalize data from narrowly relevant extreme contexts. In this, they both seek to portray themselves as representing the valid, objective scientific view and are critical of irrational, unscientific approaches. This continues the tradition initiated by Joe Weider, discussed in Chapter Two, of creating the perception that one’s strength training theories are scientifically proven. Ironically, though, while Staley and Mentzer stress the objectivity of their interpretations in conforming to the data of objective science, objective science necessarily regards their interpretations based on practical experience as inferior subjectivity. Nevertheless, it is such interpretations that shape the debate in the public domain. Perhaps the most controversial interpretation shaping the debate from the low volume, high intensity camp is the concept of ‘one set to failure’. It is this concept that has been made popular by Arthur Jones, the inventor of ‘Nautilus’ training equipment, and Mentzer, Jones’s protégé. For Mentzer, one hundred percent intensity is vital for optimum muscle hypertrophy, a level of intensity that logically occurs in the last repetition:

That last rep is very special. There is something that goes on physiologically at that point in the set where maximal intensity of effort is being exerted, which is literally responsible for triggering the growth machinery into motion. Furthermore, once you’ve actually induced growth stimulation by reaching a point of momentary muscular failure, you don’t have to do it again. Why? Because you’ve already achieved your goal of setting the growth mechanism into motion. It’s like when you throw the switch to turn on a light – once you’ve thrown the switch, the mechanism is in motion, and you don’t have to stand there flipping the switch up and down.19

Mentzer’s mechanistic materialist influence is immediately apparent in this quote. His metaphors reveal that like Newton, he sees muscle growth processes as being analogous to inert machinery awaiting a conscious stimulus from a human to initiate motion. Mentzer’s arguments focus on the optimal stimulus, or stress required for perturbing homeostasis. He

uses the analogy of suntanning to stress that one does not have to spend hours burning in
the sun to develop a tan and that determining the minimum time and intensity required
should be the object of science. In this regard he argues that:

The adaptive process is essentially defensive in nature, and the degree to which an adaptive
response is stimulated is directly proportional to the intensity of the stressor...Either the
intensity of the stressor is high enough to cause a specific adaptive response or it is not. An
absolute, objective requirement of nature is that a set of an exercise be carried to a point of
momentary muscular failure to effect an increase in strength and muscular size.\(^{20}\)

Mentzer’s theory then, (he argues that there can be only one), is based on two fundamental
principles that are regarded as absolute and objective requirements of nature; that maximal
intensity is the key to strength and muscle gains and that such intensity requires extensive
recovery. It is these principles that are also at the core of current, popular personal training
systems such as the McEvoy system that require no more than one intense workout per
week and one set to failure.\(^{21}\) It is this notion of training to failure that Staley is particularly
critical of, particularly in regard to the objectivity of definitions of failure. He argues that:

The very definition of “training to failure” needs considerable clarification. Does it mean
concentric failure? Eccentric failure? Inability to complete another repetition in good
form?...Inability to maintain the desired tempo?...Are we referring to failure of the
cellular, or neural system? Failure of the stabilizers, or prime movers?...For the purposes
of this discussion, “training to failure” describes training in a manner where each set is
continued to the point where further concentric repetitions “in good form” cannot be
completed under the lifter’s own volition. Second, the notion of failure is inexorably linked
to the magnitude of effort and ability to withstand pain and fatigue – both of which are
subjective qualities.\(^{22}\)

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\(^{20}\) Ibid, p. 56-57.
\(^{21}\) McEvoy and Associates, *Systemized Personal Training: Technical Training Manual*, (McEvoy and
Associates, Broadbeach, Queensland, 1997).
\(^{22}\) Charles Staley, ‘The Final Rep: Re-evaluating the Practice of “Training to Failure”’: *Myodynamics.com*,
For this reason he distinguishes between ‘extrinsic’ intensity, the magnitude of the external load, and ‘intrinsic’ intensity, the magnitude of effort applied against that load:

It’s important to recognize that extrinsic intensity is objective, and intrinsic intensity is subjective. In other words, we can measure the weight on the bar as a percentage of maximum, but when someone claims that they “went to failure”, we have to take his or her word for it.23

Leaving aside the abstract nature of the measurement of the weights, one can argue that Staley’s position reflects that of the mainstream in exercise science and application, that strength and muscle gains can be achieved by various methods, ‘one set to failure’, being just one of them. Aaberg, for example, sees failure simply as one program variable among many, one prone to subjective perception that may be misleading in ascertaining whether a targeted muscle has been exhausted.24 Staley himself argues that ‘one set to failure’ is a particular variable that has valid application in increasing intensity, but is deficient in exhausting targeted motor units, producing damage to sarcomeres and increasing testosterone levels.25 On the other hand, Mentzer defends what will be shown to be an indefensible position based on Ayn Rand’s ‘Objectivist’ philosophy.26 Drawing on Rand’s interpretation of Aristotle’s ontological principle, he argues dogmatically that A equals A; A being Mentzer’s method and A being muscle hypertrophy. In Mentzer’s interpretation, there is identity between A and A in that both are consciously and scientifically absolute objective truths that therefore correspond to reality. However, if one compares Mentzer’s interpretation of the ontological principle to that of the process thinker, Schelling, A equals

23 Ibid, p. 3.
26 Rand’s objectivist ethics is based on the values of reason, purpose and self-esteem and corresponding virtues of rationality, productiveness and pride. Man’s life is the standard of value and his own life is the ethical purpose of every individual. It is based though on a confused materialist metaphysics that views both matter and mind as primary and so cannot account for relationship. Epistemologically it values conscious knowing as revealing objective reality and denigrates subjectivity as emotionalist. From a Tabula Rasa basis though the emergence of such knowing cannot be accounted for. For Rand and Mentzer, scientific rationality and capitalism provide a non-contradictory basis for man’s freedom and integrity. Ayn Rand, The Virtue of Selfishness: A New Concept of Egoism, (The New American Library, New York, 1964), Ch. 1.
A relates only at a conscious level, the level of ‘product’, and expresses the relationship not between object and object, but between subject and object, or subject and predicate. As was discussed in the previous chapter, A equals A cannot express an identity between subject and object as these are already particularities. Identity is only found in that from which particularity emerges; the ‘productivity’. Mentzer’s equating of absolute and objective while at the same time rejecting subjectivity as emotionalist, amounts to an untenable, contradictory position. But it is not only Mentzer who gets this wrong, but exercise science as a whole in continually excluding the subject from the equation.

This is where, from a process perspective, these opposed positions can be understood to be complementary. What unites their views is the shared desire to hold the legitimate claim to objectivity. While Mentzer argues there is one best way and Staley argues there is no best way (but that his way is better), both base their arguments on the objective, scientific facts, downplaying their own subjective input for fear of not being ‘scientific’. However, an examination of both Staley and Mentzer’s methods for determining their positions reveals predominately heuristic processes. Data from exercise science is, in fact, often ignored as they relate how their information is derived primarily from dialectical hermeneutic processes expressed as narratives. It is the stories related by Staley and Mentzer of particular individuals and their experiences of trying particular methods that reveals their primary understanding as well as the paradoxical and provisional nature of truth in a universe of relational process. Expressed another way, science is drawn upon to support experience rather than the other way, or, experience of process determines the interpretation of scientific abstractions.

This provides an understanding of the limitations exercise science has in fully understanding the nature of activities such as developing strength. From its metaphysical basis in mechanistic materialism, its necessary starting point in attempting to understand

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27 Mentzer, for example, devotes much of Heavy Duty II to relating the many stories of his successes and the problems he has encountered with unresponsive individuals. Consequently, Mentzer’s one true method is revealed as being constantly tinkered with to suit particular individuals. Staley, on the other hand, emphasizes the need to adapt training programs to individual requirements based on his own and his client’s experience.
the relationship of human beings to gravity is from emergent structure, or ‘product’. Such a position results in the removing of process from the process, evident in the atomistic and decontextualized nature of research within the ‘scientific’ method. This leads to the accumulation of a plethora of atomic facts with no logical basis for relating them. The suggestion though, from the Logical Empiricist based assumptions of Staley and Mentzer, that this accumulation of atomic facts is providing proof of best practice in strength training is misleading. It is providing ambiguous and contradictory results, particularly as reductionism drives exercise science deeper into smaller and faster spatio-temporal levels where all that is found is greater complexity. Those who are gaining understanding of the nature of strength training are those who are learning through practical experience within human spatio-temporal domains, those ironically, such as Mentzer and Staley. Their largely unconscious prejudice though toward mechanistic science as the only legitimate method of verifying their experience, effectively obliterates any complementary relationship they may have with other ways of knowing.

From a process perspective, then, how can Staley and Mentzer’s claims be understood? Firstly, there is the understanding that universal principles cannot be derived from scientific ‘products’. What is universal is relational process itself from which emerge particular structures, or ordered potentialities for ordering produced and maintained by processes, and their relationships to particular gravitational forces. The word strength is a metaphor describing this relationship and must be understood as a potentiality rather than an object, or state. Secondly, the relationship between an exercise scientist, or practitioner, and the truth they are trying to determine, is one of subject to object, regardless of what particular method is used to mediate the relationship. As particulars, there can therefore be no simple correspondence emerging from such a relationship. Thirdly, the particular, determinate nature of science will always encounter paradoxes and contradictions when applied to processes so that any claim to truth must be provisional. Fourthly, such claims to truth must relate to those spatio-temporal domains in which they are relevant.
Universal Laws

The argument has been made that Logical Empiricist thought, underpinned by mechanistic materialist metaphysics, is the dominant influence within exercise science and its interpreters within the Fitness Industry. Underpinning exercise research and debates in the Fitness Industry therefore, is the desire to gain certain, reliable knowledge about the world in order to control it. In a Neoliberal world, having control over nature gives one access to wealth and power, seen as the primary human needs within a Hobbesian (and Randian) logic of selfishness. The struggle for control leads to the development of entrenched dichotomies, such as in the strength training debate just discussed, that act as roadblocks to further understanding, degrading the quality of relationships. It also leads to ‘McDonaldization’ that further obscures the generative nature of reality. In relation to the process definition of health, this is unhealthy. This pathology is also evident in the positions of those trying to transcend dichotomies from within the constraints of exercise science. Hatfield, for example, who also privileges science as the ‘acid test’ of whether any strength training system should be adopted, lists what he refers to as the ‘seven laws of training science.’ These are:

1. The Law of Individual Differences: We all have different abilities, bodies and weaknesses, and we all respond differently (to a degree) to any given system of training. These differences should be taken into consideration when designing your training program.

2. The Overcompensation Principle: Mother Nature overcompensates for training stress by giving you bigger and stronger muscles.

3. The Overload Principle: To make Mother Nature overcompensate, you must stress your muscles beyond what they’re already used to.


5. The Use/Disuse Principle: “Use it or lose it” means that your muscles hypertrophy with use and atrophy with disuse.

6. The GAS Principle: The acronym for General Adaptation Syndrome, this law states that there must be a period of low intensity training or complete rest following periods of high intensity training.

7. The Specificity Principle: You’ll get stronger at squats by doing squats as opposed to leg presses, and you’ll get greater endurance for the marathon by running long distances than you will by (say) cycling long distances.²⁹

For Hatfield, these are the scientific laws of training that are the basis for all different systems. What makes a system effective depends on how these laws have been interpreted and implemented. All training systems, no matter how different, adhere in some degree to these laws with the most effective being those that adhere the most. Mentzer’s dogmatic generalizations, for example, could be regarded as being deficient in their interpretation and application of laws one, four, five and seven relating to individual difference, whereas Staley may overemphasize laws one, four and seven, making any generalization difficult. Hatfield’s intent here is to introduce a set of rules that transcend all particular arguments and become the basis for evaluating all other positions. What though is the basis of Hatfield’s laws? According to Hatfield their basis is in mechanistic exercise science, a field that has been shown to produce knowledge that is ontologically derivative. By privileging mechanistic science therefore, Hatfield’s laws cannot be transcendent as they are based on abstractions no more concrete than Mentzer and Staley’s basis.

Hatfield has rightly identified some general, recurring patterns related to training that help provide some common ground for all systems. However, such patterns should not be reified into universal laws that have been somehow derived from something other than the

dialectical hermeneutic and heuristic processes from which they emerged. However, such reification is a necessary consequence of Logical Empiricist thinking that requires universal laws as a fixed basis for quantification, enabling the development of rule based systems designed to obviate the need for heuristic processes. Knowledge then becomes an assortment of immutable objects, or facts. Fitness trainers coming after Hatfield need only acquire this knowledge rather than experience it for themselves. What is it that connects these facts though? It is not their direct correspondence to reality but Hatfield’s own largely unconscious ability to organize them into a coherent and consistent narrative underpinning a particular practice. This is enabled through the pattern matching abilities of his direct perception with such patterns being filtered through his intentional arc. This primary process can not be simply abstracted from human understanding and replaced with rules. However, it is these pre-conscious acts that Hatfield denies legitimacy to through his deference to Logical Empiricist based, objective science, therefore making his own role problematic.

What Hatfield is actually describing in process terms are particular relationships that produce and reproduce themselves in relation to particular dynamic constraints. It is the continued integrity of larger and slower constraints that are the conditions for the consistency of patterns that have revealed themselves to Hatfield, not through scientific abstractions, but primarily through his perception of patterns. The role of science is that its ‘products’ become part of his experience and therefore his intentional arc that is evoked to condition his anticipation of the future. His experiences of practice and theory in relationship with multiple spatio-temporal levels, merge to condition his anticipation that future strength training, whether by him or others, will conform to his anticipations. The continued existence of Hatfield’s ‘seven laws’, therefore, must be understood as a process of dependent co-origination. Hatfield, and others within his sphere of influence, continually co-create these laws conditioned by their intentional arcs and they will continue to co-create them as long as the anticipation, or in narrative terms the projected plot, is satisfied. In other words there is no sense in which these laws exist independently.
**Evolution Misconceived**

As has been discussed, implicit in exercise science underpinned by Logical Empiricism is Objectivism and scientific realism. One of the most common assumptions in exercise science is the notion of adaptation that is clearly evident in the positions of Staley, Mentzer as well as in Hatfield’s ‘seven laws’. The assumption here is that those organisms that are the fittest, that are able to survive and successfully reproduce themselves, are those that are best able to adapt. As has been discussed, however, the implication inherent in this notion is that organisms adapt to a pre-existing, or pre-given, environment. This however again leads to incoherence. In the Fitness Industry, for example, it is the exercise extremists that are deemed to be the fittest and best adapted, a major argument for exercise participation based on evolutionary superiority. The question is though, what are they are adapted to?

In Chapter One it was argued that it is the slothful and obese that are perhaps best suited to today’s world in which hunting and gathering is no longer necessary and many problems related to inactivity can be fixed by medical technology. Arguments for adaptation must reveal the nature of the relationship between the environment and the adapting organism. From a position in which environments are assumed to pre-exist, the implication is that the environment exercise extremists adapt to no longer exists.

The problem lies in the atomism inherent in mechanistic materialism where organisms are assumed to be primarily both autonomous of each other and their environments. One can therefore manipulate and control one without affecting the other. The basis of these notions is in the reductionist neo-Darwinian concept of natural selection including Weismann’s doctrine that ‘...change only occurs in the germlines genes which are inviolate from somatic or environmental influences.’ However, this position, from a process perspective, has been shown in previous chapters to be incoherent and misconceived. It is a position that maintains the tradition of the epistemological gap and all of its philosophical

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problems in order to deny the influence of the subject, or emergent organism. Exercise science and its interpreters need to embrace a process conception of evolution that involves natural drift from processes of dependent co-origination. This would then reveal the primarily interrelated nature of co-evolution.

For example, some more enlightened exercise scientists such as Chek, are more concerned with how science’s abstractions and their various interpretations have actually perverted our primary engagement with the world. He is particularly critical of recent developments in the Fitness Industry where functional ‘free weight’ exercise has been largely replaced by machines that limit the natural movement of the body. While Hatfield is also an advocate for free weights due to their roots in human achievement in Olympic weightlifting, Chek emphasizes their importance from an elementary evolutionary historical perspective of human’s primary relationship to the world. He argues that athletes should not train like bodybuilders based on his comparison of the skills and abilities essential for competitive sport and those essential for survival among humanity’s Neolithic ancestors. He is particularly critical of bodybuilding’s obsession with isolating muscles to make them bigger rather than integrating muscles into functional movement patterns. He argues that bodybuilders would not survive long in a Neolithic environment where speed rather than bulk would be required, a view that would be consistent with the predominance of third class levers in humans. He also makes the point that for primal man, living in conditions of relative food scarcity, feeding massive muscle bulk would be problematic.

From this perspective, Chek advocates training methods that are based on natural, functional movements using free weights and even the introduction of greater instability through the use of large balls designed to artificially reproduce a primal context. Chek further suggests the need to educate people in developing functional movement patterns and re-educating those who are suffering from pattern overload as a result of using machines.

that restrict movements to narrow parameters. This need to develop functional movement patterns is also the basis of McKean’s work in understanding and training with motor pattern techniques. He stresses the need today to develop postural integrity prior to commencing any specific training program. Such development involves a learning process of habituating coordinated and integrated movements with the emphasis on facilitating pre-conscious performance of movement rather than conscious analysis. This type of development, he stresses, is urgently required to reverse the problems of sedentary work and improper exercise technique taught in fitness centres.34

What the positions of Chek and McKean reveal, is the way in which layers of conceptual abstractions, derived from scientific conceptual abstractions, produce mismatches in the patterns of conscious and unconscious intentionality. A historical analysis of humanity’s emergence reveals the nature of strength and its integral relationship to human development through practice, a co-evolutionary development acknowledged by those such as Vogel who advocate a whole organism based approach to understanding the evolving nature of the relationship between muscle development and human development in general.35 From an understanding of this primal relationship comes the realization that much of the apparent progress from the developing field of exercise science, celebrated by mainstream scientists and practitioners, has resulted in the disruption of normal human motor patterns. This is evident in developments in the Fitness Industry, underpinned by reductionist and mechanistic exercise science, that have led to inappropriate weight training technologies. This, combined with what McKean and most in the Public Health critical discourse recognize as social problems of sedentary lifestyles, has contributed to a deterioration in the relationship between humans and their constituent processes of postural anticipation.

Chek and McKean acknowledge that not all evolution is progress and that so-called advances in science may actually be regressive. Despite this, however, they stress that it is from within exercise science that such deterioration can be corrected. It is still evident, therefore, that Chek and McKean as exercise scientists still privilege their discipline and the

34 These ideas are in two unpublished papers of Mark McKean: Postural Stability and Exercise Technique (Part one) and Understanding and Training with Motor Pattern Techniques.
scientific method over other ways of knowing, a position that contradicts their own experience. An examination of Chek’s and McKean’s practices reveal them to be based on experience, to be processes of self-understanding that are removed from the limited domain of normal exercise science. They are processes involving ‘indwelling’ rather than objective method and quantification. They are processes in which truth is not determined, but ‘unconcealed’ through minimal intervention in the facilitation of body awareness. Yet Chek and McKean suffer the problem of seeing fitness in scientific realist terms. Their concern is to attempt to re-create a primal environment that humans can adapt to using tools such as rubber balls that one is reasonably sure were not present in the Neolithic age. Alternatively, what is required in exercise science is a gestalt switch from adaptation after-the-fact to what is pre-existing, to understanding that the present, drawing on the past, is always in the process of being co-created, conditioning anticipations of the future.

**Strength Training: A Process Perspective**

In summarizing the previous section, one can now understand the relationship between exercise science, the Fitness Industry, Logical Empiricism and Neoliberalism. What has been revealed is a relationship that is built, not on understanding, but on manipulation, power and control. The history of strength training has long been one primarily based on heuristic practices informed by the results of what has now been revealed to be mechanistic and reductionist exercise science. Exercise science uses the scientific method to produce certain knowledge of reality by reducing problems to highly controlled and narrow contexts. The result is a multitude of contradictory facts. Practitioners and theorists, in the belief that such science legitimizes their theories, sift through these facts and weave them into narratives that verify their experience. Then, through a process of induction, they seek to establish universal laws from particular facts. This process sees information reduced in complexity applied to domains of high complexity. Overarching this activity is the commercial goal of developing a commodity that can create a mass, dependent market, providing the holder of seemingly certain knowledge with wealth and power. Vital to this development is the atomism inherent in both Logical Empiricism and Neoliberalism that isolates fields from one another making physical activity the sole province of self-appointed
Physical inactivity and obesity in late–capitalism

experts. Those integrated within Neoliberal capitalism will ask, so what is the problem? The argument in this thesis is that the problem is primarily a metaphysical one in that those engaged in exercise science and the Fitness Industry believe their activities to be based in the true nature of reality. However, from a process perspective, activities such as strength training, reveal these beliefs to be defective.

Exercise science, underpinned by mechanistic materialism, is constrained by the logic that structure such as muscle tissue is primarily matter and its behaviour can be explained in terms of the mechanical motions of matter. The development of structure, such as muscle tissue, is assumed in mechanistic exercise science to be a linear cause and effect relationship whereby a stimulus to a primarily inert object elicits an adaptive growth response. This view stems from a materialist, mechanistic and scientific realist perspective that begins with the completed object rather than its generation and sees living matter and environment as autonomous of each other. This though has been argued to be a defective view that stems from a highly simplified and abstract concept of reality. In process terms, causation is more akin to what Goodwin describes as a diversity of cyclic loops folding back in a complex dynamic. It involves interrelated processes of both immanent and conditional causation. In process terms, the development of structure is the constraining of process, or activity.

Developing muscle, therefore, is not in transition from one state to another, but is being perturbed from its particular path through the constraining of possible pathways; a process best described by the term ‘homeorhesis’. Gare refers to ‘homeorhesis’ in relation to biologist C.H. Waddington’s theory of epigenesis, the study of the genesis of form and the differentiation of cells. According to this theory ‘…the development of the organism is canalized along different paths. These have been described by Waddington as ‘chreods’ (time-paths) and the self-stabilization along these paths as ‘homeorhesis’, corresponding to the notion of homeostasis as self-stabilization at a point.’ The organism, as a supervening constraint, co-determines the trajectory of these paths through its intentionality, understood

36 Goodwin, ‘From Control to Participation Via a Science of Qualities’, p. 7.
37 This is in Gare, Nihilism Inc., p. 339.
as being both conscious and unconscious. Vogel, for example, points out that in young mammals muscle tissue is much the same. According to him, how muscle is used, ‘…how the central nervous system sends signals to it determine how it will develop, not just in size but in structure and biochemical properties. We’re perpetually in training, intentionally or incidentally.’ In this process, the organism is always subject to dynamic constraints from higher spatio-temporal levels that limit possible pathways of the organism and its constituent processes. Constituent processes also provide limits but from within higher level mind constraints of how one feels, such as pain.

How then can this be applied to the intentional practice of strength training? In the previous chapter the importance of process thought was revealed in relation to the role of perception. It is here that the interface between organisms and their worlds exists. It is perception therefore that is the focus of a process view. In this regard, the concept of the ‘specious present’ was adopted as a process-oriented conceptual structure for understanding the nature of lived experience. In this conception, lived experience is of everything happening now but each ‘now’ is different from the previous one, creating the experience of time passing. It is this self-awareness that the present is different from the past that points to the creative nature of lived experience. With each passing ‘now’ one is not responding to, adapting to or representing a static, pre-existing independent world, but actively creating worlds through one’s conditioned intent and anticipation of the future. In the gym, for example, conscious intent to lift weights is conditioned by past experience, or the intentional arc. The intentional arc is interrelated with levels of constraint, those that constrain, and those that are constrained. Intent is therefore accompanied by largely unconscious knowledge of what achievements can be anticipated dependent on higher level constraints such as gravity, weather conditions, available time, available space and equipment, as well as mind constraints such as perception of energy levels and motivation. As mentioned previously, problems with constituent processes that are constrained such as inflammation or disease will manifest themselves within the evocative, higher level mind constraints of affect and mood.

38 Vogel, *Prime Mover*, p. 89.
With each step into the future, one is laying a path while walking. In this process, everything else in the universe is affected. The degree of this affect is dependent on proximity. For example, the effect of one’s workout on the solar system will likely be less than the effect on one’s tendons. When entering a gym, it is within a process of dependent co-origination in which all is primarily interrelated. Experience conditions the anticipation that other human beings present share a human spatio-temporal domain and experience temporality similarly. As a weight is approached, one’s intentional arc conditions anticipation of effort, both in terms of force and technique. This anticipation produces a downward causative effect on constituent processes and so must be understood as a totally embodied anticipation. World creation is the process of completing wholes. If the intent is to complete ten repetitions of a bench press at 100 Kilos, this anticipation will be realized upon successful completion. A successful or unsuccessful completion will be accompanied by an emotional tone such as frustration or triumph.

Within the ‘specious present’ worlds are continually being created based on what one anticipates them to be. If one is a strong and skilled performer working within capacities, the world being created will be largely transparent to one’s consciousness, or habituated. If one is inexperienced or working beyond capacities then the world will become opaque and one will be conscious of moments of pain, awkwardness or impending failure. The process of creating a world in which muscle is being developed involves making the world opaque by consciously breaking through the constraint of one’s conditioned anticipation. In other words, creating the conditions for a largely unanticipated event. In going for a ‘personal best’ lift, for example, one cannot fully anticipate what has yet been experienced.

**Anticipation and Dissipation**

The process of breaking through constraints is constrained by thermodynamic processes. Humans, as relational processes, are dissipative structures that emerge in far-from-equilibrium conditions; that is, humans create entropy. At the same time humans are capable of negative entropy, that being the ability to grow and self-maintain integrity, one of the distinguishing features of life. Ultimately though, either available energy or self-
maintenance capabilities dissipate, either through intense activity or with the natural course of a lifetime. This is consistent with the notion that everything in the universe emerges and disintegrates but at different scales and rates. This then leads to an interesting paradox that helps in understanding a key concept in strength training. With each repetition and set performed, one is conditioning an anticipation of a similar future. Effectively, one is becoming more strongly conditioned following repetition of an activity for anticipating what is to come. At the same time though, energy may be dissipating at a rate that cannot be sustained that is then acting as a constraint on one’s intent.\textsuperscript{39}

This is an example of how conscious processes of world creation are constrained by other interrelated dynamic systems that are most often unconscious. This relates to the issue of the relationship between the individual and structure such as the constraining effect of an embodied legal system on individual action. Hatfield acknowledges these constraints that he refers to as limits in his list of ‘thirty eight factors affecting strength and fitness’.\textsuperscript{40} These range from constituent limits of muscle fiber arrangement, musculoskeletal leverage, tissue viscoelasticity, ratio of fiber types and endocrine system function to contextual limits of social learning, freedom from disease, effect of gravity, equipment and environmental as well as spiritual factors. For Hatfield though, the notion of limits suggests something that can be overcome, a very different concept to that of dynamic constraint. He argues that:

All of these factors can be augmented, manipulated or in some way made more efficient through various and timely applications of one or more of the…”technologies” of training. Clearly, some are not alterable (e.g., fiber arrangement or insertion points of muscles). That doesn’t mean you can’t make use of your knowledge of this limitation in structuring your training, in avoiding less-than-fruitful practices, or in some way manipulating them to your advantage.\textsuperscript{41}

\textsuperscript{39} This provides a broader understanding of reductionist research being done into neural potentiation that is challenging accepted ways of preparing for intense activity. An example of such research is in G.M. Duthie, W.B. Young, D.A. Aitken, ‘The acute effects of heavy loads on jump squat performance: an evaluation of the complex and contrast methods of power development’: \textit{Journal of Strength and Conditioning Research}, Vol. 16, No. 4, (National Strength and Conditioning Association, November, 2002), pp. 530-538.

\textsuperscript{40} Listed in Frederick Hatfield, ‘Factors Affecting Strength’, \textit{Dr. Squat.com}, (2001), \texttt{<http://www.drsquat.com/articles/factors_affecting_strength.htm>}, (30 September 2001), pp. 3 -5.

\textsuperscript{41} Ibid, p. 1.
One who understands better the nature of constraint is Vogel who stresses the importance of limits in relation to the many negative feedback loops within the muscular system. For Vogel, these inhibiting processes may be more important than excitation processes. From a process perspective, this is because in a universe that is primarily flux, what is most important is being able to shut out the noise of multiple possible pathways. Examples Vogel gives include the complementary relationship between the flexion reflex and the cross extension reflex where an antagonist muscle is relaxed to allow flexion of the agonist. Complementing this is the stretch reflex where Golgi tendon organs and muscle spindles combine to regulate muscle length.\(^{42}\) Another important negative feedback system involves the role of inhibiting growth factor proteins, such as myostatin, that is active in regulating both growth and differentiation in muscle cells.\(^{43}\) In terms of complexity theory, it is the dynamic balance between positive and negative feedback systems that maintain systems at the edge of chaos, the horizon where good health exists.\(^{44}\) It is constraints that maintain our integrity in the face of uncertainty. The practice of breaking through constraints, of continually overcoming limits, particularly at the margin of the human spatio-temporal domain, is one that will eventually lead to the loss of integrity, as many substance abusing bodybuilders have discovered.

**Creating Muscle and Homeorhesis**

The application of process concepts to muscle development creates a significantly different narrative. After completing a weight session and breaking through constraints, one does not then adapt to an environment one is independent of. Rather, muscle development is a process of downward causation from the constraining level of one’s intentional arc. It is a process of world creation from anticipations of further similar efforts. Muscle grows in anticipation of the completion of a whole. Growing muscle however is always potential as one’s muscle growing world must continually satisfy anticipations of it while others

\(^{42}\) Vogel, *Prime Mover*, pp. 75-83.


\(^{44}\) This is discussed in Solé and Goodwin, *Signs of Life*, Ch. 4.
dynamic constraints must continually allow such satisfaction for the integrity of a level of muscle mass to be maintained. The development of further mass though, will require the conscious breaking through of the constraint of the conditioned anticipation, or the creation of a different world.

The maintenance of the integrity of a level of muscle mass is not adequately understood through the metaphor of homeostasis, a term often used in science in relation to stable systems. This is a static and therefore highly abstract term that does not capture the primarily active nature of reality. As discussed earlier, a more dynamic term is ‘homeorhesis’ that refers to self-stabilization of a path, or a path that tends to return to its trajectory after being perturbed. In this case it is a path being laid while walking so that one is not returning to a trajectory so much as creating it anew. The idea here is that all living systems, in their processes of world creation, are constrained by particular trajectories. These constraints are constituted by dependent features of the world that continue to endure and be co-created within the creation of new worlds such as the various structures and dynamic systems that constitute more distant spatio-temporal levels. It is these constraints that co-create the human trajectory rather than another and cannot be overcome like one of Hatfield’s ‘limits’. It is within the constraint of being a human, therefore, that perturbations are significant. In other words, a perturbation may mean disintegration or alter the course of a life, but it will not make a human a different organism.

Weight training that develops muscle is a perturbation severe enough in intensity and frequency to divert a trajectory. In complexity theory terms this relates to the critical value at which a phase transition occurs producing a newly emergent process. An increase in muscle mass therefore can be understood as a form of emergence that is understood in this thesis as involving medium downward causation. Whenever critical values of intensity and frequency are reached, a new order of muscle mass emerges that creates a new constraining effect on its constituents as well as affecting the intentional arc. However, if a perturbation is not severe enough in both intensity and frequency, the tendency will be to create anew

\[ \text{Ibid, Ch. 1.} \]
the retained trajectory. This partly explains why Public Health and Fitness Industry efforts to motivate people to dramatically and permanently change their lifestyles so often fails. Within the constraint of being human, people will tend to continually anticipate and create a particular world until such time as there is a major perturbation, such as a realization of the presence of cardiac disease. This point will be discussed more in what follows.

**Indeterminacy and Control**

The concept of ‘homeorhesis’ does not imply a determinate, predictable future; quite the opposite. Within the constraint of being human, the theory of perception and lived experience being presented reveals that each step one takes into the future anticipates the future and is therefore a leap of faith based on what is retained and evoked of the past within the field of ‘nowness’. In other words protentions are indeterminate but within a bounded domain. A trajectory is produced by a perturbation. In the case of strength training perturbations derive largely from conscious intent. The integrity of the continual creation of a world requires the continual completion of wholes, or satisfaction of anticipations. Therefore, one must continue to consciously act to create anticipations that maintain one’s trajectory. In other words, regularly lift weights. This then leads to the arguments that continue to obsess the Fitness Industry and exercise science, how much and how often?

This is of course where Mentzer, Staley, Hatfield and Chek enter the discussion. In their primary allegiance to Logical Empiricism through their privileging of mechanistic exercise science, all are logically bound to regarding the ultimate truth of strength training as relating to quantity. The ultimate goal then becomes the determination of the optimum number of sets and repetitions that establish a linear relationship to particular outcomes. With the optimum numbers, one can develop mathematical universal laws and be seen to have control over a natural process.\(^{46}\) However, all have a problem of misplaced

\(^{46}\) Mark McKean’s PhD. thesis (still in progress), for example, is described in an advertising brochure for a conference as being aimed at quantifying postural differences in order to develop a universal formula for postural assessment, one that can be computerized.
concreteness. As Goodwin argues, linear relationships only hold over a limited range and are essentially an abstract, ideal concept.\textsuperscript{47} What has been revealed in complexity research is that causational relationships involving living systems are ontologically non-linear. Also, determining a critical value for a phase transition is only made possible by assuming fixed initial conditions. The problem here though is that from a process perspective, constants, such as fixed initial conditions, are also abstract, ideal concepts. When one is about to commence a workout it is not from the same initial condition as the previous workout or even from one second earlier, but from within the process of dependent co-origination.

The practice, therefore, of developing a quantified standard of sets and repetitions involves developing an abstraction from an abstraction rather than finding that which corresponds to reality. All of those promoting strength training theories have their favourite combination of numbers for achieving the best results. Such numbers though are essentially instruments of control developed for the purpose of producing pre-determined outcomes. As has been the case throughout the history of mechanistic materialism, this practice makes qualities secondary. From a process perspective however, it is qualities that are primary and the key to greater understanding.

### The Role of Perception

The human activity of strength training can now be primarily understood as a process of world creation involving creative emergence. Abstracted from that process are concepts related to strength training expressed as metaphors based on the embodied experience of time and effort, or frequency and intensity. What one has done in terms of frequency and intensity contributes together with the intent, or projected goal, to one’s anticipation of the future, one with no guarantee of being satisfied. The ability to continue to create a world depends on the relationship between constraining processes, most of which are beyond one’s control, and what is retained and can be evoked from the past. If one over-trains,

\textsuperscript{47} Solé and Goodwin: \textit{Signs of Life}, p. 1-2.
dynamic constraints will perturb the muscle growing world, but if one under-trains, retention will dissipate, meaning that one will no longer anticipate one’s muscle growing world. This is not forgetting so much as anticipation and creation of a different world because, as has been emphasized, any past experience is always evoked in the present. From this perspective, one can argue that exercise science needs to shift its focus from mechanistic and materialist reductionism to the role of perception and understand the field of the ‘specious present’. The central questions then primarily become ones concerning the relationship of frequency and intensity to the processes of world creation, questions that open relational pathways. These are questions that converge within complex interrelationships between constraints and intentionalities within the field of lived experience that are irreducible. The embodied relationship between what one knows of the world, both consciously and unconsciously, and what one wants to achieve, determines what one anticipates, but not the outcome.

The type of intense workout required for muscle growth can be understood as a perturbation severe enough to create a new trajectory, a process involving breaking through constraints. This is not a simple linear argument that greater intensity equals greater perturbation. What a focus on perception actually reveals is greater complexity and problems of relativity. For example, the greatest perturbations and perceived intensity may be co-created by those anticipating entirely different worlds, such as the untrained, or those using low frequency techniques, such as Mentzer’s, where anticipation has dissipated prior to the next workout. As was discussed earlier, the untrained will develop dramatically at first no matter what method is applied. The greatest intensity, in terms of kilograms but relatively small in terms of perturbation, may be co-created by experienced lifters trying to create anticipation of a world of extreme muscle mass from one of huge muscle mass. In other words, they are working at or near the threshold of the human spatio-temporal domain and its constraints where further development becomes marginal.

What those at the threshold encounter, is greater complexity. A new trajectory, for example, once created, will continue to be anticipated until another is created. What must be understood however is that just as a human being as a process is a network of
interrelated spatio-temporal levels, so are human beings constituted by multiple trajectories related to spatio-temporal levels. One’s conscious intent to perturb, therefore, must be matched by other unconscious trajectories in order to co-create a new trajectory. In other words, what we want to do is not always what we can do, or what is healthy. Despite this, the strength training world is typified by those such as Hatfield and Mentzer who see limits to muscle growth as obstacles to human control of nature. From this perspective, a bodybuilder becomes a metaphor for humanity’s ultimate purpose to continually break through constraints. The achievements of bodybuilders and power athletes are thought to reveal a linear relationship between effort and reward that then justifies belief in a linear progression towards human transcendence over nature. As was discussed earlier though, such linear arguments are idealistic and highly abstract. In being so abstract, they tend to ignore or dismiss the concrete reality of the conditions that enable structural integrity. Alternatively, a process perspective focusing on perception reveals that strength training, as an issue related to structural integrity, in revealing multiple levels of complex relationships, goes beyond the narrow field of exercise science given exclusivity by theorists. The relationship of intensity and frequency lies within the relationship of a person to their world, a highly complex multi-level relationship and a multi-disciplinary one for research.

Values and Mean Intentionality

In the world of strength training, what is predominately valued is excess and extreme performance. This derives from a contemptuous attitude to constraint and a desire for control conditioned by a highly abstract view of reality. By applying a process definition of health to strength training, however, different sets of values emerge that are based on a more coherent view of reality. As has been argued in relation to constraints and ‘homeorhesis’, humans have particular trajectories, based on their intentional arcs that are partly constituted by the dynamic constraints of human’s relationship to their co-dependent environment. In other words, processes such as gravity and energy dissipation co-determine the scale and rate of their structure. A value can be applied to this general scale and rate as it relates to muscle mass that states that within this domain there are extreme
peripheries of dysfunctional relationships constituted by those who have inadequate muscle mass and those who have excess. Between these, relationships exist of a quality that maintain integrity with other interrelated levels at ‘the edge of chaos’. This has been referred to as mean intentionality.

Mean intentionality precludes as goals both extreme muscle development and total inactivity and helps establish more concrete poles of reference. The advanced anorexic, for example, can be understood as not having enough muscle mass to maintain the integrity of relationships, such as with family, friends, productive activity and constituent processes. The extreme bodybuilder, at the other pole, also has dysfunctional relationships. These relate to, among others, the environmental impact of extreme energy consumption, the effects of drug abuse and one they share with the anorexic, the limitations of self-obsession. Also at the extreme are those obsessively focussed elite athletes who have become the focus of much government and business funding at the expense of the obese majority. Underpinning these pathologies is mechanistic materialist metaphysics in the form of atomistic Neoliberalism that provides the conditions for a general growth fetish based on the autonomous individuals right to choose unconstrained growth independent of any effect on others. At the other extreme, the quickly dissipating anorexic or the slothful obese are simplistically believed to be individually responsible for making bad choices. The argument being made is that exercise science, like other mechanistic and reductionist sciences these days, is principally in the business of finding new ways to break through constraints, an activity with the potential to break down hierarchical organization. This is usually in the service of developing and improving the marketing potential of products sold by the Fitness Industry. Data from the peripheral extremes of human performance find their way into the intentional arcs of theorists to become attractively packaged fitness programs promising the general public elite level outcomes. However, for the majority in Western populations, these outcomes are both irrelevant and meaningless.
Towards an Ecologically Based Exercise Science

Alternatively, an ecologically based exercise science would have the goal of identifying what potentially constitutes mean intentionality. In other words, how can one live a life that recognizes and respects constraints that enable relationship integrity with multiple spatio-temporal domains, rather than being obsessed with breaking through constraints. This is primarily about gaining understanding of how to participate within natural processes rather than controlling them. From this perspective, the how of strength training cannot be separated from the why. Whatever strength training regime a person chooses will condition the co-creation of their world, affecting a multitude of relationships. This then raises the question of the value and quality of the world being co-created.

For example, Bryan Haycock refers to a study in which hormone-fed (meat type) battery hens are found to have larger muscle mass in their breast tissue than free-range (layer type) hens, but with less vascularity and greater pre-disposition to injury. While free-range hens can flap their wings all day, battery hens can only sit and admire their big pectoralis muscles. One can draw an analogy with the popularity of Mentzer based, minimalist training systems that are marketed largely at sedentary office workers who, the marketers argue, have more productive things to do with their time than exercising. One intense and minimalist workout per week therefore, fits perfectly with today’s busy, but predominately sedentary lifestyle. The Fitness Industry argues that by offering such products they are adapting to the real world, one that corresponds to the real needs of consumers. However, from a process perspective, this is revealed to be one of the great fallacies of capitalist consumerism. What has been argued, is that worlds are in the process of dependent co-origination and not adapting to something pre-existing. Therefore, what is being created is a shared responsibility. One can argue, that by promoting such schemes, the Fitness Industry, and exercise science that informs it, share responsibility for co-creating a world of battery hens. Rather than creating a world of regular and incidental physical activity, they

are co-creating with other business and Neoliberal governments, a world of less physical activity and greater consumption. In other words, co-creating extreme dysfunctional relationships.

In this process, the Fitness Industry profits from abstracting physical activity from other areas of lived experience by actively co-creating the anticipation of a world in which physical activity is a separate, infrequent and low priority component, a world where physical activity has become counter-intuitive and associated solely with commercial fitness service providers. In this pursuit, research is focussed on finding the minimum level of exercise that needs to be done. This, though, is contrary to the recommendations of the World Health Organization that exercise become more integrated within human activity. It is this active process of isolation therefore, that is perversely contributing to the vast majority of people in the West becoming disconnected from physical activity, undermining efforts to address the problem. Strength training, for example, has been reduced to being the means to particular ends related to the Fitness Industry and elite sport rather than the development of quality relationships, making the ends of strength training meaningless for most. At the other extreme of this polarization is the sub-culture that constitutes much of the Industry, made up of those obsessed with extreme performance.

Alternatively, strength training should be promoted within the concept of ‘mean intentionality’. A meaningful contribution to improving public health would be best achieved by striving toward co-creating the anticipation of a world where the integrity of muscle mass is maintained within quality relationships at multiple scales and rates. Such quality relationships recognize and respect higher level constraints that are the conditions for liberation as well as recognizing and respecting those levels that humans constrain. To do this a world needs to be created in which regular heavy lifting and postural development is meaningful in being integrated within people’s lives in a way that is in step with their developmental requirements at different life stages. Trajectories must be established from childhood of consistent anticipation and satisfaction of moderate strength levels rather than always seeking to create major perturbations. What must be valued in regard to strength is integrity in the face of uncertainty that precludes too narrow a focus in strength training and
too much abstraction. Of course there will always be those at the margin pursuing goals of elite performance, but predominately, a world in which the strength related goal is mean intentionality should become largely transparent making further mechanistic and reductionist research at this level redundant. From a process perspective, this is what one could term real progress. This is a long term, multi-disciplinary project involving major structural change to work and leisure practices in the Western world. It is one that first requires a shift from the notion of control to participation.

**Conclusion**

What then can be concluded from this discussion? The Fitness Industry and exercise science, are two interrelated and symbiotic fields. In the spirit of the Logical Empiricist demand for certain knowledge, exercise science largely follows the reductionist methodology of mechanistic science designed to churn out a plethora of atomic facts obtained from tightly controlled contexts. These objective facts are then used by the Fitness Industry in the spirit of Neoliberal capitalism to justify truth claims to generalized programming that can be packaged and marketed to the wider population. These facts are interpreted by practitioners within the Fitness Industry, and woven into narratives. In a culture underpinned by mechanistic materialism, scientific methodology based on Logical Empiricism is the valid epistemology with metaphysics being marginalized. Therefore, the validity of practitioner’s narrative interpretations comes from association with scientific fact rather than unscientific methods. All heuristic processes among practitioners are therefore subsumed by a scientific view that denies their validity. Consequently, arguments over ‘the best method’, or claims to universal truths, are conducted at the level of who has the most objective, scientific facts rather than who has the most coherent story. However, the necessary ambiguous and contradictory nature of scientific fact, in relation to the background of processes from which they are derived, means that science is unable to resolve problems it has largely created. This is because arguments primarily are not based on atoms of fact but patterns of meaning. Atoms of fact merely serve to help construct meaning from experience. All of the arguments discussed therefore are based primarily on
particular lived experience rather than atomic facts, making reductionist, empirical science secondary.

Integral to lived experience is intentionality. The various arguments are therefore based on the goals that are valued, both consciously and unconsciously. Therefore, the goal of an inquiry is as important as the data. It is in relation to the goal that metaphysics assumes primacy in revealing what is conditioning the anticipation of what questions are being asked. Intentionality also applies at emergent spatio-temporal levels other than that of the individual. The Fitness Industry, for example, is itself an emergent level that has a collective intentional arc conditioned by particular ideologies that embrace particular strength training theories evoked within particular environmental situations. For example, in the context of a sedentary population working long hours and with little exercise time, the intention is toward short and infrequent strength workouts. In a less pressured context, or one where particular sporting goals need to be achieved, the intention is towards longer and more frequent workouts. Therefore, the questions being asked within and between different levels of the Industry, as well as between the Industry and other fields, are often different ones. From this perspective, dichotomies are better understood as particular levels of understanding, that being interrelated, are complementary.

According to Ahl and Allen, the accumulation of further scientific data in general may not resolve differences but may only further entrench inflexible positions. From this, one can argue that there is already enough data to provide human beings with the knowledge required to condition mean intentionality toward creating muscle mass, knowledge that was intuitive in processes of co-creation of worlds now past and has been lost in changing practices or contradicted by mistaken scientific theory. Alternatively, what is required is an understanding of the processes involved in the formulation of the questions and an evaluation of what goals best contribute to producing and maintaining the quality of relationships. As was argued in relation to the bodybuilder and which also applies to the marathon runner, those goals aimed at breaking through the extreme borders of the human spatio-temporal domain and the theories that underpin them necessarily close off relational

pathways. They are goals conditioned by the desire to narrowly determine reality in order to attain wealth, power and control rather than for facilitating the flourishing of life. An epistemology based on process metaphysics alternatively seeks to develop and open new relational pathways and thus expand the domain of problems, or facilitate new syntheses.

Applying process metaphysics to the strength training debate would, therefore, see seemingly incommensurate views as complementary in relation to conditioning mean intentionality. This then broadens definitions of strength through being integrated into the process definition of health. Understanding, like Chek and McKean, the emergent, evolutionary processes of human development, reveals the context in which such development occurred. This context can be understood hierarchically as mean intentionality toward creating and maintaining the integrity of ordered potentialities for ordering through dependent co-origination. Such integrity requires quality relationships within a multiplicity of spatio-temporal levels. Quality relationships require an understanding and recognition of the nature and role of dynamic natural constraints. Theories based on efforts to break through constraints can be seen to complement an understanding of what practices potentially threaten the integrity of processes.

For the Fitness Industry and those in exercise science and Public health who support it to meaningfully contribute to addressing the physical inactivity/obesity problem, such a broad view of strength will be necessary, rather than the narrow views from extreme domains now achieving prominence due primarily to their marketing potential. The concept of strength as potential, for example, as becoming fully integrated processes within lives rather than isolated, singular events, is one that is unable to be grasped within a mechanistic materialist framework. A fundamental problem is that complementarity is about continually improving understanding of issues such as strength training whereas the Fitness Industry is about freezing scientifically proven products that can be sold to meet their pre-determined outcomes. Therefore, those with a process view of physical activity and the Fitness Industry have divergent goals. For strength training to become meaningful to people it must become fully integrated into their lives rather than as abstract fragments inconsistent with what is now more commonly sedentary existence, a process that would
make a Fitness Industry and much of exercise science and Public Health, redundant. The current relationship between exercise science, Public Health and the Fitness Industry, is incapable of facilitating this.
In the previous chapter, the problem of physical inactivity in particular was related to the defective way exercise has been reduced to an isolated, abstract commodity rather than an integrated lifelong process. Complicit in this development is the relationship between exercise science, Public Health promotion and the Fitness Industry. This was revealed to be underpinned by deep assumptions of the nature of primary reality consistent with mechanistic materialist metaphysics. In this chapter, a similar argument will be made in regard to nutrition, or the calorie intake side of the physical inactivity/obesity problem. There is probably no issue more vexed than diet and nutrition. The Media regularly reports on new diets and scientific studies claiming potential dangers or benefits of particular foods. What complicates the issue is that while strength training has been successfully narrowed to the domain of the Fitness Industry, food consumption is common practice for all human beings opening up diet and nutrition debates to a greater variety of influences and adding greater complexity. As Booth argues, ‘…dietary practices are dozens or even hundreds of times more diverse than smoking cigarettes, self-administering insulin or going for a walk.’

Like strength training, there has been a long narrative tradition of handing down advice on diet based on heuristic processes of particular individual experience. In late-capitalism, however, just as exercise science underpins strength and endurance training, the dictates of nutritional science now underpin the practice of giving responsible

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dietary advice; a practice common in Public Health campaigns and one that is now seen as a normal function of the Fitness Industry.

Against this backdrop of complexity, those in the field of Public Health and the Fitness Industry are primarily engaged in achieving two seemingly simple outcomes; making some people smaller, those who are overweight, the vast majority in the industrialized late-capitalist world, and some bigger, in a culture where food is relatively abundant this is generally those with eating disorders or those seeking greater muscle mass. The main problem groups, therefore, being targeted by Public Health as well as being a potential market for the Fitness Industry, are those whose lives are in some degree of chaos and are seeking to find and stay on a stable path. The standard for this stable path, however, is a complex relationship between generalized conservative Public Health guidelines and paradigmatic, hyper-real media images, creating a confused mismatch between expectation and probable outcome. In other words, extreme positions are taken to counter increasingly extreme behaviour. In process terms this is not mean intentionality, but a manifestation of the contradictory tension between asceticism and hedonism discussed in Chapter Two. In late-capitalism, food is both the bitter root of all evil and the sweet reward for sacrifice.

Despite the reality of such extreme emotions in relation to food, through the metaphysical filter of mechanistic materialism, food has been reduced by a predominately mechanistic nutritional science, to instruments; mere means to ends. Mechanistic and reductionist notions underpin the treatment of food as units of energy that can be split into their atomic nutrients then re-combined into diets designed to achieve specific outcomes. Like strength training, food has been abstracted from natural processes for the purpose of establishing universal laws that will facilitate greater control and manipulation. This leads to the absurd situation where popular fitness publications run articles on individual nutrients and their causative role in producing a specific fitness or disease related outcome.\(^2\) It also leads to arguments that pit nutritional categories against each other, such as the current debate

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\(^2\) A typical example of this is an article on the benefits to training of a particular amino acid, glutamine that advises it be taken as a supplement, abstracted from foods that contain it. Andrew Hamilton, “Glutamine: The Next Wonder Supplement?” *Australian UltraFit*, Issue 60, (Australian Workout Publications, Newport Beach), pp. 66-69.
between carbohydrates and protein. Like the strength training debate, this debate, based in nutritional science, reveals its mechanistic materialist metaphysical roots in the dominance of Logical Empiricist epistemology and Neoliberalism that underpin the relationship between the scientific discipline, Public Health and the Fitness Industry\(^3\). This relationship is a source of continued tension that contributes to the difficulty of achieving any complementary position. It is this debate that will be the focus of this section.

**Carbohydrates versus Protein**

This argument is over the relative merits of high protein, low carbohydrate diets and high carbohydrate, low protein diets for the purpose of body fat loss and muscle mass gain. As was discussed in the Introduction, modern industrialized countries are in the midst of an epidemic of obesity and inactivity. In response to this situation, Public Health research has focussed on, among other things, human’s past and current relationships with food. Individual disciplines within the area of Public Health conduct research into particular aspects of diet and nutrition for the purpose of establishing causal links that further enable the development of technologies designed to solve this problem. Like exercise science, the majority of this research is both reductionist and mechanistic, providing results that are often equivocal or contradictory.

Implicated in this is what Crotty argues is a cultural divide between ‘…the post-swallowing world of digestion, physiology and pathology and the pre-swallowing world of behaviour, society and culture.’\(^4\) Typically, studies in the post-swallowing world lie within the domain of the dominant biomedical model and usually involve the ingestion by laboratory animals, or selected human beings, of isolated nutrients and the subsequent analysis of their physiological and pathological effects. An examination of the major journals in nutritional science reveal a majority of such studies that conform to the ‘scientific’ method discussed

\(^3\) As was noted in the Introduction, the massive Diet Industry is being included under the term The Fitness Industry due to the similarity in their services, practices and potential markets.

in the previous section. Pre-swallowing studies are conducted within the social sciences in the domain of the biopsychosocial model. According to McIntosh, a sociologist, this domain in food and nutrition studies is dominated at one pole by anthropology, with its focus on culture and at the other, by psychology, with its focus on individual behaviour, with economics somewhere in between. This polarization is argued by McIntosh to have led to extreme positions involving either individuals or whole cultures, positions that have lost sight of the interrelated nature of both. One can argue, however, that they are united in their quest for scientific legitimacy, taking similar approaches in attempting to isolate and take snapshots of individuals and groups of people and their particular relationships to food in abstraction from broader contexts. The consequence for both pre and post-swallowing approaches is the extrapolation to universal principles of an accumulation of particular, decontextualized, abstract data.

Like the strength debate, the carbohydrate/protein argument takes place at the human spatio-temporal level of data interpretation and narrative construction, which takes place within many different media. As was argued in the previous section, it is the opinions of practitioners and scientists based on their personal experience and their particular interpretations of contradictory scientific data that shape these debates and influences the public. This influence often comes via the Fitness Industry where opinions are passed on orally or appear in the many popular Industry publications. Particular practices, and even particular processed foods, such as high protein bars, have emerged from these processes that are now marketed to the general public, often being applied to different ends than originally intended. Many of these products and practices do not conform to general orthodox nutritional science findings, creating a tension between the Industry, nutritional

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7 Ibid, p.3.


9 Booth is particularly critical of areas such as nutritional psychology and epidemiology that attempt to force individual diversity in to generalities through the use of statistics. Booth, ‘Nutrients epidemiology or healthy dietary practices?’ p. 69.
science and Public Health bodies over legitimate claims to knowledge and universal application. It is the source of this tension that this section seeks to reveal. An example of this is in a debate between advocates for high protein diets and advocates for high carbohydrate diets in an Australian Fitness Network magazine. Much of the history and nature of this debate can be found in this article. The question being debated is; are high protein, low carbohydrate diets effective? The four men participating in the debate all have high profiles within the industry and exert significant influence. Two, who argue the yes case, are registered fitness leaders Tony Findlay and Lou Barrie, while the two who argue the no case, are nutritional scientists Gary Egger and Matt O’Neill. One can discern immediately that this debate is polarized between the practitioner’s alternative view and the orthodox scientist’s view. These views will now be summarized.

Findlay, as well as being a fitness leader, declares his vested interest as a distributor for a nutritional supplement company. His position is that food in today’s world is generally nutrient deficient necessitating supplementation in the form of tablets and powders. His argument for higher protein is based on his personal experience of limited results in regard to body shape change and energy levels despite regular exercise and a high carbohydrate diet. He argues that decreasing carbohydrate intake is more effective than increasing exercise and denies the claim that today, people are just lazy. The effect of excessive carbohydrates on the ability of insulin to balance our blood sugar levels is the cause of obesity rather than insufficient activity. While Findlay argues generally that scientific research supports his position, he provides no specific references, preferring to rely more on his own experiences of changing his diet. His recommendations are:

1. Increase protein intake – it does more than just build muscle.
2. Increase good quality fats.

3. Limit your refined carbohydrates after lunch – by doing this your hormones will be able to use fat as fuel.\textsuperscript{11}

Barrie, as well as being a fitness leader is a competitive bodybuilder, an important point that will be discussed further in this section. Barrie argues that orthodox nutritional science is wrong about fat and its relationship to obesity and heart disease. Fat of any type is only a problem when consumed with carbohydrate in the form of starches and sugars. According to Barrie:

The basic issue is the presence of insulin combined with a correlated lack of the antagonistic hormone, glucagon. When insulin is present, the body will not use fat as fuel (dietary or stored). Also while insulin is present the body is primed to store fuel, not burn it. Therefore, if you consume larger amounts of carbohydrate your body will switch to almost exclusive usage of that fuel, becoming set up to store the other sources of energy (fat, protein and alcohol) as fat...The principle behind a low carbohydrate diet is simple – deny the body its preferred source of fuel (carbohydrate) and it has to manufacture fuel from other sources.\textsuperscript{12}

Essentially, high levels of dietary protein can be broken down into glucose with less elevation of insulin levels. Barrie therefore advocates that most of our calories should come from protein and fat with a few fibrous vegetables included. Because protein is relatively low in calories compared to carbohydrate, he advocates that even athletes should increase their fat intake in the form of oils, avocados or high fat meats. Unlike Findlay, Barrie cites many scientific references from ‘credible’ journals to support his claims and is critical of those who dismiss these ideas as a ‘fad’ that lacks any scientific support.

Egger, is arguably Australia’s most highly qualified and respected authority on exercise and nutrition. He is one that dismisses high protein diets as a ‘fad’ and equates those who promote it with charlatans. Egger promotes the orthodox linear line that high fat consumption together with poor levels of physical activity are the cause of obesity and

\textsuperscript{11} Ibid, p. 24.  
\textsuperscript{12} Ibid, p. 25.
related health problems. Weight loss that is associated with high protein diets is simply due to lower calorie intake as well as potentially dangerous water loss and protein breakdown. Weight fluctuations are determined by a simple equation involving calorie intake and expenditure. Because carbohydrate is the most efficient fuel source, it is required to provide energy for physical activity that increases our expenditure. Low carbohydrate intake reduces the capacity for physical activity and if coupled with high fat intake increases fat levels in the body that leads to cardiovascular disease. He qualifies his position though by arguing that:

For someone who has a weight problem, the best recommendation is a high protein, high carbohydrate diet. It’s well accepted now that the protein content of today’s diet is a fair bit less than what it used to be in traditional times (15% of the Australian diet is protein, compared to 25-30% in the past). The problem is that while we’ve decreased protein, we’ve increased the fat proportion attached to that protein. Therefore it is more beneficial to reduce the fat and increase the protein component…Fat mass can be decreased on a high carbohydrate diet provided the fat intake in the diet is low and provided the total portion size is not excessive.13

O’Neill is a qualified practicing dietitian working within the Fitness Industry. He basically supports Barrie’s analysis of the effects on glucagon and insulin levels of varying levels of protein and carbohydrate in the diet and acknowledges the fat utilization benefits of a high protein diet, particularly at extreme levels of carbohydrate depletion. However, he questions the efficacy of extreme carbohydrate depletion for long term weight loss, general health and sports performance. Such diets deplete glycogen stores in the muscles and the liver. This glycogen utilization leads to water loss that accounts for much of the initial weight reduction. Depleted glycogen stores though adversely affect sports performance, particularly in endurance events where these available stores and their replenishment are most required. He also points to the dangers of high protein diets being too monotonous.

From a post-swallowing perspective, monotonous protein diets can, he argues, ‘…reduce the variety and number of fibre and antioxidant-rich, plant-based foods consumed, which could contribute to an increased risk of developing various cancers.’ \(^{14}\) From a pre-swallowing perspective he suggests that monotonous diets can become boring and be difficult to maintain long term. O’Neill agrees with Egger that protein consumption could be increased from 15 to 25% of energy intake. Like Barrie, he supports his ideas with scientific references from ‘credible’ journals and concludes by advising fellow fitness professionals that:

> As our task is to help clients achieve permanent healthy eating habits, not short term fat loss, a diet that’s reduced in fat, has adequate protein and is moderate to high in carbohydrate, is the most prudent prescription.\(^{15}\)

This summary provides an overview of the issues involved in this debate and the level of polarization. While the scientists seem to be making some concessions regarding acceptable protein intake, this is within the subtext that those representing science are clearly better informed while those putting the alternative view to Egger and O’Neil are, to a large extent, reacting to the orthodox view they represent. Therefore, to understand their position, the metaphysical and epistemological basis of the orthodox view must first be analyzed.

**The Orthodox View**

The orthodox view is based on an abstract nutritional model, the ‘Food Pyramid’, originally developed in the U.S.A. and later adopted by Australia where it is known as the ‘Healthy Eating Pyramid’. The development of this model is associated with the development of health promotion generally and dietary advice more particularly. Contemporary dietary advice has been characterized by a shift since the 1950’s from an emphasis on deficiency and under-nutrition to the problems of chronic diseases, particularly heart disease,

\(^{14}\) Ibid, p. 28.  
\(^{15}\) Ibid, p. 28.
associated with affluence in Western industrialized societies. In summarizing significant events in this development, Crotty states that:

The release by a Senate Select Committee of Dietary Goals for the United States in the 1970’s was a watershed in the development of dietary advice internationally. Further developments in the US culminating in the government sponsored Dietary Guidelines for Americans in the 1980's were paralleled by similar dietary advice in Australia and other countries. Such advice was characterized by various combinations of guidance to reduce fat, salt, sugar and cholesterol and increase fibre consumption. This advice about nutrients and food components was translated into recommendations about particular foods with varying degrees of scientific justification and cultural and political sensitivity.\(^{16}\)

It is this last point of Crotty’s that is of particular interest. The mechanistic roots of nutritional science are revealed through the favoured methodology that has underpinned its influence on dietary guidelines. The mechanistic construction of dietary guidelines from the results of reductionist research into the nutritional components of food reveals such roots. Drewnowski’s summary of the types of research that have supported, and continue to support, the composition of dietary guidelines and their limited value in establishing causal links between diet and chronic disease, supports this position:

Causal links between diet and chronic disease are generally inferred from evidence gathered from a variety of sources. These include data from animal and laboratory studies, clinical trials, epidemiological surveys, and ecological comparisons. Animal studies generally involve dietary manipulations and prolonged exposure to specific diets or disease-promoting agents. However, their value is sometimes limited by questions regarding their relevance to the origins of chronic disease in humans. Clinical investigations address the effects of selected diets or dietary supplements on patient samples and on appropriate controls. Such studies are often limited both in sample size and in the usual duration of diet exposure. Information on dietary patterns and health status of populations is generally provided by large-scale surveys in nutritional epidemiology. Such surveys may suffer from inadequacies in dietary intake assessment, being based most often on a single measure of

\(^{16}\) Crotty, ‘Health promotion and nutrition’, p. 493
24h food recall...Ecological comparisons involve correlations between diet composition and the prevalence of disease that are made between different countries. Such studies critically depend on the accuracy of food consumption measures and the completeness of medical statistics collected from various nations.\(^\text{17}\)

One can see here an emphasis on post-swallowing research into the linear cause and effect of de-contextualized nutritional components. This is combined with probability data from epidemiological studies and various forms of quantified meta-analysis. The limitations of these research methods, according to Drewnowski, result in a wealth of contradictory evidence and a failure to establish continuous and strong causal links between diet and disease. What does emerge is the realization that a multiplicity of factors is involved, from genetic pre-dispositions to environmental constraints, in other words, complexity.

However, as Crotty argues, dietary guidelines have not been the product of complex research but primarily of post-swallowing research into nutritional components. Both Crotty and Drewnowski represent voices of discontent within the Public Health critical discourse over the emphasis on this narrow research focus that finds its support within the dominant biomedical model. As has been argued, the biomedical model is underpinned by mechanistic materialism and such narrow research practices by Logical Empiricism. It seems clear, therefore, that modern dietary guidelines promoted by orthodox nutritional scientists and disseminated through Public Health campaigns are largely the product of both. What then are these guidelines?

**Current Dietary Guidelines**

Wahlqvist and Kouris-Blazos point out that the ‘Healthy Eating Pyramid’ has been constructed from the scientific establishment of recommended dietary intakes (RDI’s) and the relationships of these intakes to disease. They state, in relation to Australia, that:

The recommended dietary intakes or RDI’s generally refer to vitamins, minerals, energy and protein. Recommendations for other macronutrients are generally defined as their energy contribution to the total dietary energy...Recent surveys of the Australian population show that the current diet is higher than recommended in protein, total fat, saturated fat, refined carbohydrates and sodium, and lower than recommended in total carbohydrate, complex carbohydrate and fibre. Australian diets also appear to be borderline for zinc, magnesium, folate, iron (women only) and calcium (women only). In food terms, the average Australian diet is proportionately too high in animal foods and too low in plant foods...Adults are not consuming the recommended amounts of vegetables (especially men), legumes, milk and milk products (women only), cereals and breads (women only) and fish, whereas consumption of meat and indulgences (high fat/sugar snacks) are more than double the recommended amount.\(^{18}\)

Wahlqvist and Kouris-Blazos describe a process in which quantified data on nutrient requirements become the basis for a qualitative model of various foods and the proportions in which they should be consumed on a daily basis. The quantified data, or RDI’s, as the National Health and Medical Research Council defines them, represent ‘...the levels of intake of essential nutrients considered, on the basis of available scientific knowledge, to be adequate to meet the known nutritional needs of practically all healthy people.’\(^{19}\) As Rutishauser states these levels are derived from estimates of physiological requirements for population sub-groups specified by age, sex and physiological state. The recommended amounts are generous and exceed the average physiological requirements of each group to allow for differences such as absorption rates and metabolism. From this data the pyramid is constructed. Cereals and fruits and vegetables form the base of the pyramid as an ‘eat more’ category, meat and dairy products form the middle as an ‘eat moderately’ category and fats, oils and sugar form the apex as an ‘eat in small amounts’ category. While there have been some refinements since this was introduced by the Australian Nutrition Foundation in the 1980’s, this basic model forms the core of orthodox thinking. It is this model that is the basis for Egger and O’Neill’s arguments against high protein diets and their support for high levels of carbohydrate and low levels of fat.

\(^{18}\) Mark Wahlqvist and Antigone Kouris-Blazos, ‘Dietary advice and food guidance systems’: Food and Nutrition, p. 508.

\(^{19}\) Quoted in Ingrid Rutishauser, ‘Nutritional standards of reference’: ibid, p. 476.
The Alternative View

Like Crotty and Drewnowski, the alternative views of Findlay and Barrie are largely a reaction against the narrow parameters of nutritional science and its product, the ‘Healthy Eating Pyramid’. One can see arguments in most of the alternative literature against the modern scientific paradigm and the inability of its generalizations to account for individual difference. The position is that orthodox nutrition adopts a ‘one size fits all’ approach that does not always make sense in practice. It is clear that in both extreme alternative literature and the mainstream Public Health critical discourse, this orthodox approach is regarded as being too heavily based on post-swallowing, nutrient research and not enough on pre-swallowing investigation of history and culture. Alternative views therefore range from a mix of nutrient, anthropological and socio-cultural research to more radical views rejecting nutrient research entirely.

The total rejection of nutrient research is usually within the realm of ‘New Age’ philosophy that was discussed in relation to theistic process philosophy in Chapter Three. A typical example of this is Deepak Chopra’s *Ayurvedic* approach to nutrition:

In *Ayurveda*, a balanced diet does not revolve around fats, carbohydrates, and proteins. Nor are calories, vitamins, and minerals given direct attention. These nutrients are known to us intellectually, not through direct experience. You cannot detect the Vitamin C in your orange juice, much less the difference between it and Vitamin A. For the most part, Western nutrition comes out of laboratory analysis. *Ayurvedic* nutrition comes directly from nature. When your taste buds greet a bite of food, an enormous amount of useful information is delivered to the doshas. Working solely with this information, *Ayurveda* allows us to eat a balanced diet naturally, guided by our own instincts, without turning nutrition into an intellectual headache.20

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Physical inactivity and obesity in late—capitalism

One can see here an essentially process view in that primacy is given to direct perception of the world rather than abstract reasoning. From a process perspective, therefore, those such as Chopra are understood as important voices in nutritional arguments, particularly in revealing the amount of confusion caused by science rather than progress. Then there are those such as Fallon who draw on the practices and beliefs of traditional, non-industrialized cultures as well as orthodox science to directly refute the claims of modern nutritional science. For Fallon, the current dietary guidelines, rather than representing scientific truth, are more the result of too close a relationship between nutritional science and the Food Processing Industry. This has resulted in what she calls ‘Politically Correct Nutrition’ handed down by the ‘Diet Dictocrats’ that ignores several dangerous errors built into the ‘Food Pyramid’. Fallon argues that these errors are:

First, the new guidelines imply that everyone can eat the same foods in the same proportions and be healthy. According to the Department of Agriculture recommendations, grains should be the basis of our diet; but many people do very poorly on grains. Others have a low tolerance to dairy products…Secondly, the pyramid calls for reduced fats without addressing the dangers of low fat diets. Finally, the new guidelines perpetuate the myth that fats, carbohydrates and proteins have equal nutritional properties no matter how much or how little they are processed. The experts make no distinction between…foods that nourished our ancestors and the newfangled products that dominate the modern marketplace.²¹

Fallon is highly critical of the Food Processing Industry, the largest, most powerful manufacturing industry globally, and its effect in ‘devitalizing’ agriculture. She provides several examples of how this Industry exerts an insidious influence over academic institutions through its funding of research. The consequence of this is the corruption of orthodox nutritional science that, she argues:

…singles out foods by independent producers – eggs and beef – but spares the highly profitable and powerful grain cartels, vegetable oil producers and food processing industry;

it sacrifices old-fashioned butter on the altar of the latest nutritional fad but spares pasteurized milk products and processed cheese; it gives lip service to the overwhelming evidence implicating sugar as a major cause of our degenerative diseases but spares the soft drink industry; and it raises not a murmur against refined flour, hydrogenated vegetable oil and foods adulterated with harmful preservatives, flavourings and colouring agents.\textsuperscript{22}

Like Findlay, Fallon suggests that there has been deterioration in the nutritional quality of food. This view also receives support from many orthodox scientists. Jones, for example, argues that the cost of modern food processing and preserving techniques is that they diminish the nutritional content of foods necessitating the artificial adding of lost nutrients.\textsuperscript{23} However, this supplemental practice is problematic, according to Wahlqvist, because of the complex interrelationships of nutrients, such as enzymes and vitamins that may not be reproduced in abstraction from their natural context.\textsuperscript{24} Fallon, rather than recommending supplementation, advocates a radical return to pre-industrial agricultural and food preparation methods. She also supports Barrie in arguing that saturated fat is not a problem when kept in its natural relationship to protein, such as meat and whole, non-pasteurized dairy products. To support her claims she draws on both archeological and anthropological evidence of better health amongst hunter-gatherer societies as well as a large body of scientific evidence that contradicts the orthodox position.

Like Fallon, there are those who support the view that the past holds the key to the future. D’Adamo, for example, argues from the perspective of evolutionary biology that the evolutionary development of blood types partly determines the types of foods one should eat. The history of human development still pre-disposes one to the conditions from which one emerged. The original blood type for the largely carnivorous Cro-magnon man was O and is still the dominant blood type, one in which meat remains the staple. With the emergence of agriculture, between 25,000 to 15,000 BC, emerged the more herbiverous type A in response to a more domesticated, agrarian environment. Type B emerged from the migration and merging of races moving to colder climates around 15,000 to 10,000 BC.

\textsuperscript{22} Ibid, p. 3.
\textsuperscript{23} Gwyn P. Jones, ‘Food processing’: \textit{Food and Nutrition}, pp.89-96.
\textsuperscript{24} Mark L. Wahlqvist, ‘Vitamins and vitamin-like compounds’: Ibid, pp. 222-248.
and is adaptable to a variety of foods. According to D’Adamo, Type AB is the most recent and rarest, not having been detected prior to 1,000 AD. This emerged from the intermingling of Type A and B in larger settlements and cities. For D’Adamo then, diet and nutrition must first be understood from its basis in the evolutionary weaving together of blood type, geography and race.\(^{25}\) D’Adamo sees himself as both the scientist and practitioner who has set about proving scientifically the results he has experienced in himself and the patients that he has treated based on ideas passed on to him by his father. He therefore engages in conducting conventional reductionist and mechanistic scientific research, as well as using existing conventional medical research to support what conventional medicine regards as unconventional ideas derived from unscientific beliefs.

Barrie’s perspective is similar. As a bodybuilder, Barrie comes from within a particular tradition of practice that has heuristically discovered the benefits of high protein diets in producing competition results that require extremely high levels of muscle mass and extremely low levels of body fat. As Ruud and Wolinsky point out, these results are gained through extreme cyclic processes of ‘bulking’ and ‘cutting’ in relation to competition schedules that are largely based on ‘…advice from more advanced bodybuilders, bodybuilding magazines, and “nutrition stores”’.\(^{26}\) As was argued in relation to strength training, competitive bodybuilding is an activity at the extremes of the human spatio-temporal domain that involves unhealthy practices of cutting off development of relational pathways. It is therefore from beliefs rooted in such an extreme level seeking to break through natural constraints, that Barrie’s beliefs in high levels of protein are derived. He then seeks to legitimize these beliefs by seeking out and highlighting orthodox scientific research that contradicts the orthodox, high carbohydrate view.

Like Mentzer and Staley in relation to strength training, D’Adamo, Barrie and Fallon argue their particular unorthodox positions from a basis in traditional, narrative and intuitive


knowledge that provides an important complement to other views. However, they then degrade such knowledge in their efforts to be legitimized by orthodox science, despite its inconclusive results. Egger and O’Neill, on the other hand, choose to base their knowledge in orthodox science and deny its basis in traditional, narrative and intuitive knowing. It is the epistemological dominance of orthodox science, though, that hinders any possibility of complementarity. This is a particular problem for those within the Public Health critical discourse trying to broaden the research parameters of diet and nutrition.

**Seeking Complementarity**

For example, scientists, Wahlqvist and Kouris-Blazos, argue that:

> The Australian Dietary Guidelines...are based upon current scientific knowledge about the relationships between diet (mainly nutrients) and disease. Momentum gathers towards a more integrated way of describing the human diet which incorporates not only the nutrient composition of foods, but also the non-nutrient components, food patterns (e.g. traditional diets), food beliefs and their influence on morbidity and mortality.  

This approach has come to be known as Food Based Dietary Guidelines (FBDG’s) and was recommended in practical policy terms by the World Health Organization. It is suggested that several developments are required for such a policy to be possible. These are:

1. a broad socio-cultural approach to food and health, with sensitivity to food traditions and beliefs

2. major advances in food science which allow an appreciation of food component complexity and its implications for human biology

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3. scientific studies which show that food patterns, food scores (like variety, traditionality and acculturation), and not simply nutrient intakes, are predictive of health outcomes and are amenable to useful change in their own right

4. the ability to handle large databases of food intakes, health outcomes and trends in those variables with time: the new discipline of nutrition information applied to nutritional epidemiology

5. an appreciation of the ecological implications of dietary guidelines.\(^{28}\)

According to Wahlqvist and Kouris-Blazos, these developments can be achieved through more and better science that is able to track and quantify health indices of traditional food patterns and variety and combine this data with quantified data on nutrient requirements and densities. This will then bring about a paradigm shift from nutrients to food in dietary guidelines that is ‘…likely to make a significant contribution to human health, to the maintenance of cultural diversity, and to optimal nutritional status in a sustainable environment.’\(^{29}\)

However, rather than creating a paradigm shift, this orthodox scientific approach that is clearly based in a Logical Empiricist science of quantities, is actually arguing that other epistemological traditions should be subsumed by it. This is a position that according to a process definition of health is not conducive to the aims of cultural diversity or sustainability. What the alternative views discussed reveal is that there are other ways of knowing the world that Logical Empiricist based science cannot make sense of and therefore denies validity to. With this in mind, point one of the listed required developments becomes nonsense, as sensitivity to food traditions and beliefs requires recognition of the alternative forms of knowing they are based on. Point two becomes nonsense, within the Logical Empiricist paradigm, because further advances in food science will structurally resolve to a tighter focus aimed at greater simplicity. Point three becomes nonsense, because patterns are not revealed in the reifications of science, but in the

\(^{28}\) Ibid, p. 511.
\(^{29}\) Ibid, p. 511.
‘productivity’ of active processes such as the pattern recognition of direct perception that is effectively denied validity. Point four becomes nonsense, in the continued mistake of Logical Empiricist based science of equating accumulated data with knowledge and point five becomes nonsense, because scientific methods and practices that are underpinned by mechanistic materialism cannot make sense of the interrelated nature of a multiplicity of spatio-temporal domains.

Wahlqvist and Kouris-Blazos typify the biomedical model discontents within the Public Health critical discourse. They seek a new paradigm from within a paradigm that stifles the development of new relational pathways. Those like Horisberger, for instance, speak of holism and integration with seemingly no concept of what they mean. He regards the evolution of nutritional science, particularly in its relationship to food technology and the fading of traditional patterns of food consumption, as totally separate developments. Change in food consumption is due to ‘…the constant movement of goods, popularity of tourism, higher purchasing power, changes in life-style, improvements in agrobusiness, and so on.’

Nutritional science is understood as having no apparent link to these developments. Nutritional science itself though, he argues, is integrative by nature; though not with nature itself it would seem. Such an integrated nutritional science is composed of a complex assortment of disciplines that has difficulty assigning a single discipline a central role. Its problem solving strength lies apparently in its separate development as an objective, internally integrated observer of change. If these contradictions are not enough, his view is further problematized with the revelation of his own integration into a research arm of a multi-national food-processing corporation, a revelation that would appear to confirm many of Fallon’s concerns.

Horisberger reveals further confusion in his call for a dual macro and micro approach to nutritional questions:

> Epidemiology may lead to interesting and plausible associations, the validity of which must be explored at the cellular level, while a sequence of events observed at the subcellular level

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31 Horisberger’s address is listed as Nestec Ltd. at Nestlé in Switzerland. His paper portrays industry as being largely benign in recent historical changes.
level may need to be moved up to a higher level of biological organization (cell, organ, man, and ultimately society) to evaluate its significance. The key to future research will be the ability of investigators to move from one level of biological organization to another.  

What Horisberger is arguing for is a new approach that includes a notion of hierarchy, one that is already implicit in process thought. For him though, such an approach will only be possible from the bottom up. Understanding at higher levels must be based on ‘hard’ data from post-swallowing laboratory and clinical research that identifies optimum nutritional requirements. It is scientific advance at the molecular level that will make sensible higher levels of organization and give research such as epidemiology more authority. For the confused reductionist, Horisberger, higher levels are mere epiphenomena of the lower. From this perspective, one that denies ontological validity to and integration of, higher emergent levels, he is ignorant of possibilities of unforeseen consequences deriving from newly emergent levels. He is able to eagerly anticipate exciting advances in science and technology based on molecular research aimed at breaking through natural constraints, such as genetic engineering, transgenic animals and the use of microwaves, at the same time as insisting that they be environmentally friendly.  

This confused position is typical of those scientists who argue for the integration of multiple levels of understanding without taking seriously the ontological and epistemological validity of levels other than their own specialty. The ‘environment’, rather than being recognized as an ontologically real, downwardly causative, constraining higher level, becomes merely an afterthought.

Any complementarity in nutritional science will not be realized through the arguments of these pseudo-dissidents. In taking as their starting point the particular abstract products of their own scientific disciplines, they are left with further particularities and nothing to integrate them. A consequence is the frustration experienced by those such as Wilson, who has attempted to make the field of nutritional anthropology from an ecological basis.

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33 Horisberger argues that all new developments must take the environment into account as ‘modern technology owes ecology an apology’. He then equates environmental concern with improved production efficiency rather than the nature of the research itself. Ibid, p. 243.
respected by nutritional reductionists in biomedicine, economics and psychology. In support of Wilson, Booth points to the inadequacies of individual, isolated approaches to the complexity of dietary practices, particularly qualitative approaches based around individual behaviour from both biomedical and social science based disciplines. He proposes that:

Perhaps nutrition is a prime area for contemporary anthropologists’ understanding of how communities work to be joined with psychologists’ understanding of how individuals achieve solutions to everyday challenges, in collaboration with the biomedical science of diet-dependent diseases, to find ways to improve the health of western populations – not least in tackling the epidemic of obesity.

It is the fragmentation and the privileging of the narrow perspective of mechanistic and reductionist nutritional science that is contributing to confusion amongst the public as to what they should eat. Like strength training, food has become the domain of self-appointed experts mediating and effectively degrading people’s primary relationship with food. Complementarity is required for a non-reductionist approach, as Booth rightly argues, but the conditions for this will not be the biopsychosocial model proposed by Booth, but a shared metaphysics involving a truly radical paradigm shift from an ontology of matter, to one of process. The implications of such a paradigm shift will now be discussed.

**Nutrition: A Process Perspective**

Four disparate groups have been identified as protagonists in diet and nutrition debates. First, those who believe in the truth of orthodox science and that its product, the model of the ‘Healthy Eating Pyramid’, corresponds to reality; second, those who deny the truth claims of orthodox science in favour of belief systems where direct perception and tradition is primary; third, those who hold views radically different to orthodox science but seek to

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35 David A. Booth, ‘Nutrients epidemiology or healthy dietary practices?’ pp. 69-70.
justify them through orthodox science based evidence; fourth, those nutrition and social scientists who question the narrow parameters of orthodox approaches without questioning the validity of the approaches themselves. Except for the second group, that includes some problematic theistic process views, the world-views of the others can be understood to be based in materialist metaphysics. For them, food is primarily matter and relationships to do with production and consumption are secondary. This ultimately privileges mechanistic materialist based nutritional science as the field that represents the true nature of reality. From a process perspective, however, primary reality is relational process. Food therefore, is primarily interrelated processes the nature of which cannot be understood as completed objects but through its processes of generation in relation to multiple spatio-temporal domains. As has been argued, the emergence of structure involves the constraining of activity along particular pathways. It is to the nature of constraints, therefore, that one must first turn to understand the relationship between humans and food. Of particular relevance here is Fischler’s concept of the ‘omnivore’s paradox’. 36

Fischler, arguing from sociology at the margin of nutritional science, suggests that there are three fundamental characteristics of the relationship between man and food that need to be understood. The first relates to the cognitive function of categorizing the world, or in process terms, the ordering of patterns. In relation to food, cultural culinary systems provide a way of ordering and classifying the world. They provide the largely unconscious habitualized framework that help determine what we eat and when. He uses comparative examples of foods, such as insects, that are widely eaten in some parts of the world and not in others, to support this. The second characteristic is what he terms the principle of incorporation, or the taking of food into the body. This principle relates to the issue of identity formation and the notion that ‘you are what you eat’. He argues that people, consciously or unconsciously, take on some characteristics of the food they eat. Fischler’s third characteristic is what he terms the ‘omnivore’s paradox’:

36 This is in Claude Fischler, ‘A Nutritional Cacophony or The Crisis of Food Selection in Affluent Societies’: For a Better Nutrition in the 21st Century, pp. 57-65.
Humans are omnivores. Being an omnivore means being subject to an ambiguity. The omnivore is adaptable and free to eat a wide range of foods. In contrast to the specialists (carnivores, herbivores, etc.) the omnivore can adapt to a wide range of foods. But there is one severe constraint: unable to obtain all the nutrients needed from a single food source, the omnivore needs to eat a variety of foods. This is the basis of the paradox. On one hand, needing variety, the omnivore must be “neophilic”, i.e., prefer diversity, innovation, exploration, and change. But on the other hand, the omnivore has to be conservative, suspicious toward new foods, because any unknown “food” is a potential poison, a danger. Thus a form of anxiety appears to be literally built in the condition of being an omnivore.\textsuperscript{37}

Fischler proposes that it is the function of ‘cuisine’, a complex set of rules centred on food preparation and including factors such as table manners, appropriateness, occasion, time and environment, to relieve this anxiety by providing a structure in which food choices can be made. In other words, cultural food preparation and consumption beliefs and practices have emerged and evolved as constraints on food choice. Initially, these constraints were largely natural as early humans were mostly dependent on their local environment and what was naturally available. With the development of agriculture, trade and preservation technologies, came less local dependence and more choice leading to the development of more sophisticated belief systems. In modern Western societies, argues Fischler, the increasing complexity of food production, processing and marketing, as well as global trade, has resulted in major socio-economic change and considerable modifications in human’s relationship to food. The current relationship is one of increasing anxiety as people gain greater choice of foods but are removed from its production and preparation. People are coming to terms with being increasingly identified as ‘pure consumers’. Fischler concludes that:

\begin{quote}
We have jumped, without much of a transition, from heteronomy (rules for individual behaviour are imposed collectively, by culture) to autonomy (rules are selected or generated by the individual) and anomy (a void or an overflow of conflicting rules). To a large extent, modern distrust over the safety of food and concern over the appropriateness of diets
\end{quote}

\textsuperscript{37} Ibid, p. 60.
stem from the anxiety associated with the ambient nutritional cacophony.\textsuperscript{38}

Fischler’s view provides an example of creative synthesis that better reveals the dynamics of the increasing complexity, what he aptly terms cacophony, that characterizes diet and nutrition debates and creates confusion within communities. From this view, one can understand that the various positions taken in these debates are less about universal truths and more about establishing and entrenching particular belief systems that constrain food choices against a background of flux. Understanding though how and from where such belief systems emerge is not a scientific problem but a metaphysical one. One’s fundamental ontology will largely determine the quality of relationships that one brings to a debate. A mechanistic materialist, for example, will continually search for a fixed point from which change can be measured. This leads to reductionist explanations deriving from abstract equations describing barely observable, distant spatio-temporal domains and decontextualized models. Alternatively, a ‘New Age’ theologian will attempt to wrap the universe in a teleological blanket that inhabits all spatio-temporal domains at once, effectively stifling the possibility of real creative emergence by adding an overarching causative dimension, what has been referred to as strong downward causation.

Alternatively, an insightful view such as Fischler’s achieves coherence from its basis in process metaphysics. From this perspective, his views can be interpreted as presenting a narrative in which humans as processes, as ordered potentialities for ordering, emerge from and into interrelationships with other processes in a multiplicity of spatio-temporal levels. Humans maintain their structural integrity through their interactions with higher level constraints that produce and reproduce the dynamic conditions for their existence and lower level, nested constituents that human’s constrain. The understanding that belief systems, or cultural ‘cuisines’, act as dynamic constraints must first assume a background of activity. From this, the recognition of food can be conceived as primarily the process of direct perception, or protention toward the many patterns of processes that stand out within this background as providing for the continual creation of human structural integrity. Unconscious processes of categorization involve one’s intentional arc, or habitus, that

\textsuperscript{38} Ibid, p. 62.
condition the ‘products’ of conscious reflection, these being particular, abstract, metaphorical labels and rules of ‘cuisine’. The ingestion of food, or incorporation, is a process in which an enduring pattern, or organism, within a particular spatio-temporal domain is disintegrated and its constituents transformed to become constituted within a new constraining level within another spatio-temporal domain. This structural transformation is one that makes the process of food incorporation, particularly taking into account Fischler’s use of the concept in relation to human identity formation, one in which boundaries between organisms and their environments are revealed as permeable. This then opens up a wide range of causative relationships between many spatio-temporal levels including relationships of both immanent and downward causation that confer the ontological reality to emergent spatio-temporal levels necessary for humans to become potentialities for ordering.

The concept of the ‘omnivore’s paradox’ is consistent with an ontology of active process where structural integrity is continually created within oscillations between chaos and order, or mean intentionality. Fischler describes Western culture as having broken through traditional constraints at such a scale and rate as to have produced a chaotic environment in which anxiety levels increase. The response to this anxiety is an over-reaction caused by a desperate ‘grasping’ for order. What emerges is a multitude of belief systems all competing in a power struggle for legitimacy through various mediums of symbolic representation. The notion of incorporation reveals the significance of these struggles at levels from individual to global identity that go way beyond basic material need. Fischler’s view therefore incorporates all three dialectical patterns of orientation, power and recognition within its framework.

There is a problem for Fischler, though, in that while he recognizes the importance of cultural constraints, he fails to appreciate the different hierarchical levels at which they exist, particularly the metaphysical level. Like Lash and Urry’s chaotic world of disorganized capitalism, discussed in Chapter One, he concludes that today’s world is one of chaotic anxiety. From a metaphysical perspective, however, this is understood as superficial in that it fails to recognize a deeper level of order, or emergent cultural
constraint. Schlosser reveals this deeper level of order, in his historical account of the emergence and development of the Fast Food Industry. This is a story of rapid social and technological change in post-World War Two America in which a small group of modestly educated, unconventional and hard working entrepreneurs applied scientific management and production line technologies to develop impersonal systems of food production, marketing and service. This was in conjunction with a period of scientific optimism, emerging automobile culture and the development of freeways.  

From small beginnings in hot dog and hamburger stands the Fast Food Industry has grown, its strongest growth occurring in a period in which real wages declined and female participation in the workforce grew. According to Schlosser, it is now at a level at which: ‘On any given day in the United States about one-quarter of the adult population visits a fast food restaurant.’ The Fast Food Industry has transformed all aspects of modern life at local, national and global levels and has been a major contributor to environmental degradation. It has subsumed much of the Food Processing Industry and has particularly played a central role in the spread of obesity. In process terms, Fast food has become a supervening cultural constraint conditioning an increasingly staple diet in the West of energy dense, highly processed hamburgers, french fries and sugary soda drinks.

This development has been well documented and critiqued by many including Ritzer, who reveals from a Weberian perspective the nature of the technical rationality, or irrationality, underlying ‘McDonaldization’. From a metaphysical perspective though, what is interesting in Schlosser’s account is his characterization of the Fast Food Industry’s founding fathers as men who both glorified science and technology and held Social Darwinist beliefs. Like many in the Fitness Industry, their goal was and is to replace meaningful and unpredictable heuristic processes with highly ordered conditioned responses based on immutable systems of rules. The Fast Food Industry is therefore, itself

40 Ibid, p. 3.
41 Ibid, p. 9
42 Ritzer, *The McDonaldization of Society.*
43 Schlosser, *Fast Food Nation*, pp. 36-37. Schlosser focusses particularly on the relationship between Ray Kroc, the founder of the McDonald’s franchise and Walt Disney. Men who both believed in survival of the fittest and production line technology.
underpinned by mechanistic materialism. It is an industry that reflects the views of its founders that people are mere cogs in a machine moved by appetites and aversions. It has intentionally created a world in which human beings are subsumed by machines as the means for generating immense power and wealth for a handful of bourgeois aristocracy.

What this reveals is that underlying the surface chaos of people whose traditions of cultural cuisine have been obliterated, is the crystallized order of mechanistic materialism in the form of the Fast Food Industry that is generating a process of global homogenization. Any radical change leading to the emergence of meaningful cultural constraints will require the replacement of such defective constraints at a metaphysical level.

**Towards Complementarity**

A non-reductionist, process framework such as Fischler’s, applied to the carbohydrate/protein debate, reveals both the nature of the argument and ways in which the protagonists may be seen to complement each other. First, each can be understood as being within the broader context of attempting to legitimize and thus gain recognition for a particular belief system; establish order in a chaotic environment. They and those they represent seek therefore to become higher level constraints on general food choice. Being a human higher level constraint though is a position of power that requires symbolic capital. The epistemological legitimacy of orthodox nutritional science, together with its co-evolutionary interrelationship with the massive Food Processing and Fast Food Industries that influences global political policy, as argued by Fallon, sustains the symbolic capital of the orthodox protagonists. This can also be understood within the context of the dominant Neoliberal ideology that underpins capitalist economies and confers symbolic capital on profitable business enterprise and its contributors. The orthodox protagonists can therefore be seen to be in a symbiotic relationship with the Food Processing and Fast Food Industries, as well as believing that they have a legitimate right to prescribe for general populations. They abuse their position by essentially putting forward a functionalist view that seeks to integrate people within the system rather than challenge the system itself. With lesser power, those on the alternative side can only legitimately focus on the opposition of individual experience to general dictates; or in Bakhtin’s terms, the
opposition of polyphonic narratives to a monological one. It is this tension between narratives that is explored by Santich in her historical narrative study that reveals the complex power struggles that have led to current nutritional guidelines.\textsuperscript{44}

Secondly, most of those within the debate seek, as Goodwin argues, control over nature rather than participation within it.\textsuperscript{45} In other words, most believe that the continual breaking through of constraints by science will yield the knowledge to enable control over natural processes, as against those who seek to re-establish and conserve lost constraints in order to participate within them. As has been argued, scientific ‘products’ cannot constrain productivity, but then, neither can historical ‘products’. Constraints are in the process of dependent co-origination, making problematic the ontologically atemporal views of those who reduce solutions to either a return to the past or the scientific determination of the future. All co-evolutionary change is within contexts that have qualities that cannot be understood simply from quantification or historical extrapolation. As Goodwin argues, the nature of process is perhaps better indicated by qualitative experience, such as Schelling’s notion of viewing an artwork. Qualitative experience, though, whether drawing upon the past or anticipating a future, is relevant to direct perception within the ‘specious present’, making the immediate context for the experience the relevant one. Evidence, such as that involving primitive cultures and blood groups therefore, must be applied to active, evolving contexts that have moved beyond the conditions of their primitive emergence.

This leads to the third and final point relating to intentionality. Like strength training, arguments in nutrition are based on the goals sought that condition the particular questions being asked. These goals are quite explicit in the arguments of the four protagonists. Findlay, for example, as a purveyor of dietary supplements, seeks to control his weight and have ample energy by supplementing his high protein diet with abstracted nutrients while doing as little exercise as necessary. Barrie, as a bodybuilder, engages in more strength training than endurance training and wants maximum muscle mass with minimum fat. Like

\textsuperscript{44} Narratives rather than scientific evidence are the basis of the profound insights in Barbara Santich, \textit{What the Doctors Ordered: 150 Years of Dietary Advice in Australia}, (Hyland House Publishing Pty. Ltd., South Melbourne, 1995).

\textsuperscript{45} Goodwin, ‘From Control to Participation Via a Science of Qualities’, pp. 1-10.
most bodybuilders, as Ruud and Wolinsky reveal, he probably supplements his diet with highly processed, enriched powders and bars, and perhaps also anabolic-androgenic steroids.\textsuperscript{46} Egger wants to see more participation in endurance activities such as walking, blaming the lack of such exercise and incidental activity in general as the main cause of obesity. He recommends a diet in line with orthodox guidelines that includes large quantities of carbohydrate, the most efficient fuel source for aerobic exercise, and low levels of fat, particularly saturated fat. He also recommends the use of poly and mono-unsaturated fats that are produced by the influential Vegetable Oil Industry. O’Neill, who primarily works with athletes, is particularly interested in the effect of diet on sport’s performance and so, like Egger, recommends high levels of carbohydrate to fuel high levels of activity. Both Egger and O’Neill share concern over the continued good health of anyone deviating from the scientifically accepted guidelines.

Each then, while claiming varying degrees of scientific legitimacy, can be seen to be putting forward a view based primarily on particular patterns of experience that match the patterns of their anticipations, therefore making a meaningful whole. In other words, they are all co-creating worlds. For some, such as Egger and O’Neill, the abstract product of the ‘Healthy Eating Pyramid’ will largely match anticipations, although, concessions that there is a need for higher protein levels reveals at least a minor epistemological crisis. For others, the ‘Pyramid’ will not make sense for a multiplicity of particular reasons due to the relationship of polyphonous narratives to the monological one. Post-swallowing and epidemiological studies can only assign probabilities to any likely consequences for either. In Fischler’s terms, it is the ‘cuisine’, therefore, that is of most importance, or the cultural constraint in which the whole structure of meaning lies.\textsuperscript{47} It is this that conditions

\textsuperscript{46} Ruud and Wolinsky highlight the ubiquitous use of nutritional supplements among bodybuilders as well as anabolic-androgenic steroids. Ruud and Wolinsky, ‘Nutritional Concerns of recreational Strength Athletes’, pp. 56-58.

\textsuperscript{47} This is essentially how Fischler accounts for the ‘French Paradox’ that continues to baffle nutritional scientists. While the French eat three times the level of saturated animal fat that Americans do, they have much lower rates of obesity and heart disease, making the ‘Pyramid’ highly problematic. In explanation, Fischler argues that: ‘In France, we eat in a socially controlled and regulated way, but it’s pleasant…Structure is something that constrains you but also supports you.’ In this, Fischler reveals what nutritional science continually fails to take into account, meaning. This is in Laura Fraser, ‘The French Paradox’: \textit{Salon.com}, (4/2/2000), \texttt{<http://www.salon.com/travel/food/feature/2000/02/04/paradox/print.html>}, (6 June 2002), pp. 1-4.
anticipations within the intentional arc. What is argued in this thesis is that effective constraints are those that condition mean intentionality and not the overconstrained behaviour conditioned by those seeking control such as the Fast Food Industry.

**Conclusion**

What this discussion highlights is the way in which fields seeking to address nutritional problems are contributing to growing confusion. This stems from problems of misplaced concreteness and consequential multiple layers of abstraction leading to seemingly unconstrained exponential technological growth and the determination of reality for ends of attaining wealth and power. These ingredients, also present in strength training debates, reveal the dominant influence of Logical Empiricism and Neoliberalism in the attempt to create an abstract world devoid of ambiguity and complexity. The result is much ambiguity and complexity within a cacophany of atomistic, entrenched dichotomies. Alternatively, Fischler reveals that what is fundamental to health is culture, in this case the quality of relationships a culture has to its food. Quality relationships are ones that maintain a dynamic balance that oscillates between developing and maintaining a variety of food, one area in which nearly all protagonists agree, and the dynamic constraints that provide order. From a process perspective, these quality relationships are at ‘the edge of chaos’ where there is integrity in the face of uncertainty. The active creation and maintenance of such a balance is mean intentionality towards dietary coherence. Human beings eat in anticipation of completing wholes incorporating within their intentional arc multiple levels from social to biochemical. This involves the simultaneous matching of multiple trajectories of ‘homeorhetic’ pathways, both conscious and unconscious, within the process of lived experience within the ‘specious present’. Cultural constraints are essential in this process, but equally as important are those constituents humans constrain. Mean intentionality, therefore, requires not only respect for constraints but responsibility for constituents.

From this, one can gain a deeper understanding of the nature of public health problems related to nutrition in late-capitalist Western societies. For example, the argument can be made that relative to human history, mechanistic based agricultural and food processing
technologies have broken through constraints at a rate that has produced dysfunctional relationships. In other words, the development of constraining traditions has not kept pace with the development of novelty. With the breaking through of constraints due to the application of reductionist research based in distant spatio-temporal domains and the continual reification of scientific ‘products’, science and technology has become increasingly based on abstractions and removed from the concrete conditions for life. This leads to accelerated co-evolutionary development based on the scale and rate of domains smaller and faster than the human domain. This then leads to chaos as human beings attempt to anticipate rapidly changing worlds in which there is little consistency. In other words, there is too much uncertainty producing too little integrity. As with strength training, what has replaced traditions based on experience, to fill the constraint vacuum, are rules based on abstractions. It is therefore deemed no longer necessary to develop a meaningful relationship with food, or a tradition based on embodied, heuristic processes. Science and industry have developed rules based on experiment that now determine our food selection, creating too much order.

This then leaves human beings at the mercy of scientific experts, ‘New Age’ gurus and Food Processing Industry marketers. Many foods that are mass-consumed in the West are now de-natured abstractions, novel, highly processed and refined molecular combinations that have been molded into various shapes, or perhaps, mechanistic food. In the Fitness Industry, for example, products such as high protein candy bars are heavily consumed and marketed within a cultural context where highly processed foods now form the base of consumption pyramids.\(^{48}\) Other, so-called ‘natural’ foods, have been subjected to high levels of processing to facilitate mass production and transport. Much of today’s food, therefore, is as abstract as the ‘Healthy Eating Pyramid’ that defines them. As with strength training, this is not a situation that has developed as an adaptation to the real world of consumer demand. It is a process of world creation in which all share responsibility. Like the Fitness Industry, the Food Processing Industry, the Fast Food Industry and its supporters, profit from creating dependency through the development of layers of

\(^{48}\) This CSIRO pyramid revealing ‘indulgence’ food as the highest consumption area is in, Wahlqvist and Kouris-Blazos, ‘Dietary advice and food guidance systems’: Food and Nutrition, p. 515.
abstraction that obscure primary relationships. The fact that all human beings are capable of growing and preparing their own food, the context in which healthy cultural cuisines emerge, is not one this powerful Industry would want to see created anew. Instead, fresh produce has become the privilege of the rich while calorie dense and nutrient low processed food has become the cheap fodder for predominately obese lower socio-economic groups. What is being created in Western developed countries where food is relatively abundant, is a world in which people are consumers only and in which natural and traditional constraints on food consumption have been removed in favour of what are proving to be meaningless rules. In such a world extreme consumption makes sense whereas constraint does not.

The Fitness Industry and Public Health bodies, in their relationship to mechanistic nutritional science, the Food Processing Industry and the Fast Food Industry, needs to look at the issue of diet and nutrition from the process perspective of quality of relationships. This means that monologic approaches involving narrow parameters need to be challenged whether deriving from ‘New Age’ theology or orthodox science. From an ontological base in relational process, ecology, rather than physics, constrains nutritional research programs in which the relationships between spatio-temporal domains and the polyphonic narratives relating the human domain to its food become primary. Proposed universal truths are understood as abstract ‘products’, particular to human’s relationship to local and global environments. Truths are understood as provisional in that in all complex co-evolutionary developments involving emergence there is potential for unforeseen pathways. Perhaps most importantly, both natural and artificial constraints are recognized for their relative quality of providing conditions for the creation and maintenance of structural integrity, or their quality in relation to mean intentionality.

Applying a process definition of health will provide a coherent framework to underpin the intentions of those in the Public Health critical discourse who are currently seeking broader parameters in diet and nutrition research but from within a mechanistic materialist framework that inhibits such broadening. It will also give coherence to those in the Fitness Industry trying to advocate naturalistic lifestyles from a metaphysical basis in abstractions. What is also revealed in this discussion is the way in which quality freedom, conditioned
by mean intentionality, is obscured by a superficial and unsustainable freedom in the form of unconstrained choice. Underpinning this superficial freedom are the stifling constraints of mechanistic materialism. Finally, what emerges as most important in diet and nutrition debates, from a process perspective, is that patterns of food consumption make sense at multiple scales and rates from the individual to community and to culture. Currently in the West, as is evident in the ambient cacophany of debate, increasing homogeneity in consumption, and escalating obesity, it is clear that they do not.
The symbiotic relationship between the Fitness Industry, Public Health, exercise science and nutritional science must be understood against the background of the commercial imperative which dominates Neoliberal societies. In this context, their relationship to each other is instrumental; that is, they are all means towards each other’s ends of producing income. Scientists increasingly direct and apply their research to new technologies and the production of commodities that will be attractive to business, and the business of fitness takes up what is marketable. Logical Empiricist epistemology complements this relationship through producing and reproducing what process thought reveals is an illusory reduction of complexity. The consequent abstractions then become the basis for further abstractions leading to further processes of simplification and the development of universal laws or rules to dictate behaviour. These are then reified through a process of ‘scientific’ legitimation where the language of ‘science’ is appropriated. Those who resist this process by arguing the reality of complexity are marginalized.

There is perhaps no more stark an example of this instrumental rationality than in the Fitness Industry’s relationship to the social sciences in the search for the key to human motivation. The social sciences are those disciplines that seek to analyze and explain human activity whether as individuals or groups. Its major disciplines of psychology, sociology, politics and economics emerged in the scientific revolution of the nineteenth century as attempts to apply the rigorous methodology of natural science to the study of
human behaviour. As Gare argues, this necessitated embracing the dominant mechanistic materialist culture of the natural sciences as well as the implicit concepts of Social Darwinism, Logical Empiricism and instrumental rationality from which mechanistic natural science emerged. This has led to a preoccupation within the social sciences with quantification, prediction and control rather than understanding, or participation.¹

These developments are particularly evident in what is a problematic bias within the Fitness Industry as well as the Public Health field toward the ‘products’ of the discipline of psychology. A look through any of the major publications or seminar programs within the Industry will reveal a host of psychology related topics and participating psychologists. Rarely will a relevant article or paper appear from sociology, politics or economics, or other disciplines involved in social and cultural analysis such as anthropology, history, literature, or philosophy. This narrow focus is further problematized by the Industry only drawing from psychology either crude and outdated behaviourist models or simplified cognitive models. Behaviourist models, for example, are implicit in the many motivational schemes promoted by fitness practitioners that offer extrinsic and often unrelated rewards. Typical examples are Cohen’s ‘Fat Jar Fitness’ that proposes that people put a coin in a jar every time they exercise, or the ‘Body For Life Challenge’ that offers the carrot of $100,000 cash or being a cover model to motivate participants.² Cognitive models are the basis for the plethora of articles and presentations promoting self-efficacy, confidence-building and performance enhancing techniques that are derived mainly from the practices of the closely related sub-discipline of sport and exercise psychology.³ Many sport psychologists have now carved out a lucrative niche within the Fitness Industry selling motivation as a commodity.

¹ Gare, Nihilism Inc., Ch. 6.
Why does psychology enjoy such a privileged relationship with the Fitness Industry and Public Health? Why are other social sciences rarely if ever drawn upon? The argument in this chapter is that much of the answer lies in the total domination of mechanistic materialism in late-capitalism and the quality of relationships that emerge from this development. This domination co-evolved with the emergence of the social sciences themselves. It is necessary therefore to briefly examine this co-evolutionary process and recapitulate some of the points made in Chapter Two.

**Mechanistic Materialism and the Social Sciences**

The argument made in Chapter Two supported Gare’s argument that the development and subsequent global domination of capitalism must be understood as the embodiment of the mechanistic materialist world-view. The scientific revolution, following the Enlightenment, led to the strengthening of this world-view through secularization and the reification of mechanistic science and its associated methods and concepts as the highest epistemological authority. As Gare argues:

> …the development of capitalism and the development of the mechanistic world-view have been intimately related, and has further exemplified the tendency for people to use nature as an analogy for understanding society and society as an analogy for understanding nature. To begin with the mechanistic conception of people was spelt out to interpret and legitimate the development of capitalism. This culminated with the rise of modern economics. This, together with the associated Malthusian theory of population, then served as an analogy for understanding the diversity and evolution of species in nature. Evolutionary theory in turn provided the basis for a new development in ideas about society, which are at present being reapplied to nature.⁴

Prior to the scientific revolution, theorizing about the nature of humans and their organization was the role of philosophers and theologians. With the coming of the scientific revolution, efforts were made to study human behaviour in much the same way as

⁴ Gare, *Nihilism Inc.*, p. 137
those such as Newton and Bacon conducted natural science. For example, Gare identifies Adam Smith as originating the discipline of political economy and the notion of the economy as an object of analysis in its own right in ‘…the spirit of the physical sciences as a disinterested search for the simplest imaginary machine to account for the phenomena.’ This resulted in his conception of the economy as a mechanism driven by individual self-interest. Sociology originated with the Social Darwinist reformulation of Comte’s positivist sociology through the work of Herbert Spencer. Spencer developed the basic concepts of the new rigorous science of sociology, being structure, function, system and equilibrium, in accord with the mechanistic conception of society being explained through the behaviour of its component parts. His utopian view of a perfect social organization required the subordination of individuals to the goal of perfection and necessitated the weeding out of those deemed by nature not fit to survive, such as inferior races.

Social Darwinism reinforced the Hobbesian concept of the need to control human action that was purely motivated by a struggle for power waged by self-interested individuals. Classical economics was then challenged by neo-classical economists from the marginalist school whose concept of the laws of exchange was based on being analogous to statical mechanics or the laws of equilibrium in the physical sciences. Economics was developed as a mechanism of utility and self-interest that excluded the labour theory of value conceived by Smith and then subsequently fully developed by Ricardo and Marx. According to Gare:

In the neo-classical scheme, agents are classified as consumers or producers and are simply assumed to have ‘tastes’ or ‘goals’ which, subject to certain constraints, they seek to satisfy to the maximum. There was no attempt to analyse the content of these tastes, goals or constraints. And while economics based on the labour theory of value had at least included nature as something to be worked on and had focussed attention on how much surplus labourers were capable of producing over their own needs, marginalism virtually excluded nature from consciousness. The economic process was represented as a circular diagram between production and consumption within a completely closed system. Any shortage of

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5 Ibid, p. 141.
6 Ibid, pp. 144-147.
natural resources due to the destruction of nature was registered as increasing prices, and therefore as increasing national income. The jettisoning of the labour theory of value also excluded from consciousness all consideration of the real contribution to production of various participants in the economy. It justified the efforts of people to obtain whatever returns they could through the market, whether through the selling of their labour power, through exploiting labour power in manufacturing, or through speculative buying and selling of commodities and companies.\(^7\)

As human nature became increasingly characterized as survival of the fittest, the social sciences became increasingly oriented toward prediction and control to facilitate racial superiority and strengthen nation states against external threats. Psychology, for example, became increasingly about measurement of mental aptitude in the development of I.Q. testing. The rise of behaviourism was associated with the desire to control human behaviour in the same way that natural science was seen to be succeeding in controlling nature. As Gare argues, behavioural psychologists increasingly found employment in business, education, military and government organizations as well as advertising agencies.\(^8\) Mechanistic concepts continued to flourish after World War Two with the emergence of information theory, particularly cybernetics. Through the use of cybernetics by Talcott Parsons, sociology became increasingly identified with functionalism, or the complex of feedback loops that continually adapt and integrate systems into liberal capitalism. Information theory is also the basis for the emergence of cognitive psychology where the brain is identified with mechanical information processing systems. With the reduction of humans to information processors facilitated by the social sciences, computers have emerged to enable an unparalleled level of mechanized social control.\(^9\)

Today, with much of the world subsumed by what is now Neoliberal capitalism, one can argue that much of social science is still concerned with producing and maintaining Parson’s feedback loops. The dominant ideas are still those that positivism, evolutionary

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\(^7\) Ibid, pp. 147-148.
\(^8\) Ibid, p. 150.
\(^9\) Ibid, pp. 154-155.
and functionalist theories contributed to justifying liberal capitalism, these being, as well as mechanism, that:

(1) society is understandable, and deserves scientific attention; (2) society evolves slowly and corrects its own problems, given time; and (3) society is like an organism, with the various parts accepting the rules, being interrelated, and meeting needs or performing functions.\(^\text{10}\)

**Instrumental Rationality and the Social Sciences**

The co-evolution of capitalism and the social sciences reveals why fully integrated industries, such as the Fitness Industry, would draw upon those scientific disciplines that justify and encourage their practices, while rejecting the work of the large body of alternative critical theorists. This is part of the unhealthy process of degradation of the quality of relationships argued for in this thesis. Why privilege psychology over functionalist sociology though? To understand this the concept of the individual rational actor, autonomous of social relations, needs to be explored in its relationship to instrumental rationality.

According to Gare, the emergence and development of capitalism is sustained by concepts in which instrumental rationality is integral, such as those developed by Hobbes. For example:

In capitalism it is through money that people, roles and actions are designated as significant. The role of captain is important because ships make a profit, which means that it is worth exchanging money for labour-power which can function in the role of captain. The status of money in society in turn is sustained by the conception of humans as egoistic individuals who only enter into association with others because it is in their selfish interests

to do so, and by the notion of economic progress as improved efficiency engendered by the struggle between egoists mediated by a monetary economy.\textsuperscript{11}

It is in terms of such concepts that people define themselves and orient their actions. They evaluate their individual actions through the construction of narratives in relation to both others and the various spatio-temporal levels of social formations in which they are embedded. This acting, defining and evaluating process forms the intentional arc, or habitus, in relation to general ideals of what is considered good in a culture. In relation to capitalism, Gare argues that:

The ideal in most business enterprises in Western countries is to control everything, to make everything, both nature and people, serve as predictable instruments for achieving extrinsically defined ends. This ideal is an expression of the metaphor of a machine. In all machines the whole is explained by the motion of the parts, while at the same time parts and their movements are evaluated according to their degree of subordination to the ends to be achieved by the machine. The actions of a ship’s captain should be directed towards the subordination of both himself, the crew and the ship to the goal of transporting cargo or passengers, moving them from one location to another. It is by virtue of the efficiency achieved by such subordination that economic enterprises are seen to maximize profits and so survive, grow and to contribute to economic progress – essentially the total instrumentalization of the world for the maximum production of commodities.\textsuperscript{12}

It is within the emergence and development of the social sciences that this instrumentalization became a central concept, particularly in arguments over the differences between the natural and social sciences and their objects of study. As Benton and Craib argue, the objects of study of the social sciences, human individuals and groups, live in a world of meaning, language, reflective thought and communication. Their study therefore requires a hermeneutics, or interpretation of the meanings people give to their actions. Following the work of the neo-Kantians, important themes emerged in the study of human activity. These included themes focussed on ‘…the importance of moving back and forth

\textsuperscript{11} Gare, \textit{Nihilism Inc.}, p. 378

\textsuperscript{12} Ibid, p. 378.
between the part and the whole of what we study, the intimate link between understanding
and narrative, the importance of values and value choices, the movement between
individual subjectivity and collective objectivity.\textsuperscript{13} This interpretive approach raises
questions about the nature and types of rationality involved in human action. Benton and
Craib argue that it is within this interpretive tradition that instrumental rationality, implicit
in mechanistic materialism, was made explicit and its nature explored.

Benton and Craib identify Max Weber as a pivotal figure in this tradition through his
primary concern for individual meaning and the effect of shared cultural meanings on
individual action. They describe Weber as an ‘ontological individualist’ who saw the world
in terms of the interaction of individuals rather than collective social entities. What made
social life sensible was that human beings act rationally and attach meaning to such actions.
The object of study for the social sciences, therefore, ought to be meaningful action rather
than simplistic behaviour, but to understand society meaningful social action, or actions
directed to others, must be the focus. Weber distinguished four types of meaningful social
action that could also be failure to act or passive acquiescence. As Adams and Sydie
describe them:

\textbf{Instrumental rational action} occurs when the “end, the means, and the secondary results
are all rationally taken into account and weighed.” The prototypical form of such action is
action based on objective, scientific knowledge.

\textbf{Value-rational action} is action based on a “conscious belief in the value for its own sake
of some ethical, aesthetic, religious, or other form of behaviour, independently of its
prospects of success.” The key here is that the action is an end in itself rather than a means.

\textbf{Affectual action}, or emotional action, sits at the border of behaviour that is “meaningfully”
oriented and may, on occasion, go “over the line” – as, for example, in “an uncontrolled
reaction to some exceptional stimulus.”

\textsuperscript{13} Ted Benton and Ian Craib, \textit{Philosophy of Social Science: The Philosophical Foundations of Social Thought},
(Palgrave, Hampshire, 2001), p. 76.
Traditional action is action determined by “ingrained habituation.” Like affectual action, traditional action is also borderline meaningful because in most cases the action is an “almost automatic reaction to habitual stimuli which guide behaviour in a course that has been repeatedly followed.” It is action on the order of “it has always been done this way.” Weber suggests that most everyday action is of this type.\(^\text{14}\)

According to Weber, both value-rational action and instrumental rational action differ from traditional and affectual action in that an extrinsic purpose is involved.

Actions are rationalized by individuals as being motivated by beliefs in particular values or as means to achieving particular goals. As Benton and Craib argue, Weber identified the dominance of instrumental rational action as the driving force linking ascetic Protestantism to the development of capitalism. Meaningful action was action directed toward bringing about change in the world in the interest of the actor. The object of the social sciences was therefore the application of such meaningful instrumental action to study such action, effectively marginalizing those actions that were of intrinsic value, or considered irrational. Weber’s interpretive methodology sought understanding through observing and describing such action then explaining it in relation to rational goals and shared meanings. He used a comparative method relating action to thought experiments that rationally constructed ‘ideal types’, such as his ‘ideal’ bureaucracy. The bureaucracy though, or capitalism, was always the product of individual rational actors essentially pursuing their own ends and so in this sense, meanings were taken for granted.\(^\text{15}\)

In putting forward his concept of the rational actor, Weber was often critical of Western rationality and did acknowledge wider forms of rationality such as values that did not always bring measurable benefits to the actor. Like Marx, Weber saw a world dominated by instrumental rationality, where, for instance, people became instruments of the economy, as ultimately devoid of meaning. Further developments in the emerging social sciences though, saw a narrowing in favour of instrumental rational action as the social sciences moved away from Weber’s notion of understanding to that of socio-technological

\(^{14}\) Adams and Sydie, *Classical Sociological Theory*, p. 177.

\(^{15}\) Benton and Craib, *Philosophy of Social Science*, pp. 78-81.
engineering. Benton and Craib implicate phenomenology in this process through the work of Alfred Schutz. They argue that Schutz provided a phenomenological foundation for Weber’s ‘ideal type’ methodology through his notion of typification. In starting from consciousness, Schutz suggested that the sorting out of the stream of sensations in our immediate perception involved a process of typification of recurrent elements. The same process is involved in classifying other people and their behaviour. For Schutz though, according to Benton and Craib, the instrumental rationality of the pursuit of practical ends was of most significance:

…the social world is built up from a complex multitude of typifications which we organize into ‘meaning contexts’, a taken-for-granted stock of knowledge which we share with others. We choose which typifications we employ according to their ends, the projects we pursue at the time. The social scientist has his or her own specific project and here we move into Weber’s methodology. The specific project of the social scientist is to build rational, ideal types of social action. Schutz calls these ideal types ‘second-order typifications’. They are constructed out of the typifications of the actors we are studying, the everyday stocks of knowledge that they employ. He talks about constructing ‘rational puppets’, in a sort of rational puppet theatre. We can put our puppets in different situations, and if we know their goals we can predict their actions, were they to act rationally in pursuit of their goals.\(^\text{16}\)

Concepts such as Schutz’s removed, to some extent, instrumental human action from the world and placed it within individual consciousness. This move helped provide a defence of the simplistic and highly abstract conceptual models underpinning rational choice theory that emerged in marginalist economics and are implicit in behavioural psychology, utilitarianism and exchange theory in American sociology. In rational choice theory, according to Benton and Craib:

The basic assumption is that people will act in a way which brings them benefits and will avoid acting in a way that does not bring them benefits. Exchange theory, for example, is based on the idea that people will exchange activities when seeking to maximize

\(^{16}\) Ibid, p. 84.
profits…The whole of society can be seen in terms of a series of such decisions and exchanges. The assumptions of the economics of supply and demand are the same: I am an agent on a free market and I have a disposable income and a set of needs and preferences which I order into a hierarchy – some are more important than others. I then decide how to dispose of my income to fulfill my most important needs or realize my most important preferences, whether they be for heroin or for books. The market, the ‘perfect market’ (perhaps the ideal-type market) consists of other equally free individuals pursuing their own interests and preferences in similar ways, and the end balance is the price of goods on the market; the price will settle at a point where the demand for the good equates with the willingness of suppliers to supply and the largest possible number of people are satisfied.\textsuperscript{17}

Fundamental to rational choice theory and instrumental rationality in general is the notion of a hierarchy of needs that must be met. In the sociology of Parsons, society, liberal capitalist society in particular, is itself an organism that has particular needs which individuals are merely instruments in helping provide for. In this sense, individuals are subsumed by a structure that they have a role in nourishing but are powerless to transform. Through the influence of those such as Weber and Schutz though, as well as the control orientation of the mechanistic natural sciences, rational choice theory simplistically inverted this such that societies, ecosystems and other individuals became the instruments for meeting individuals needs. Paradoxically though, these needs, no matter how abstract, could not alter the universal nature of this relationship. As was discussed in relation to Gare, this fitted within the mechanistic materialist ontology of immutability and atomistic individuals pitted against each other and the world for their survival. This individualism remains the basis of Neoliberal ideology today that makes success or failure in life the sole responsibility of the individual within a facilitative environment. Postmodernism in the social sciences has contributed to this by subverting any basis for collective action.

This development also further polarized the social sciences into the agency or structure camps, with psychology becoming the science of individual agency and sociology becoming the science of social structure. With the assumption being that liberal capitalism is a fixed immutable social structure that everything else adapts to and integrates with,

\textsuperscript{17} Ibid, p. 85.
those areas of social research critical of liberal capitalism or that raise the possibility of radical structural change, such as Marxism, have become increasingly marginalized. Those areas that have thrived are therefore not just those social sciences that adhere to Logical Empiricist epistemology, but those that have actively facilitated the adaptation and integration of individuals into liberal, now Neoliberal, capitalism. This, one can argue, is partly the basis of psychology’s success achieved despite the many problems inherent in its theories and practices. But there is another related aspect to this success that will now be examined.

Psychology and Theories of Mind

The argument being put forward is that an industry such as the Fitness Industry, as an integral co-evolving emergent structure constituted within the higher level constraint of the structure of Neoliberal capitalism, has an instrumental relationship with the social science of psychology that facilitates further instrumental relationships that manipulate individuals to adapt to and integrate with the constraining structure. For the Fitness Industry, as with most industries today, the Neoliberal capitalist structure is unquestioned, effectively reifying it. In this environment, these relationships and any that may emerge, are unhealthy in that they are of a quality that over-constrains the potential for development of relationships along novel pathways. Mechanistic materialism underpins this environment where an unreflexive industry and an unreflexive science mutually support each other. Simplistic, ahistorical Logical Empiricist based concepts from behavioural and cognitive psychology, therefore, continue to thrive through their continued instrumental application by industries such as the Fitness Industry. This is despite the many philosophical problems inherent in these concepts that have been identified by those reflexive thinkers who acknowledge the complex nature of reality. These problems are essentially those identified in previous chapters associated with Logical Empiricism, mechanistic reduction and the epistemological gap.

Psychology however, enjoys a privileged status through its increasing role as the science that can seemingly explain the nature of the relationship between the individual and their
environment. This status has come at the expense of philosophy from where theories of human psychology originated. Turner, for example, in his questioning of the philosophical basis of behaviourism, situates psychology within the Logical Empiricist project to emancipate science from metaphysics, a process that continues in psychology despite positivism’s own internal doubts. He argues that behaviourism:

…freed us once, but not for all, from the skeins of mentalism, from the tangles of volition, feeling, and imageless thought. Thus by taking behaviour, and only behaviour, as the source of its data, psychology was to become a science such as physiology, or even physics. It would have no need of metaphysics. It would renounce its grandparentage, as indeed it did, and turn to positivism and operationism for familial support. But unfortunately they, the science of behaviour and positivism, were siblings, and boasts of allegiance came at a time when positivism itself was temporizing its proprietary claims on dogmatic objectivity.  

Turner’s analysis of the logic of behaviourism reveals a body of thinkers tenaciously clinging to a simplistic, mechanistic and deterministic model based in Logical Empiricism, despite ever-increasing complexity. The radical behaviourism of Skinner, for example, was based on a stimulus-response model that reduced behaviour to classes of actions tying indeterminate variables of environmental stimuli to determinate variables of conditioned response. The purpose was to make psychology an objective empirical science reduced to simple ‘if-then’ propositions based on the observation of behaviour devoid of any inner world of emotion, meaning and intentionality. As Turner argues though, all of this required a denial of the many implicit and explicit assumptions underlying the inventive process of presumptive hypothesis formulation. This is particularly evident in Turner’s analysis of the language of psychology and in how behaviourists, ‘…as a group, have been notoriously lax or inconsistent in their definitions of stimulus and response.’

19 Turner reveals some of the variations in such definitions relating to problems of distal or proximal and potential or actual stimuli as well as the problems of the relative importance of molar or molecular responses. Ibid, p. 36.
According to Lagerspetz, critiques such as Turner’s over the period of the late 1960’s to the late 1970’s, marked a turning point in psychology’s development. The attacks on behaviourism, or stimulus-response psychology, during this period, accused psychology of over-concern with ‘...the study of problems without useful application, the use of laboratory methods, the neglect of internal experience, excessive operationalism, the study of problems that were not meaningful just because they allowed the use of stricter methods, the denial of free will and initiative, and a view of human beings as merely passive creatures reacting to different stimuli, rather than autonomous individuals.’

These are similar to criticisms that have been made of exercise science and nutritional science discussed in earlier chapters. As Lagerspetz argues though, these attacks reveal psychology as being far from monolithic. These critiques served to highlight the distinction between two opposing camps, ‘mechanist’ and ‘humanist’, that has characterized psychology from its beginning to the present. But while Lagerspetz argues that this ongoing dialectic is based on differing images of humans, implicit in this are different conceptions of mind. The images of humans produced by mechanistic psychology, gain credence from being linked to apparent explanations of mind.

Turner argues, for example, that while Skinner’s concept implied a direct relationship between stimulus and response, proximal and molecular variations raised the issue of something mediating the relationship. Identifying this mediating object, or objects, is at the heart of the development of psychology’s movement from a direct relationship between stimulus and response, excluding mind, to the ‘black-box’ principle to attempts to conceive of what is in the box. For Turner, writing in 1968, hope was expressed for the eventual reduction of psychology to the emerging science of neurophysiology that would lead to greater ‘cognitive satisfaction’.

Neurophysiology would eventually fill in the contents of the ‘black-box’ and explain all of the messy issues associated with mind of qualia,


21 In this regard, Turner argues in defence of the hypothetico-deductive scheme of rational science against emergence. Essentially, there is a problem in that emergent novelty can only be framed within the available language and concepts of science that restricts ‘...the discussion to that class of emergent situations where extant theory is insufficiently explicit to permit derivation of the emergent properties of the events.’ Turner in effect affirms that mechanistic, reductionist science cannot explain emergence and that Logical Empiricism locks us in to reductionist science, pp. 120-126.
intentionality and consciousness in materialist terms. Accurate models can then be constructed that correspond to how the brain processes information. From this perspective cognitive science emerged, the study of human information processing and its associated areas of neurophysiology, artificial intelligence and cognitive psychology. This development assumes the reductionist world-view of those, such as Turner, that mind will be explained once the bottom, upwardly causative level of explanation has been discovered. Such a discovery will then enable technical quantification, prediction and control of mind. As many critics point out though, cognitive approaches have had little if any success in advancing understanding of mind beyond behaviourism and have mainly succeeded in raising more questions.

This is essentially Bruner’s argument in his criticism of the nature of the ‘cognitive revolution’. He sees the emergence of cognitive science from a humanist perspective as an effort to replace behaviourism and reestablish mind and meaning in psychology. This revolution though has become a devolution, due to the success of the ‘new’ cognitive science that is dominated by mechanistic reductionism and the consequent ‘technicalizing’ of mind in computer modelling. The notion that the computer metaphor of ‘virtual minds’ corresponds to real ones Bruner labels, the ‘new reductionism’ in psychology, a development that revived behaviourism. He argues that:

This new reductionism provided an astonishingly libertarian program for the new cognitive science that was being born. It was so permissive, indeed, that even the old S-R learning theorist and associationist student of memory could come right back into the fold of the cognitive revolution so long as they wrapped their old concepts in the new terms of information processing. One did not have to truck with “mental” processes or with meaning at all. In place of stimuli and responses, there was input and output, with reinforcement laundered of its affective taint by being converted into a control element that fed information about the outcome of an operation back into the system. So long as there was a computable program, there was “mind”.

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Bruner describes a historical development in psychology in which mind has been continually denied relevance through the passage of differing mechanistic and materialist theoretical schemes. From behaviourism where mind was excluded altogether, to cognitive science where mind is reduced to an information processing computer program, to today where mind is identified with a particular type of potential computer involving neural networks and parallel processing.

This latest development, that is a mere extension of the others, reproduces what Brothers labels ‘neuroism’, or, the ‘…position that the mind can be explained in terms of the individual brain.’ ^23 Brother categorizes the concepts of ‘cognitive neuroscientists’, those neuroscientists and psychologists that attempt to bridge the brain and psychology, as ‘naturalist’; a view that sees mind as belonging to the natural world. She distinguishes three types of ‘naturalist’ beliefs:

a. Mental states are forms of brain activity and don’t have any real properties of their own. People holding this view are called “eliminativists.” They think everyday psychological language is just outmoded talk that will one day be replaced by the more accurate language of neuroscience. Or,

b. Mental states are aspects of brain states – like liquidity is a property of water molecules at certain temperatures – with bona fide properties of their own, including the ability to cause physical events. Or,

c. Mental states are aspects of brain states, but without causal properties of their own. ^24

Brothers, argues that what is common to all three views is that they are ‘internalist’. That is, by situating mental states within the brain, they necessarily situate mental states within the individual brain. This is in contrast to ordinary language philosophy that is more popular among sociologists that ties mental states to social practice, an ‘externalist’ view.

Drawing on Wittgenstein’s concept of ‘grammars’, or the way we learn to talk about and understand complex concepts in the social setting of ordinary conversation, Brothers argues that there are two major problems with ‘internalist neuroism’. The first concerns the logical problem that the objectivist language of science and the ordinary language of psychology are two separate language-games. She argues that:

The neuroist notion that the mind can be found in the individual brain is an illusion based on a picture of the human person. It is a single picture of both physical body and mental life. As a grammatical remark, this picture accurately captures the way we use the term “person” in normal, practical circumstances, for “a body with a mental life” is exactly what we mean by “person”. But when we move away from our everyday use of “person” to scrutinize the picture more deeply – when we start to take the picture as an object of analysis – we get confused. We feel we should bring to bear both the language of natural science (for the physical part of the picture) and the language of the mental (for the psychological part of the picture) to describe the same picture…The trouble is, the practices of modern natural science belong to one area of human thought, with its own history and concepts, while the practices of attributing mental states to ourselves and others belong to an entirely different area, also with its own history and concepts…So even though we normally fuse body and mind in the concept of “person,” it doesn’t work to take the picture so seriously that we drag in the full conceptual paraphernalia of natural science in order to weld it together with psychology.\(^\text{25}\)

The implication of this for Brothers is that psychology is a different social practice to science that creatively re-encodes concepts we already have rather than testing theories by rejecting false hypotheses. She encapsulates this problem in the following quote from psychologist John Shotter:

Psychology cannot, as it hopes, penetrate into men’s actual inner ‘workings,’ for it can never escape from the fact that we only ever investigate what we mean by the term ‘our inner workings.’ And while the meaning of the term may be changed as a result of our

\(^{25}\) Ibid, p. 9.
investigations, even then we still confront what we mean by the term rather than our actual inner workings in ‘themselves’.

Within the dialectic of orientation, Brothers is essentially highlighting what is a central theme in this thesis, that is, the problem of linking multiple spatio-temporal domains through the domain of human language. ‘Neuroism’ inter-penetrates ordinary language with concepts derived from a particular practice of experimental observation of micro levels; reductionist language that elevates the explanatory status of micro domains over our own. It is the success of this inter-penetration that is the basis of Brothers’ second problem relating to the role of ‘neuroism’ in our lives. She likens ‘neuroism’ to a cult centred on the brain as its sacred object. Neurophysiologists and cognitive psychologists weave together language from both domains into narratives that confer symbolic reverence to the material stuff of the brain. Associated with this reverence is the hierarchy of experts who have privileged access to the brain’s inner workings. While neuroscience knowledge itself confers cultural capital, effective communication and interpretation usually involving simplification, confers symbolic capital. The doctrine of ‘neuroism’ is now conveyed through an elite ‘high priesthood’ of highly marketable communicators and their best selling publications that have captured the public’s imagination. The market interest in these ideas is driving increased co-evolution of neuroscience narratives with others such as emotion and clinical psychiatry. Other co-evolving narratives are of those addressing the physical inactivity problem such as the Fitness Industry and Public Health.

**Theories of Mind and Exercise Psychology**

The discussion so far reveals in particular some of the major assumptions underpinning the Fitness Industry. That is, that people who exercise, particularly those who pay to utilize the Industry’s services, are fully autonomous rational actors making rational choices in their

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26 Ibid, p. 10.
27 Brothers also highlights the massive funding going into brain research and the increasing financial rewards for using cognitive neuroscience to persuade people that all kinds of predictions of behaviour can be made from athletic performance to drug addiction. She also points to the significance of the decade between 1990 and 2000 being declared by the US Congress the Decade of the Brain. Ibid, p.6. and Chapter 7.
own self-interest. The industry is just such individuals providing services and informing others of their services in their self-interest. This instrumental relationship of mutual self-interest is mediated by a neutral system of exchange, or money. Money, fitness facilities, equipment and other individuals are all acceptable objects on a level playing field available to be used for the rational advancement of individual’s self-interest. The unavoidable implication is that those who do not exercise regularly, the vast majority in the West, are irrational. They are not making rational choices in their own self-interest but are allowing themselves to be victims of value-rational, affectual and traditional actions, actions rational thinkers are seemingly immune from. The direction of force is one way, in that any influence, be it internal or external, the individual controls from the inside, from the brain. Constituent and contextual processes are therefore conceived as separate, inert, passive objects that can be controlled and manipulated by one’s brain in one’s self-interest. Consequences of these actions beyond self-interest become inconceivable. Individuals within the Fitness Industry therefore, come to embody the sciences that underpin the Industry. They have become an elite minority of fully autonomous, rational egoists that control nature while independently observing and seeking to manipulate those who are out of control for their own ends. Within the logic of rational choice theory and ‘neuroism’, no other form of relationship is possible. This is an unhealthy environment that limits understanding.

These assumptions are created and maintained by the various manifestations of a mechanistic and materialist historical tradition of misconceptions about the mind, the latest being ‘neuroism’. Apart from the vast amount of popular literature emerging from ‘neuroism’, the main medium through which these misconceptions influence the Fitness Industry, as well as the Public Health field, is through the relatively young sub-discipline of psychology known as sport and exercise psychology. According to Dishman and Buckworth:

The primary focus of exercise psychology has been to explain the psychobiological antecedents and consequences of exercise behaviour. Efforts have been made to identify
the determinants of adoption and adherence to regular exercise and the effects of physical activity on psychological attributes.28

This simple linear cause and effect approach is in response to the highly complex problem in Public Health as to why the majority in the West choose sedentary lifestyles, despite the overwhelming evidence of associated health risk. As with exercise and nutritional science, the goal of exercise psychology is instrumental; that is, to explain and predict exercise behaviour in order to control it. Central to this goal is the quest to find the key to human motivation29. To this end, four major theories have and are being applied. Dishman and Buckworth identify these as (1) behaviour modification, (2) cognitive-behaviour modification, (3) the transtheoretical model and (4) social cognitive theory.30 Behaviour modification is similar to Skinner’s stimulus-response model where the role of thoughts, motives and perceptions is minimized in favour of a simple cueing and reinforcing learning method. As was mentioned earlier, methods popular in the Fitness Industry that involve extrinsic stimulus such as Cohen’s ‘Fat Jar Fitness’ fit this model where mind is denied in favour of conditioned response. This is also the basis for the knowledge-action model of behaviour favoured by health promoters that assumes that the mere presence of enough knowledge about a health issue will condition behaviour change.31 Interestingly, Dishman and Buckworth comment that these methods have been relatively successful in exercise intervention studies.

The other three models all assume some form of mediation between stimulus and response though varying in the level of complexity. Cognitive-behaviour modification is the simplest of these in which psychological variables alone mediate behaviour. According to this model, irrational, unproductive thoughts and incompletely formed cognitions are the

29 Frost provides an example of a static, Newtonian, mechanistic materialist based definition of motivation, common to the field, as ‘…that which initiates, directs, or stops behaviour; something which impels one to move, to act, or to desist; any need, urge, emotion, or drive that prompts an individual to action.’ In Reuben Frost, Psychological Concepts Applied to Physical Education and Coaching, (Addison-Wesley Publishing Company, Massachusetts, 1971), p. 245.
cause of dysfunctional or maladaptive behaviours in individuals. These behaviours can be changed, or perhaps treated, by training individuals to replace faulty thoughts with effective beliefs and cognitive skills.\(^\text{32}\) This is a particularly powerful model in the Fitness Industry and is evident in many articles and programs such as Judith Verity’s that emphasize the individual’s ability to overcome any obstacle through positive thought processes, goal setting and self-monitoring.\(^\text{33}\) Perhaps the major key to this model’s success though is in its basis in cognitive psychology and therefore, ‘neuroism’. This model assumes an identity between mind and individual brains, the locus for learning to cope with the world as it is. It fits perfectly with the concept of the rational actor and denies any external mediation or problems with total individual responsibility. Also, irrational and dysfunctional behaviour can be linked directly to neurophysiological irregularities within this model reducing value-rational, affectual and traditional action to pathological anomalies. This model has also been relatively successful.

The transtheoretical model is a little more complex in suggesting that behaviour change is mediated through a dynamic process involving five interrelated stages; precontemplation, contemplation, preparation, action and maintenance. As Dishman and Buckworth describe it:

\[\text{People in precontemplation are not thinking about starting an exercise program. Those in the contemplation stage are considering starting an exercise program. During the preparation stage, a plan has been made but not implemented. People in the action stage have started regular exercise within the past six months, but are at greater risk of not adhering than someone in the maintenance stage, for whom exercise behaviour is more established.}\(^\text{34}\)

This model, however, is merely an addition to cognitive and behavioural models and acts as a guide to intervention strategies. It assumes nothing different about mind from the other

\(^{32}\) Dishman and Buckworth: ‘Exercise Psychology’, p. 454.


\(^{34}\) Dishman and Buckworth, ‘Exercise Psychology’, p. 454.
Physical inactivity and obesity in late—capitalism

models. Also, any identification it may have with dynamic process is lost through being reified.

Social cognitive theories, according to Dishman and Buckworth:

…conceptualize cognition, affect, and value-related variables as mediators in the choice of goals, and thus exercise behaviour. The theories assume that personal factors, environmental events, and behaviour function as interacting and reciprocal determinants of each other. Bandura emphasized the influence of self-efficacy and expectations about behavioural outcomes as determinants of behaviour. He proposed that self-change operates through self-initiated reactions. These reactions are stimulated by a discrepancy between personal goals or standards and knowledge of personal achievement. For example, individuals dissatisfied with their current exercise or fitness who adopt challenging goals and are confident (i.e. have high self-efficacy) that they can attain their goals would presumably have optimum motivation for maintaining exercise.35

This is the most complex of the models in that it seeks to account for a wider variety of interrelated mediators from cognitions to self-efficacy to environmental factors. It reflects the humanist approach in psychology to develop more holistic models and in this sense, better complements inter-disciplinary approaches. Egger (et.al.) though, places social-cognitive theory within a group of models classified as individual behaviour change models. These all take the basic form of knowledge-attitude-behaviour and include models used in Public Health promotion such as the cognitive-dissonance model, the health-belief model, reasoned action theory, protection-motivation theory and trying theory.36 These theories seek to identify what it is that forms attitudes, just as neurophysiologists seek the contents of the black box. They only vary essentially in what they list as relevant to attitude formation with the most complex of them having the longer list. One can argue therefore, that while these theories represent a more complex approach, this complexity, like the transtheoretical model, is really just an addition that confuses rather than fundamentally challenges the prevailing ‘neuroistic’ concept of mind. The individual

36 Egger et. al., Health Promotion Strategies and Methods, pp. 24-37.
A rational actor is still privileged in these models but is subject to wider influences that he or she needs to control. From the Fitness Industry’s perspective, this added complexity only further complicates the individual, brain-centred mind’s ability to make rational choices. It is therefore not surprising that these models are not represented in Fitness Industry literature. It is perhaps also not surprising that Dishman and Buckworth are critical of these more complex approaches as having been less effective in stimulating exercise participation, more difficult to quantify and having failed to make consistent predictions.\textsuperscript{37}

In a world dominated by mechanistic materialism and ‘neuroism’, complexity and ambiguity only confuse things.

The relationship between the Fitness Industry, Public Health promotion and exercise psychology is therefore one that is predominately aimed at reducing complexity. In this regard, it must be understood that the Fitness Industry and the Public Health field are about achieving pre-determined outcomes, not understanding the nature of exercise participation. In this context, complexity becomes superfluous while reduction and simplification become necessities. It is reasonable to assume then that those models are preferred that provide the simplest route between stimulus and response. There is a synergy within the notions of an autonomous rational actor, a brain imprisoned mind and an economic system based on fragmentation and manipulation of individuals for mutual self-interest. Exercise psychology and its most simplistic models of human behaviour change best fit within this relationship. This facilitates the Fitness Industry in particular being able to operate from a fixed position within a fixed political economic system from where it can legitimately utilize the system’s tools to integrate the irrational. The relative success of the most simplistic behavioural and cognitive methods reveals the extent to which individuals are already integrated. The argument of this thesis, however, is that such efforts to over-constrain human behaviour; to funnel irrational individuals into rational fitness centres or Public Health programs as means to achieving pre-determined ends, is unhealthy. This challenges in particular the Fitness Industry’s belief that it is rational, the very pillar on which it and the sciences that support it, rests. To understand the nature of rationality, one must turn to process philosophy and particularly a process conception of mind.

\textsuperscript{37} Dishman and Buckworth, ‘Exercise Psychology’, p. 455.
MIND: A Process Perspective

So far it has been argued that the relationship between the social sciences, the Fitness Industry and the Public Health field is corrupted by instrumentality. Inquiry into the nature of human activity is bounded by the need to achieve pre-determined outcomes in a competitive environment. Sport and exercise psychology has been identified as the discipline that best facilitates the achievement of these outcomes. This symbiotic relationship though precludes greater understanding of the nature of exercise participation by precluding other perspectives. More complex models and analyses from diverse disciplines are eschewed in favour of the most simplistic interpretations of simplistic research in psychology. Those academic disciplines and particular research projects that facilitate simplistic commercial outcomes in turn receive greater access to funding and symbolic capital. The overall effect is the continual rejection of complexity. This is consistent with the whole mechanistic materialist historical tradition of simplifying reality. However, as has been consistently argued in this thesis, this always amounts to misplaced concreteness as the reality of complexity continually asserts itself. The mechanistic materialist may put his finger in the hole in the dyke, but more holes and cracks will soon appear that he or she cannot cover. An excellent example of this is the problem of mind.

As has been discussed, ‘neuroism’ is an attempt to identify the mind with the individual brain. It is part of the ongoing materialist project to identify what is non-material with matter, which then provides a basis in areas such as psychology for the physical sciences, such as neurophysiology. As was argued in relation to Schelling though, A is not A; or, matter as a ‘product’, as an inert, solid object, is not to be identified with the ‘productivity’ from which it emerged. From a process perspective, thoughts, feelings and intentions are understood as abstract metaphors for the relational processes that create and maintain the

38 As was discussed in Chapter One, this is matter as it has been conceived since the seventeenth century ‘…as an independent actual existent or substance, in itself devoid of any internal process of change or becoming, and capable only of change of place, that is, of locomotion.’ Leclerc traces the historical development of this concept that he characterizes as a continual effort to replace Aristotle’s notion of hyle with something substantial. Ivor Leclerc, The Nature of Physical Existence, (University Press of America, Lanham, 1986), Part II, pp. 101-151.
structure of mind in the same way that rock is a metaphor for the relational processes that create and maintain the structure of a rock. This makes absurd the notion that something non-material such as mind can emerge from matter, a notion that has been the basis of wrong thinking and damaging dualism for centuries. Both mind and matter are emergent, conceptual particularities. From a basis of relational process, mind can be better understood as an emergent evolving constraint on activity, rather than as some mystical, eternal and immutable property of matter. From this basis, materialists are necessarily dualists. It is only by breaking once and for all this incoherent but persistent dualism that a fuller understanding of the nature of mind can be grasped, an understanding that reveals the true nature of the relationship between the individual, others and the world. Such a fuller understanding is evident in this passage from Gare:

In terms of process philosophy, the individual as a process of becoming is intelligible as an emergent process within the world. Through participation by the sensitive organism in the dialectical processes of becoming and the various semi-autonomous processes of society, the organism is individuated as a subject, and this individuation consists in the emergence of the capacity, inherent in the nature of the different dialectical processes, to reflect on the conditions of its existence, to take responsibility for its conception of the world, to choose which others to regard as significant, and to strive to live life accordingly, modifying or transforming relationships of power in the process. That is, the individual has the capacity (cultivated in some societies, suppressed in others) to develop a mind. The mind is not a substance. To make up one’s mind is to interpret one’s situation, to commit oneself to projects accordingly, and to have gained sufficient self-mastery to persist against obstacles in the effort to realize these projects. To have a mind of one’s own is to have developed one’s understanding, to have established one’s convictions about the nature of the world and oneself and what projects are worth striving to realize, and to be able to formulate effective projects of action in accordance with these convictions and to be prepared to act accordingly. ‘Mind’, so conceived, is in accordance with common usage and the ontology of process philosophy, a structure, the potential to order activity in a way which cannot be entirely understood from the physical, biological, cultural and social conditions of one’s existence since it involves new constraints on activity not present in these conditions. Freedom as the potential for self-determination is a function both of the development of mind and the nature of the individual’s situation, and there is no guarantee that it will be
achieved. Children are born in chains, and the challenge of life is liberation; but this liberation is always socially, biologically and physically situated.  

In this view, the human mind is not given apriori, but co-evolves within dependent co-origination of individuals, societies and their environments, including other species. Mind can therefore be understood as structure that exists within multiple spatio-temporal domains. It is a higher level constraint on not only individual development, including our own constituent processes, but on all levels of human cultural development be they family, community, society, national or global levels. Mind therefore is not simply contained within human individuals but is in the world. Moreover, as an emergent structure, as defined in process terms, it has ontological reality and therefore, real causative relationships both upward and downward. The human mind is embodied but not as matter in the sense of being in a brain or a sensori-motor unit. As relational process, the mind is embodied in all that humans relate to and interact with in the world, including one’s own body. In this sense it is semi-autonomous. This ontological reality of what is essentially immaterial though, is only made sensible within a metaphysical basis of relational process. In other words, mind, as that which is immaterial, can emerge in a universe that is primarily immaterial but not from that which is a secondary abstraction, matter.

One way of conceiving the emergence of mind is in relation to the concept of the ‘semiosphere’ that emerged from semiotics, or the study of signs. The argument from this field is that the world cannot be understood without accounting for the reality of sign systems, or how objects come to mean something to someone or something. In the semiotic theories of one of its founders, C.S. Peirce, for example, semiosis is seen as a triadic relationship between object, sign and interpretant. This means that between object and sign there is a mediator. The concept of an interpretant though is far more complex than those of attitude, or the ‘black-box’ in psychology, and interpreants cannot be isolated from the sign systems in which they are enmeshed. Much of this complexity lies in the possibility for triadic sign relationships in a multiplicity of spatio-temporal domains, not

39 Gare, Nihilism Inc., p. 370.
just human ones. The notion that triadic sign systems are ontological then provides some basis for understanding the nature of semiotic activity in humans. Favereau, for example, argues that while neuroscience has succeeded in discovering and describing physio-mechanical aspects of biological sign-exchange, it has yet to develop a theory of ‘…the very principles by which the emergence of mental representation from neuronal electro-chemical signal transduction is even possible…’  

Brothers also pointed to this problem and in fact, the entire history of mechanistic materialism is littered with just such dead ends in this regard. Favereau, however, sees promise in Piercean semiotics:

In Peircean semiotics…we find a way out of this impasse with the twin recognition that: (1) ‘representation’ – as well as the capacity for signification of which representation is but a part – is not a process originating from, nor exclusively the domain of, the human mind and that (2) the nature of such ‘representation’ in a specifically human psychological context does not reduce to a linear, unitary process whereby one presently existing state or thing (such as the rich, subjective experience of “pain”) isomorphically “stands for” or corresponds to one other presently existing state or thing…and so on down the line in the manner of a graphical computer interface until at least one reaches the static, underlying, and finally causal “program code” – but that ‘representation’ is a fundamentally creative process of interactionally achieved, massively co-constructed mediation across networks of relation in a complex, open system which ultimately allows the human organism to transcend the brute indexicality of physically present, coextensive and discrete relata and to participate interactively across its own organizational levels – levels which include the intrinsically dynamic elements of neuron, body, sign and world.

He goes on to argue that:

The totality of this systemic and incessant sign activity we reify as “mind”. An ongoing, dynamic process of sign-exchanging cells embedded in sign-exchanging brains embedded in sign-exchanging bodies embedded in sign-exchanging worlds, the eternal interplay of self-organization and symmetry-breaking that characterizes the moment-to-moment

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experience of this recursively interactive system constitutes, in a very real sense, the very essences of “knowing” and of “the mind”. 43

Favereau’s position is that the human mind, as a complex semiotic process of sign interpretation, can be understood as emerging from within a semiotic world, or ‘semiosphere’. In process terms, all spatio-temporal levels can be understood as involving some degree of interpretation, or, they are ontologically semiotic. 44 By applying hierarchy theory, such levels can, at the same time, remain ontologically distinct. This means that while human spatio-temporal domains participate within the semiosphere, they are particular and ontologically real emergent levels, not wholly explainable from their parts, with particular levels of semiotic complexity. As was discussed in previous chapters, signals from other spatio-temporal levels are always distorted and filtered through the level of the interpretant. This obviates the need for reduction to ‘panpsychism’ or ‘preformationism’. It does not obviate the inescapable conclusion though that from a process perspective intersubjectivity is ontological, or that unity precedes particularity, as Schelling argued. This is the essence of Favereau’s argument for a neurosemiotic intersubjectivity in trying to identify what patterns of order are common to all spatio-temporal domains. 45 The point is that what one describes as patterns of order, intersubjectivity and hierarchical levels only have reality as secondary derivatives, as abstract conceptualizations of our reflexive consciousness. Primary reality, in process terms, is total immersion in processes of becoming of meaningful, relational patterns of multiple scales and rates, including other humans. What one conceptualizes as mind, therefore, must be understood as having emerged from unified relational process and so cannot be ontologically discrete.

The implication here is that the self is conceptual; it is derivative rather than ontologically primary. Primarily we are totally interrelated. Problems that have emerged in relation to the self and mind stem from the evolving complexity of the human semiotic system that has

45 Favereau draws on a particular example of mirror neurons to support ontological intersubjectivity. For the purposes of this thesis though it is his support for a general principle of ontological semiosis that is more important and more powerful. Ibid.
led to a sophisticated use of metaphor and also to the privileging of sight particular to humans. This means that the object within the triadic sign relationship has not only become the focus for attention as solid object, but has become more and more abstract in being derived from abstractions. Humanity’s conception of itself has therefore evolved to be far removed from primary reality. The concept of the fully autonomous, self-interested rational actor is an example of this. So is the concept of a mind as the epiphenomenal property of an individual brain. A truly complex understanding of human behaviour will not be possible until the primary reality of intersubjectivity is taken seriously. The trajectory of human development though has seen such an understanding evolve to become counter-intuitive.

Seeking Complementarity

As has been argued in relation to exercise and nutritional science, greater understanding of complex issues requires a complex approach of admitting multiple perspectives into debates. The problem within the Fitness Industry and dominant mechanistic areas of Public Health, for the reasons outlined in this section, is that there is currently one privileged perspective in relation to the nature of human activity, that of mechanistic and reductionist sport and exercise psychology. At the same time though, new perspectives keep emerging within the Public Health critical discourse in response to the growing complexity of the issue of exercise participation, much of which relates to the failure of health promotion methods to increase participation. In general, the focus is on increasing inter or multi-disciplinary approaches. Those such as Egger, et. al., for example, acknowledge that health promotion, including efforts to increase levels of physical activity, is an immensely complex field that cannot be reduced to one or two methods. He outlines a series of strategies and methods ranging from individual behaviour change to socio-political and environmental activism and concludes that ‘…all strategies are valid and potentially useful, and that combinations of strategies and methods are likely to yield the best results.’

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McElroy, while arguing for a more complex approach to the problem of physical inactivity in particular, is also critical of the focus on individual behaviour change that has dominated the health promotion movement since the 1980’s:

Social scientists have questioned the wisdom behind emphasizing good health through individual lifestyle changes. Social epidemiologists S. Leonard Syme and Linda Balfour offer several reasons for why strategies focussed on changing individual behaviours are likely to be disappointing. First, they point to the fact that previous health promotion strategies aimed at changing behaviours have not worked. Despite more than two decades of trying, many Americans have failed to adopt healthy lifestyles. The second reason is that the health conditions of today, such as cardiovascular disease, diabetes, and cancer, involve such large numbers of people that it is impossible to prevent such diseases by simply changing the behaviours of individuals one at a time. Finally, and perhaps most crucial to an understanding of the disappointing results of health promotion efforts targeting the behaviours of individuals directly, they point to how individual approaches do little to address the social conditions that have contributed to the problem. Even if individual health habits are changed, if the wider social and cultural context in which behaviours occur are not altered, there will be the “next generation of people who will suffer from the same adverse social conditions”.  

In response, McElroy proposes a framework for transforming sedentary modern Western societies into physically active ones. This involves transformations in three key elements, these being, (1) the development of individual responsibility, (2) changing intrainstitutional norms and (3) fostering interinstitutional collaboration. The key, she argues is to transform society from a competitive one to a collaborative one in which social equity, institutional collaboration and active living are norms. This involves transforming institutions such as school, work, family and health care. Views such as McElroy’s represent the body of externalist views coming from those areas of the social sciences that begin from a basis of

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48 Ibid, Ch. 9.
social interaction. These views are sometimes expressed in policy-making at various levels of government but are mostly totally ignored by the Fitness Industry.\(^\text{49}\)

As was argued earlier, in psychology in general there is some recognition of greater complexity, particularly from the humanist tradition in the field as Lagerfeld described it. There are also more complex views within sport and exercise psychology. Frost, for example, writing in 1971, the early years of the discipline, stressed the need when applying psychological concepts to sport and physical activity, to treat humans as complex organisms for whom the whole is more than the sum of its parts. In Frost’s call for a holistic approach, psychological concepts must be seen as complementing all other aspects of human experience.\(^\text{50}\) Martens, a practicing sport’s psychologist, adopts a similar position in being critical of what he sees as the emergence of two separate and diverging areas of sport psychology, ‘academic’ and ‘practicing’.\(^\text{51}\) He argues that this divide is the result of each being based on different epistemologies; academic sport psychology being based on the orthodox, objective scientific paradigm and practicing sport psychology being based on a heuristic, experiential paradigm. His heuristic paradigm is based on Polanyi’s triad of knowledge in which the person provides the link between problems and clues using tacit knowledge that cannot be accounted for by orthodox science. The person, in Polanyi’s triad can be likened to the interpretant in Peirce’s semiotic triad. Martens’ argument is one that is consistent with process thought, that orthodox science continually operates on the basis that there is no person, or interpretant, to confuse a fallacious correspondence. The result is a mismatch between what is discovered in laboratory experiments and what is experienced in the field by practitioners. Martens, suggests that the field can be unified by academic sport psychology adopting the heuristic model as its paradigm of what constitutes legitimate knowledge.\(^\text{52}\) In other words, sport psychology must be open to the different


\(^{50}\) Frost, Psychological Concepts Applied to Physical Education and Coaching, Ch. 1.


\(^{52}\) Ibid, pp. 52-55.
perspectives that emerge from human’s participation in the world rather than from a fixed point outside of it, the view from nowhere.

In discussing the future directions of sport and exercise psychology, Morgan analyzes what he calls the sport psychology ‘trash heap’. Theory, from psycho-physiological to behavioural to cognitive that have been borrowed from academic psychology, all end up being discarded because in isolation they fail to ‘work’ in sport and exercise contexts. He argues that progress is halted due to a prevailing, reductionist, ‘ready, shoot, aim’ approach that sees sport psychologists increasingly isolating themselves. He suggests that the science must move toward a systematic, multi-disciplinary approach that is developed within the context of exercise and sport rather than institutional laboratories. Landers makes a similar argument but suggests that much of the problem with sport and exercise psychology is that it has become predominately more method oriented and less problem oriented. He identifies four roadblocks that are limiting a problem-solving orientation and need to be overcome. The first relates to the problem of the field becoming too focussed on application and service delivery. Sport psychology has now become part of the service industry and graduates are more interested in finding non-academic jobs, such as in the Fitness Industry, than doing research. There are now more psychology Ph.D’s than ever but relatively few doing research. The result is that many theories being applied in the field have no research basis. The second roadblock is linked to this lack of research skill in that those theories that are ‘trendy’ tend to be adopted uncritically across the field. One or two researchers are able to dominate the field with ideas that may be outdated or irrelevant. Roadblocks three and four relate to the problems of parochialism and the reluctance to borrow ideas from other disciplines that keeps sport psychology not only isolated from outside disciplines but also from other disciplines within the field of exercise science.

The issue of problem solving raised by Landers is perhaps a key one here. While Landers distinguishes between method orientations and problem-solving orientations, perhaps it is

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better to argue that all human activity involves problem-solving and therefore the question becomes one of value; whether some problems are more worth solving than others. Like those in both exercise and nutritional science who argue for a more complex approach, these social scientists all see their particular disciplines becoming more fragmented and isolated as complexity grows, the evolutionary problem of over-specialization discussed in relation to Cohen and Stewart in Chapter Three. At the same time, the problems being addressed are becoming as small and abstract as the multiplying sub-disciplines themselves leading to generalizations that are based in narrow research parameters. These generalizations then necessarily fail to account for complex wholes. The big problem is, however, that all those social scientists just discussed who are arguing for multi and inter-disciplinary approaches, and therefore greater complementarity, regard the problem as essentially an epistemological one, which is itself a narrow view. While there are implicit metaphysical assumptions, in the spirit of Logical Empiricism, metaphysics is eschewed in favour of gathering together different epistemologies, in much the same way as data is gathered, to help justify their own disciplines. Without an explicit metaphysics, these thinkers and the isolated scientists they are critical of, continue to fail to address the most worthy problem, that of the nature of existence. This is a metaphysical problem that needs to be addressed before any meaningful complementarity can be achieved.

**Towards Complementarity**

In summarizing the argument in this section, the Fitness Industry, Public Health and the social sciences can be understood as complementing each other in lacking any meaningful complementarity. This is because they are each underpinned by a metaphysical framework that denies its possibility. Within a mechanistic materialist framework, human beings are like individual, fully autonomous atoms that crash into each other rather than meaningfully interact. In the modern twist to this Newtonian world, humans are mysteriously able to aim at and move towards that which they need to crash into in their own self-interest. Everything in nature is inert and discrete so that individual human action need not have any consequence for anything else. Nature and other human beings therefore become mere means for individual self-realization. In this world where matter is primary, anything
immaterial can only be reduced to that which is material, such as the mind being reduced to
the brain. That which is immaterial, therefore, must be conceived as being contained in a
fixed location. In a material universe, the idea that everything is connected has no real
plausibility and is reduced to a mere matter of individual choice. As absurd as this seems,
this is the undeniable logic of an industry and a science rooted in mechanistic materialist
concepts of Neoliberalism and Logical Empiricism. Its logical conclusion, is a world in
which the quality of relationships, suffer.

This is only revealed from the level of a metaphysical perspective, one that is denied
legitimacy within mechanistic materialist social science. From a process metaphysical
perspective, one in which metaphysics is legitimate and relational process is primary,
intersubjectivity not only becomes plausible, it becomes ontologically real. As
‘productivity’ we are primarily unified and as ‘product’ we are secondarily particular.
Matter emerges as a manifestation of relational process to an interpretant within a particular
spatio-temporal domain. This only conceals the underlying nature in which all is
connected. In unconcealing primary reality a process perspective provides a ‘groundless
ground’ for the primary reality of intersubjectivity. This then provides a coherent basis for
non-reductionism, something lacking among all those seeking non-reductionism from an
epistemological base. What is being argued, is that the social sciences will not become
non-reductionist, and therefore embrace meaningful complementarity, unless process
metaphysics and its rich tradition of thought is embraced. This would enable the opening
up of possible relational pathways and provide for a fuller understanding of the richness of
human activity, rather than the impoverished one currently dominant.

In relation to exercise participation, for example, those disciplines directly engaged in this
problem can break free of the parent disciplines of physics, biology, sociology and
psychology and embrace as their supervening science the science of relations, ecology.
This is essentially the project of Bronfenbrenner and his concept of an ecology of human
Bronfenbrenner unites a variety of social scientists within a bioecological paradigm that provides the conditions for complementarity. The bioecological paradigm is designed to replace what he describes as the dominant and domineering role of psychology in human development research. It is defined in two propositions as follows:

Proposition 1. Especially in its early phases, and to a greater extent throughout the life course, human development takes place through processes of progressively more complex reciprocal interaction between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate environment. To be effective, the interaction must occur on a fairly regular basis over extended periods of time. Such enduring forms of interaction in the immediate environment are referred to as proximal processes. Examples of enduring patterns of proximal processes are found in parent-child and child-child activities, group or solitary play, reading, learning new skills, studying, athletic activities, and performing complex tasks.

Proposition 2. The form, power, content, and direction of the proximal processes effecting development vary systematically as a joint function of the biopsychological characteristics of the developing person; of the environment, both immediate and more remote, in which the processes are taking place; and the nature of the developmental outcomes under consideration.

Incorporating concepts of process, hierarchy, emergence, semiosis and co-evolution, Bronfenbrenner’s bioecological paradigm provides a model of what a process conception of the social sciences might look like and how it might approach a problem such as exercise participation. Within such a model, exercise participation is seen as a proximal process, an interaction of multiple spatio-temporal levels that to be effective must form an enduring pattern. Exercise participation becomes one of many enduring patterns of proximal process that are shaped within optimal conditions for childhood development in which there are consistent interrelationships. Poor conditions for childhood development are those in

56 Ibid, pp. 620-621.
which patterns of interrelationships are not present or do not endure, an unstable or chaotic environment. What is then acknowledged in this model is that patterns established in childhood co-evolve with patterns from both proximal and distal spatio-temporal domains throughout the life course to become processes of greater complexity. Essential for patterns continuing to endure throughout the life course despite increasing complexity, in this model, are sufficiently stable conditions.

Bronfenbrenner’s concept accords with a process concept of health in which exercise participation can be understood as tied to the notion of a quality of relationships and mean intentionality. Physical activity is an interrelationship between constituent and contextual processes of an emergent human organism. For a child, such a relationship develops through interaction with the immediate environment but the quality of this relationship relates to the extent to which the child can explore their movement potential without destroying themselves. Like the ‘omnivores paradox’ in relation to nutrition, human beings are best able to explore their potential within appropriate constraints. It is therefore the quality of constraints that creates the optimum conditions for physical development. Those constraints that are most relevant are those that are proximal such as the relationship of constituent processes to local gravity, climate or terrain, that limits our capacity for particular physical activity and our contextual relationships to family, friends, carers and authority that sets boundaries. Establishing an enduring pattern of exercise participation therefore requires a quality proximal co-dependent environment that is both stable and complex and facilitates, among other relationships, adequate levels of skill acquisition, education, care, support, protection, nutrition, facilities, and importantly, self-generated play activity. In other words, exercise participation is a complex multi-level issue involving multiple quality relationships that is beyond the domain of any single discipline, scientific or otherwise.

However, having argued for the necessary role of constraints in establishing enduring patterns of relations, the question becomes one of how these patterns continue to endure as complexity increases throughout the life course. Here is where Bronfenbrenner's concept can benefit from hierarchy theory as well as from Dreyfus’s interpretation of Merleau
Ponty’s conception of ‘intentional arc’. Dreyfus argues for a more dynamic conception of memory than the mechanistic and materialist representational model in psychology associated with ‘neuroism’, where memories are likened to objects that are stored and retrieved. Drawing on Merleau Ponty’s concept of ‘maximum grip’, he argues that the ‘intentional arc’, discussed in previous chapters, emerges from the process of completing gestalts, or achieving equilibrium, a process that occurs prior to concepts of representation or goal setting. As patterns are learned, memory becomes an active process of pattern matching. From this one can argue that for patterns to endure, gestalts must continually be able to be completed. Therefore, there needs to be a stable relationship, or perhaps, some continuing transparency between what one learns of the world and the subsequent realization of anticipations. Stable environments, however, can also be understood in process terms as the continual creation and maintenance of larger and slower higher order constraints within processes of dependent co-origination at levels ranging from the planet, to government, to family; higher order constraints of a quality that continually creates integrity in the face of uncertainty. This was also the position taken in regard to strength training and nutrition. Any efforts to increase exercise participation must first understand the nature of these relationships.

**Conclusion**

A process metaphysical perspective reveals that as processes of becoming, humans are ontologically intersubjective. This means that efforts by the social sciences to contain problems, such as exercise participation or obesity, to one or two disciplines or methodologies, are entirely abstract and therefore, for the purpose of understanding, are destined to fail, as they have. The problem is that within this world-view neither the dominant social sciences, Public Health bodies, nor the Fitness Industry, see a need for radical change. Being fully integrated within a mechanistic materialist framework, they are each focussed on achieving narrowly conceived, pre-determined ends, for which everything and everyone become means. This instrumental approach makes each complicit in

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contributing to the creation of an abstract world, one in which physical activity, as well as food for that matter, both ontological realities, have been abstracted from the rhythm of daily life to become instruments. Once abstracted, they become mere matters of individual choice, like intersubjectivity itself. The Fitness Industry, Public Health marketers and those social scientists that contribute to it, then seek to manipulate this choice to one that fully integrates the individual into this relationship. The problem, however, is that for many, this has the effect of disrupting the formation of enduring patterns of relations relating to physical activity and diet, relations that should be part of a healthy early childhood, as well as disrupting the continued creation and maintenance of such relations, a problem identified with strength and posture deterioration. In other words, the instrumental relationship created is not one that originally subsumed proximal processes, leading to a mismatch. From a process perspective, dependent co-origination needs to respect continuity. For many in Western societies, enduring patterns relating to physical activity have either not formed properly, have been disrupted through becoming interwoven with contradictory patterns in environments of increasing complexity, or have become too ordered. In contributing to this development, the social sciences are failing to improve understanding. It is clear then, that the symbiotic relationship the social sciences have with the Fitness Industry and Public Health bodies, is a dysfunctional one. They should actually have opposing goals. A social science underpinned by process metaphysics would be ecological in its approach admitting multiple complementary perspectives into creating a better and provisional understanding of major problems such as exercise participation. It would embrace narrative approaches such as Bruner’s that reveal the need for meaning and reject psychology’s ‘sanction for selfishness’ as do Wallach and Wallach, who argue that meaning comes from intersubjectivity. Its priority should be mean intentionality and understanding the nature of meaningful relationships, one’s in which enduring patterns emerging from proximal relational processes continue to make sense. The Fitness Industry’s goal, in particular, is to profit from confusion. The conclusion to be drawn,

59 Wallach and Wallach argue that internalism is fundamentally flawed and that there are far better therapeutic benefits from turning outward, as is consistent with the dialectic of recognition. Michael A. Wallach and Lise Wallach, *Psychology’s Sanction for Selfishness: The Error of Egoism in Theory and Therapy*, (W.H. Freeman And Company, San Francisco, 1983).
therefore, is that anyone seeking to understand the nature of exercise participation and create the conditions for increased participation, should have a high degree of autonomy from industries such as the Fitness Industry, as well as Neoliberal government propaganda machines that characterizes much of the Public Health field. In the concluding chapter, the conditions for a healthier world will be explored.
NINE

CONCLUSION

This thesis has sought to understand the nature of an emergent major public health problem in Western, developed societies; the increase in levels of physical inactivity and obesity. The position taken is that this problem is related to the defective ways of thinking that underpin the current period of late-capitalism. Supporting this position involved developing a complex argument linking multiple disciplines and levels of understanding within the human spatio-temporal domain. Such linking, it was argued, is only possible from a broader metaphysical perspective that examines underlying assumptions related to concepts of primary existence. The framework for this examination was Gare’s concept of an ongoing dialectic between two competing metaphysical traditions of thought, mechanistic materialism and process thought. Simply put, primary existence in mechanistic materialism is matter, with relationships and processes being secondary, whereas in process metaphysics, relational process is primary and matter, secondary. It was argued that mechanistic materialism was problematic in that it is associated with the reification of abstractions and all of the philosophical problems that flow from that. Alternatively, it was argued that process metaphysics offered a more coherent view of the nature of the universe, one in which all is primarily interrelated, there are no fixed foundations and all is in the process of dependent co-origination. Process metaphysics is put forward as a secular basis for re-integrating the human spatio-temporal domain left fragmented and nihilistic from centuries of mechanistic materialist dominance.

From the perspective of process metaphysics, it is the dominance of mechanistic materialism that is understood to have created the conditions for the physical inactivity and obesity problem to emerge. These conditions are not only related to this particular problem
but are, as Gare argues, related to a hegemonic culture underpinned by mechanistic materialism. This culture, it has been argued, is Neoliberal based capitalism supported by the epistemic strategy of Logical Empiricism. Within this hegemonic culture, mechanistic materialism is inculcated within the intentional arcs of people and their social forms becoming the central narrative around which they orient themselves. It is therefore created, maintained and anticipated prior to critical reflection. Critical reflection however, reveals that the role of a hegemonic culture can be understood as only making sense from a process perspective. From the perspective of mechanistic materialism, the world is primarily comprised of individuals acting in their own self-interest. Social formations are mere epiphenomena, or the sum of individual activity that has no downward causative effect. In Chapter Four however, it was argued that from a process perspective, a social formation such as a culture can be understood as an ontologically real emergent spatio-temporal level, one that is constrained by higher levels as well as having a downwardly causative effect on its constituents. Any society or community of individuals must be understood as being constrained by a culture and therefore cannot be fully understood without examining such cultures.

It was also argued that there is historical continuity in that what is being created in the hegemonic culture is a form of social organization that continues a historical tradition of cultures in which there is justification for the control of many by a few. Those who seek to make others the mere means towards their ends co-create a metaphysics that justifies the powerful maintaining power. Mechanistic materialism was argued to provide a basis for the powerful to reify particular concepts as immutable universal laws in the attempt to close off the potential for alternative pathways. Of particular concern in this thesis, in this regard, is the way health has come to be defined within this culture. The dominant biomedical and biopsychosocial view within a framework of Logical Empiricism, was shown to determine and maintain health as an isolated fragment of human life, one that is the exclusive domain of self-appointed experts in particular fields, each trying to grow and maintain their power base. Humans, like their body parts, are seen in this view as

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1 Gare borrows this term from the Marxist Antonio Gramsci and discusses its current relevance in Gare, *Nihilism Inc.*, pp. 408-414.
interchangeable parts of the vast machine that is Neoliberal based capitalism; a machine believed by its supporters to be the ultimate model of human organization.

Such defective concepts, however, were shown to have led to the emergence of a dysfunctional relationship between the major health problem of physical inactivity and obesity and those organizations, scientific disciplines and industries involved in addressing the problem. It is the stated aim of Public Health bodies such as The World Health Organization to unite all concerned and develop a multi-level approach to physical inactivity and obesity. However, it has been argued in this thesis that through their mutual basis in mechanistic materialism, those addressing the problem are implicated in both its creation and further development. Of particular concern is the emergence, within a culture of commodification, of parasitic industries such as the Fitness Industry that seek to profit from such problems while believing they provide solutions. In fact, they have a vested interest in the continued creation and maintenance of pathologies related to the nature of the hegemonic culture and because of the economic imperatives of Neoliberal capitalism, they are able to garner support from academic and political organizations seeking commercial relationships.

A Process Understanding of Physical Inactivity and Obesity

Given these conditions, how can increasing levels of physical inactivity and obesity amongst most in Western developed nations, be understood from a process perspective? In Chapter Four, a process definition of health was outlined in opposition to the predominant, mechanistic materialist based definitions. From a mechanistic materialist basis, health was shown to be primarily a matter of quantity and the domain of those who could best measure and add up its parts. Health, from a process perspective, was argued to be primarily related to the quality of relationships both individuals and their social forms could co-create and maintain. This quality is related to both the proximity and relevance of spatio-temporal domains and the concept of mean intentionality in which life at the edge of chaos, where integrity is maintained in the face of uncertainty, is anticipated and created. Vital to good health in this concept is the ability to recognize, respect and be responsible toward proximal
interrelated constraining spatio-temporal levels and constituent spatio-temporal levels. What this was shown to reveal is that health itself is a constraining level that is ontologically a multi-level and multi-disciplinary issue and not epistemologically exclusive to biomedical or biopsychosocial approaches. Health was therefore shown to require the matching of relational patterns across multiple homeorhetic pathways enabling continuity in the completion of wholes anticipated within processes of world creation within the field of lived experience, as well as enabling the development of new pathways when anticipations are not satisfied.

From this perspective, increasing physical inactivity and obesity can be understood to be an emergent pathology of an unhealthy higher level constraint, the hegemonic culture. In fact the hegemonic culture can be understood to be in the process of decay. Despite its increasing global influence and the euphoric triumphalism of its supporters, Neoliberal capitalism shows all the signs of a decadent culture. This can be understood from a process perspective from which the universe is understood to be a constant process of oscillations between emergence, decay and extinction at different scales and rates. Human beings and their social formations also follow this pattern. In the Introduction, it was argued in relation to Restivo’s concept of epistemic strategies, that an important sign of a culture in decay is the ossification of its underpinning dominant epistemologies. New ways of knowing the world, including alternative metaphysical concepts, are resisted by deeply entrenched cultural institutions more intent on maintaining the status quo than creating understanding. All of those mechanistic materialist based institutions and industries involved in addressing the physical inactivity and obesity problem, have been shown in this thesis to be predominately following such a path. They have been shown to be primarily interested in integrating isolated, disempowered individuals into a seemingly unchallengeable political-economic system for the purpose of accumulating symbolic capital and toward this purpose, substituting creative heuristic processes of human development for mindless rule-based systems of conformity.

The problem for this culture is that being based on the highly abstract metaphysics of mechanistic materialism, the world of Neoliberal capitalism now being co-created and
Physical inactivity and obesity in late–capitalism

maintained is a highly abstract one far removed from the requirements for the sustaining and flourishing of life. It is one that accords with the ideological demands and voracious appetites of the bourgeois aristocracy rather than the interrelated nature of human development. The consequence is that whole generations of people who are the means toward such ends have been disconnected from quality relationships as well as the means for developing them. In fact relationships themselves are no longer deemed primarily important, matter is, in the form of material goods. The core purpose of life in Neoliberal capitalist societies, as was argued in relation to Hamilton in previous chapters, is to satisfy one’s individual desires through the consumption of material goods, including exercise as a commodity and fast food. It is consumption that drives economic growth and creates material wealth, particularly for those who own the means of production. However as Fischler pointed out in relation to food choice, such consumption is now abstracted from traditional constraints that, having been created by heuristic processes, gave meaning to generations of cultural practices. With the replacement of such processes with rule-based systems, such as occurs in ‘McDonaldization’, itself an emergent cultural constraint, human developmental pathways that provide meaning through valuing experience and through situating one within a tradition, are by-passed.

What is co-created from this is a world in which there is structural anticipation of homeorhetic pathways of consumption and few perturbations. Like obsessive strength training, the ultimate aim of such consumption is to break through constraints; the hegemonic culture’s measure of progress in which there is no sense of immediate or broader consequences other than continued economic growth and a sense of control over nature. Within this culture, unconstrained material consumption leads to the satisfaction of what is considered the highest need of human beings, the maximization of individual pleasure. This reveals another indicator of a culture’s decline, the development of an imbalance favouring hedonism over asceticism, as was discussed in Chapter Two. A consumption culture is a hedonistic culture, one in which asceticism, delayed gratification or altruism, no longer make sense. Neoliberal capitalism, however, has also been argued to be a competitive Social Darwinist culture, so that while all continually anticipate hedonism, only a relatively few satisfy it. It is therefore a hedonism similar to cyrenaics, also
mentioned in Chapter Two, where attaining pleasure at the expense of others, including future generations and other forms of life, is morally justified.

From a process perspective, here lies the root of the failure of those in Public Health and the Fitness industry to perturb the physical inactivity/obesity pathway. Mean intentionality is a process of dynamic balance that creates and maintains life at the edge of chaos. Being dynamic, it is achieved through creating, maintaining and participating within a continuous oscillation between chaos and order within a narrow amplitude. Focussing on culture, however, one can argue that history shows a series of large amplitude oscillations in the process of cultural transition rather than dynamic balance. Characteristic of these transitions, are large oscillations between hedonism and asceticism and also, one can argue, ideology and utopianism. Cultures in decay tend to become increasingly hedonistic and nihilistic, particularly at the level of the powerful elite that constrains the activity of lower levels in the hierarchy. This is a chaotic condition that generally reaches a level of crisis, or phase transition, that creates the conditions for the emergence of an ascetic phase to create order. Accompanying this is another transition from ideology to utopianism. As a culture decays, order, in the form of ossified ideologies, becomes dominant over utopian imagination, what Ricoeur refers to as the field of the possible; ‘…a field…for alternative ways of living.’ A culture in decay, therefore, can be characterized as one that is paradoxical, in that it is on the one hand chaotically hedonistic and nihilistic and on the other, so ordered it is incapable of imagining alternatives. In other words, it is wildly oscillating from one extreme to the other.

One can understand such a paradoxical culture as a consequence of mechanistic materialist thought. Drawing on the Buddhist concept of ‘co-dependent arising’, mechanistic materialism underpins the ‘craving’ and consequent ‘grasping’ for fixed foundations. It is such ‘grasping’ that traps a culture within a loop, condemning it to a repetitive cycle and preventing transcendence. Cultures therefore, continually emerge and decay within a deeper and longer cultural cycle of mechanistic materialism, that are incapable of renewal.

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2 This is in Ricoeur, Lectures on Ideology and Utopia, p. 16.
3 A brief but clear explanation of this concept can be found in Varela, Thompson, and Rosch, The Embodied Mind, pp. 111-117.
As they decay and become more and more chaotic, they turn inward to ‘grasp’ what is believed to be the culture’s solid foundation, to recreate order. This is what is happening amongst most of those seeking to address the physical inactivity/obesity crisis in both Public Health and the Fitness Industry and why they are failing. For them, the hegemonic culture is inculcated as the fixed ordered domain in which solutions to increasing chaos can only be sought. This, however, is analogous to someone with a diseased heart, and therefore a highly ordered pulse rate, who is no longer capable of anticipating chaos. Those addressing physical inactivity and obesity from within a mechanistic materialist framework are therefore too ordered to be able to deal with the growing chaotic uncertainty. This is also the case for the vast numbers of people integrated into the fast food culture. What is required is a more flexible, open and imaginative approach.

**Toward a Healthier World**

A culture of extremes devoid of imagination best characterizes the present decadent hegemonic culture of Neoliberal capitalism. It is a culture in which the middle contracts and the excessive peripheries expand. From this, one can understand increasing relative inequality between rich and poor and between the powerful and the powerless, recognized as key causes of modern non-communicable diseases\(^4\), as being related to the inherent logic of the culture. One can understand the relatively expanding poles of both the totally inactive obese and the obsessively overactive and its relationship to increasing levels of non-reflexive, addictive behaviour, particularly in relation to the changing nature of recreational activity. What must be understood is that a hegemonic culture of extremes co-creates the conditions for extreme behaviour of its constituents. In Neoliberal capitalism, extreme behaviour makes sense because it maintains high levels of consumption. Against this hedonistic culture of extremes, Public Health bodies concerned at the consequences of such unconstrained consumption, attempt to promote the benefits of moderation. The middle ground of moderation, or mean intentionality, however, is no longer meaningful or

\(^4\) It should also now be understood that from a Process perspective there is nothing existing, at least within living systems, that is non-communicable, and that this term is highly misleading and revealing itself of mechanistic materialism.
logical in the hegemonic culture. No perturbation can be generated within this culture that is severe enough to divert people from their homeorhetic paths to the peripheries. Some of these extreme pathways create the production and mass consumption of a contradiction, being novel technological products designed to reduce energy expenditure as well as technologies designed to expedite energy uptake. For the Fitness Industry, such contradictions exist in its treatment of fitness as a product, a lifestyle choice to be consumed making it no more meaningful than any other product. It is therefore marketed, not in terms of asceticism and moderation, but like any other product, as something to consume in extreme in order to achieve extreme results and maximize both pleasure and profits.

What is required to transcend this cycle of decay is utopian imagination. As Ricoeour argues:

...development of new, alternative perspectives defines utopia’s most basic function. May we not say then that imagination itself – through its utopian function – has a constitutive role in helping us rethink the nature of our social life? Is not utopia – this leap outside – the way in which we radically rethink what is family, what is consumption, what is authority, what is religion, and so on? Does not the fantasy of an alternative society and its exteriorization “nowhere” work as one of the most formidable contestations of what is?  

The problem of physical inactivity and obesity in Western Neoliberal cultures cannot be understood from within its own logic, but must be compared with imagined alternatives. What currently exists is a world of extremes in which there is an expanding pole of the physical inactive and obese. What would a world of mean intentionality be like in which a balance between energy expenditure and consumption is understood, inculcated and anticipated? Cocks, has done some imaginative work relevant to this question in his development of three possible scenarios for life in Australia in the year 2050. These scenarios include a conservative development scenario, an economic growth scenario and a post-materialist scenario. One can argue that the conservative development and economic

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5 Ricoeur, *Lectures on Ideology and Utopia*, p. 16.
6 Cocks, *Future Makers Future Takers*. 
growth scenarios show little imagination but merely describe what has been and what now is the ideological basis for life in Australia.

Conservative development is a highly paternalistic structure similar to what Australia had from the end of World War Two to the late 1970’s, the major difference being a greater emphasis on intervention to manage acknowledged environmental degradation. In this scenario, full employment, social justice, environmental and equity values and strong economic growth are seen as non-contradictory. Acknowledged imperfect markets will be controlled by strong national government adequately financed by a tax regime aimed mainly at the wealthy but not at business, the driver of economic growth. In this scenario, social health is a function of all having a well paid job and there is a strong emphasis on integration. In relation to health, the emphasis will be on a nationalized public-owned system anticipating policies such as ‘…consumer-driven, not provider-driven services; providers being held to best practice; more evidence-based medicine; reduced research into high-technology limited-benefit procedures; a shift from illness treatment to health promotion; better integration of home-based carers into the health system.’ It will be a two-tier system (public and privately owned) controlled centrally that will move away from public service provision to contracted delivery. Within such a system, one can argue, economic growth, consumption and biopsychosocial model dominance are still major priorities implying that there will be little challenge to the status quo and consequently little change in regard to physical inactivity and obesity.

The economic growth scenario can be characterized as an extension into the future of the current culture of Neoliberal capitalism. In this scenario, a ‘…healthy economy is the essential prerequisite for a healthy society’ and freedom and wealth are ‘…the keys to high quality of life because they guarantee people a wide range of alternatives from which to make lifestyle choices.’ Cocks’s characterization of the economic growth scenario accords with the way Neoliberal capitalist culture has been characterized in this thesis. One can argue that from a Neoliberal’s perspective it represents a natural progression, or maturing,

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7 Ibid, p. 140.
8 Ibid, p. 159.
from the highly constrained form of conservative development capitalism to one in which all are free to pursue their own self-interest. In this world, minimal constraints and maximum competition drive individual wealth creation. Rather than managing distribution the accumulated wealth of successful individuals will naturally filter down in the form of job creation. The focus therefore will be to enhance the success of those individuals who are able to compete in the tough, highly competitive global market. In terms of health care and most government services in general, these will be provided by the private sector and paid for by the user, lessening the tax burden on individuals. Consequently, in this scenario, the commercial Fitness Industry will grow to become the sole provider of physical activity as a commodity. The management of a major public health problem will become the responsibility of its engorged parasite.

What does require more imagination is Cocks’s post-materialism scenario. This is a relatively radical scenario based on collaborative, trusting, sharing and altruistic relationships, rather than material needs. In this scenario, according to Cocks:

\[\ldots\text{environmental degradation, social injustice and an unsociable society are the three most important impediments to achieving the goal of high quality of life for present and future Australians. And that these problems will only be ameliorated or, better still, pre-empted, if managed within the context of a more mutualistic form of social organization – that is, one which explicitly acknowledges the degree to which we depend on one another to build successful lives.}\]

Cocks makes explicit three fundamental differences between the two previous scenarios and the post-materialist one. Firstly, in a post-materialist world the logic of economic growth and unconstrained consumption will be challenged and replaced with a low growth or steady-state economy with caps on consumption. Secondly, the powers of central government will be devolved and a commitment made to participatory democracy in order

\[9\text{ Ibid, p. 182.}\]

\[10\text{ The structure, viability and ultimate necessity of a steady-state economy is outlined in Herman Daly, \textit{\textquote{The Steady-State Economy: What, Why, and How?}}: Quarry Australia?: Social and environmental perspectives on managing the nation\textquoteright s resources, eds. Robert Birrell, Doug Hill, and John Stanley, (Oxford University Press, Melbourne, 1982), pp. 251-260.}\]
to create a sense of community and local control. More power will go to ‘…not only regional and local governments, but to not-for-profit participatory organizations in the community sector…; self-help movements and social movements; and to a strong, independent media sector and judiciary.’ Thirdly, the socialization process will be shifted away from a narrow vocational focus to a more general focus on developing responsible community members. Education will be both structured and open and vocation-specific training will only commence post-adolescence.

Another significant difference is in health care. In a post-materialist world health service delivery will also be de-centralized. Primary care will be prioritized and delivered from local and regional health centres staffed by multi-disciplinary teams, in which, one could argue, fitness professionals play an equal role. Hospitals will only provide higher order services. General practitioners will be better trained in community and preventative medicine and there will be recognition and provision of alternative medicine. Perhaps of most significance to this thesis is the post-materialist position on physical inactivity and obesity evident in the following passage:

People will be able to earn rebates on their health care levy if they visit a health consultant annually to demonstrate they’ve not been smoking, have avoided obesity and have achieved a good level of cardio-vascular fitness. While rebates would be the inducement, the primary role of health consultants would be to help people avoid getting sick. Health consultants could also act as advocates for patients within the complexities and deficiencies of the health system. Specialist health educators will be given the heavy responsibility of helping children want to stay healthy through life. And, of course, they will teach them

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11 Gare argues that the notion of a participatory democracy was originally developed by the Ancient Greeks but has been modified as a consequence of the dominance of mechanistic materialism to become representative democracy. Participatory, polyphonic democracy, he argues, where power is in the hands of the people, requires some form of process metaphysics to justify it. In Arran Gare, ‘Process Philosophy, Democracy and the Environment: Defending Democracy Against Neo-Liberalism: Concrescence: The Australian Journal for Process Thought, Vol. 5, (forthcoming).
12 Ibid, p. 182.
13 Russell Renhard has examined the nature, role and potential effectiveness of multi-disciplinary health care teams and concluded that teams that are integrated and ‘…display characteristics such as a problem solving approach and that are not hierarchical in nature, are likely to influence practitioners towards a role that is consistent with a primary health care approach.’ Russell Renhard, ‘Multidisciplinary Health Care Teams as a Primary Health Care Strategy’, (Master of Applied Science diss., La Trobe University, Melbourne, 1999), p. iii.
how to do it. The Post-Materialism Party believes that, in time, proper health education will massively reduce the national sickness bill.\(^{14}\)

In this post-materialist world, therefore, health is viewed differently. It is based on relationships rather than commodities. Responsibility for and control of health care is with people and their communities rather than massive bureaucratic institutions. This is supported by localized professionals in multi-disciplinary teams who establish meaningful, reciprocal relationships with patients. This is both a structural and an individual approach such that they do not contradict each other. In regard to physical inactivity and obesity, for example, inducements to change individual behaviour are matched by the social, economic and socialization policies of the culture. Children are educated in a balanced relationship between moderation and creative self-organization and enter an adult world consistent with their education. Or in process terms, the quality of relationships necessary for the flourishing of life are inculcated within their intentional arcs conditioning mean intentionality, anticipations of which are consistently satisfied throughout their life course. This world in which there is a focus on nurturing, open education and self-organization for children and adolescents within a structure consistent with its intentions, creates enduring patterns of proximal processes that were argued in relation to Bronfenbrenner in Chapter Eight, to be the basis for developing sustainable complexity. In short, it is a culture in which being physically active and constraining consumption in order to maintain a consistent mean body weight makes sense at multiple levels.

It is clear that the post-materialist scenario provides a better model for addressing physical inactivity and obesity than the other two. For Cocks, however, as a scientist, the constraints of the scientific tradition of objectivism preclude him from making such a value judgement. He prefers to present these three scenarios from a position of objective disinterest, what has been shown in this thesis to be a highly abstract position. For him, all three complement each other and add something to his overarching liberal position of reasonable pluralism. From a process metaphysical perspective, however, both the conservative development scenario, what Australia used to be and the economic growth scenario, what Australia and

\(^{14}\) Ibid, p. 205.
much of the Western world now is, have serious philosophical problems, many of which have been revealed in this thesis. In particular, conservative development, based on political economies that restored order after the chaos of World War Two, is clearly too ordered while economic growth, based on Neoliberal ideology, is clearly too chaotic. This has become clear because Ricoeur’s functional role of utopian imagination has succeeded. The imagined post-materialism scenario has revealed the defective and extreme nature of the other two. Cocks’s position therefore, that a balanced future would be a mix of the best aspects of all three, amounts to a view of balance in which extreme order and extreme chaos offset one another. This though, is precisely what has been described as the nature of the current decadent hegemonic culture, a culture of extremes. The fact that all three scenarios complement each other does not mean that they are equal in value. Relative to the others, the post-materialist scenario is in itself a balanced culture rather than one that is an offset to others and as such, should be aimed at. In dialectical terms, it is itself an appropriate new synthesis.

What is being proposed is that the most effective, sustainable and meaningful strategy for solving the physical inactivity and obesity public health problem and satisfying World Health Organization objectives, is cultural transformation, significant enough to have the potential to create a new social, political and economic world order. Such a transformation, however, must first overcome the inertia associated with mechanistic materialism. It has been shown in this thesis that process metaphysics has the potential to overcome mechanistic materialism and underpin the creation of a new world order, one such as a post-materialism world that continually creates and maintains conditions at the edge of chaos; a world, therefore, that is underpinned by a process conception of health. The open nature of process thought though, requires that “…activity directed to changing the world should not be conceived as an engineering task to erect a preconceived model of how things ought to be; it is activity aimed at establishing and increasing the power and influence of practices, social relations, institutions and the products of activities embodying one form of thinking over those which embody another.”

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15 This argument is in Gare, *Nihilism Inc.*, Ch. 17.
16 Ibid, p. 422.
Gare further outlines some of the steps required for such activity to occur:

Firstly it is necessary to challenge and replace the dominant stories defining individuals, communities, organizations, nations and civilization. It is necessary for individuals to change their habitus...Beyond this, it will be necessary to look for, or create niches within which the theoretical ideas, interpersonal relationships, practices, ways of living, relationships to the physical environment, and organizations embodying the process conception of the world can be established and made to flourish, and which in so doing can provide further niches for other process oriented research, relationships, practices, lives and organizations to establish themselves. The aim should be to develop these in such a way that they eventually undermine and displace the practices, relationships, ways of living, institutions and organizations embodying the mechanistic world-orientation.\(^{17}\)

This thesis should be understood as a contribution toward creating and maintaining this process.

\(^{17}\) Ibid, p. 422.
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