

ECOLOGICAL CRISIS AND HUMAN NATURE:
The Green and Liberal Approaches

by
Marta Nestaiko

A thesis
presented to the University of Waterloo
in fulfilment of the
thesis requirement for the degree of
Master of Arts
in
Political Science

Waterloo, Ontario, Canada, 2003

© Marta Nestaiko 2003

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

ABSTRACT

The concept of human nature profoundly shapes our understanding of how political and social life ought to be organised. This thesis examines the concept of human nature developed by the Green political perspective and its impact on the Green understanding of economy, society and technology. By comparing the Green and Liberal concepts of human nature (and by extension their respective conceptualisation of society, economy and technology), it is argued that the roots of present day environmental crisis could be traced to the Liberal concept of human nature and the Liberal conceptualisation of the relationship between humanity and nature.

Acknowledgements

I would like to thank my supervisor Professor Richard Nutbrown for his expertise and help, and also my second reader Professor Sandra Burt for her guidance and insight. Without their input, this thesis would not have materialised as well as it did.

I would also like to acknowledge the political science Graduate Secretary Carol Gray for her help and expertise in sorting out the “bureaucratic” requirements of completing the Master’s degree.

Also, I would like to thank the political science graduate students (2001-2002) and the department for making grad school a very memorable experience. With your support, humour and understanding, grad school was a positive, lively and fun experience.

Dedication

To Andrey Lasichuk,

Without your endless and unconditional loving support, there would be no way.

Table of Contents

Introduction	1
<i>Green perspective as theory.....</i>	<i>5</i>
<i>Green perspective as ideology.....</i>	<i>10</i>
<i>Human nature and political perspective.....</i>	<i>16</i>
Chapter 1: Green vs Liberal concept of nature: political, social and economic consequences for the environment	20
<i>Classical concept of the universe and human nature</i>	<i>21</i>
<i>Medieval concept of the universe and human nature</i>	<i>25</i>
<i>Liberal concept of the universe and human nature</i>	<i>28</i>
<i>Green concept of the universe and human nature</i>	<i>34</i>
Chapter 2: Green vs Liberal economy.....	43
<i>Liberalism and the private ownership of nature</i>	<i>44</i>
<i>Liberalism and Capitalism</i>	<i>48</i>
<i>Capitalism, economic growth and the environment</i>	<i>53</i>
<i>Capitalist production and the environment</i>	<i>60</i>
<i>Industrial capitalism</i>	<i>64</i>
<i>Globalised markets and the environment</i>	<i>67</i>
<i>Globalised capitalism, growth and the environment</i>	<i>69</i>

Table of Contents... continued

Chapter 3: Sustainable development vs Sustainability: business as usual or a new way of living?.....	74
<i>The Brundtland Report and the politicisation of sustainable development</i>	<i>75</i>
<i>Sustainable development – what’s in a name?.....</i>	<i>77</i>
<i>Sustainable growth and development as Liberal values.....</i>	<i>82</i>
<i>The political implications of the sustainable development discourse</i>	<i>95</i>
<i>The political significance of the Green discourse of sustainability</i>	<i>98</i>
Chapter 4: Industrial technology vs Green technology	99
<i>The Nature of Technology</i>	<i>100</i>
<i>Technological Progress</i>	<i>107</i>
<i>Efficiency = Technological progress = Social Progress?</i>	<i>112</i>
<i>Why the technological fix will not solve environmental problems</i>	<i>118</i>
Conclusion	121
Works Cited	126

INTRODUCTION

Almost unnoticed, Green politics has emerged on the political agenda of most developed nations and became an established perspective in current political and moral debates. The emergence of Green politics has generated a heated debate both within academia and within the environmental movement over the definition of Green political thought, and over the political consequences of the Green perspective.

Although ecological or Green political ideas can be traced back to the nineteenth century backlash against the spread of industrialisation and urbanisation, the modern “green debate” started with the 1962 publication of *Silent Spring*. The book written by Rachel Carson alerted readers to the connection between environmental degradation and the industrial economy. *Silent Spring* revealed the presence of natural limits to economic development, a premise that went against one of the central tenets of today’s dominant liberal ideology.¹ From then on, the question of whether concerns for the environment can be construed as a coherent body of political ideas has been a matter of on-going debate.

Existing analyses of the Green perspective fall into a number of categories. Some political pundits see the Greens as a protest, issue-led and ephemeral political phenomenon. Others place Green thinking under the heading of new social movements. Some distinguish between red (socialist) and green (anarchist) forms. Others, again, define Green political thinking as neither traditional left nor right, but as left-ecological. There are also those that see Green ideology as a post-modern instance of demands for radical

¹ Humphrey, Mathew. “Reassessing Ecology and Political Theory”. *Environmental Politics* 10 (2001): 2-5.

democracy, or as a radical alternative development from nineteenth century anti-capitalist and liberationist movements, or as a new rendering of classical conservatism.

In general, these different analyses can be broadly divided into two categories: those that try to incorporate ecological concerns into existing schools of thought and those that acknowledge the distinctiveness of a Green perspective and its comprehensiveness as a new political point of view.

The main argument of the first group of analysts is that although green thinking has useful insights about how best to protect our natural environment, neither a social vision nor a political route for its actualisation can be derived directly from ecological premises. Authors such as Luke Martell argue that while different sorts of social and political arrangements are compatible with Green objectives, traditional non-ecological criteria are needed to decide which political arrangements are preferable for a sustainable economy and society. Ecology, in Martell's opinion, can be part of political theory but does not provide a basis for such a theory.²

The second group of analysts draws attention to the fact that the Green perspective has produced an innovative historical analysis, social vision and political action plan. The main argument of the second group is that the Green political perspective is a coherent set of political ideas irreducible to a number of disconnected environmental concerns. In contrast to Martell's reasoning, authors such as Freeden and Paehlke are more inclined to view Green thought as a new political theory distinct from other modern philosophies such as Marxism and Feminism. Robert Paehlke perceives Green political

thought as a theory that blends Green and non-Green concepts, values, and science into a single perspective on how best to alter political and economic patterns and processes.³ Paehlke concludes that environmentalism is a distinct theory which, while incorporating “old” concerns for equality and social justice, transcends the contemporary right-left ideological spectrum. Green theory, according to Paehlke, offers a new dimension to contemporary politics that is not focused solely on the problems of economic growth and wealth distribution.

Some authors have gone further by asserting that Green thought is not only distinct from other political theories, but also constitutes a new ideology. Thomas Freeden, for instance, argues that the morphological configuration of Green ideology consists of “core” concepts and other concepts that constitute a “periphery”. Thus, even though the ideas of decentralisation and small government were “borrowed” from other theories and ideologies, it does not undermine the morphological distinctiveness of Green ideology.

Indeed, the failure in the last thirty years of the first group of political analysts to incorporate Green ideals into existing conceptual frameworks without losing the essence of Green political thought, speaks in favour of the uniqueness of the Green perspective. Nonetheless, the question of the place of Green thought in the pantheon of political ideas has not been settled. One of the reasons Green thought has eluded clear classification is due to the fact it is composed of a diverse variety of environmental groups, parties and

² Luke Martell. Ecology and Society: An Introduction (Massachusetts: University of Massachusetts Press, 1994) 160.

³ Robert C. Paehlke. Environmentalism and the Future of Progressive Politics (London: Yale University Press, 1989) 177.

individuals that call themselves “Green”. Many within the environmental movement have adopted Green rhetoric without embracing the essence of “the Green way”. Authors such as Andrew Dobson and Arne Naess have attempted to clarify the situation by drawing a distinction between certain strands of Green thought. Dobson, for instance, distinguishes between environmentalism and ecologism within Green political thinking.

Environmentalism, he argues, refers to a moderate or reformist approach to the environment that responds to ecological crisis but without fundamentally questioning conventional assumptions about the natural world. Ecologism, on the other hand, adopts an eco-centric or biocentric perspective that shifts priority away from human needs to the needs of nature or the planet.

Similarly, Arne Naess, the Norwegian “eco-philosopher”, has also divided Green thought into two strains: “deep ecology” and “shallow ecology”. “Shallow” ecology accepts the lessons of ecology but harnesses them to human needs and ends.⁴ This strand of “shallow ecology”, or environmentalism according to Dobson, can easily be addressed in the traditional language of Liberal self-interest. “Deep” ecology, on the other hand, completely rejects any belief that the human species is in some way superior to, or more important than, any other species – or, indeed, nature itself. “Deep ecology” or ecologism is not compatible with dominant Liberal principles and values, and therefore, constitutes a new entity on the contemporary political spectrum or, as the Greens themselves would like to believe, represents a new dimension in the old left-right continuum. As my analysis will be primarily concerned with the ideas of “deep” ecology or ecologism, I will adopt Dobson’s distinction between environmentalism and ecologism. Further, this thesis will be

based on the assumption that the Naess/Dobson distinction is correct and that the ideas constituting ecologism reject the anthropocentric approach to the world and instead advocate the biocentric or ecocentric vision of nature and humanity's place within it.

Although today most political pundits would agree that Green thought brings new insights into political theory, the debate, however, has not been resolved regarding the definition of the Green perspective: there is still a disagreement whether the new Green perspective constitutes a theory, or whether the Green movement has developed an ideology.

It is then necessary to begin the development of a main argument with a review of the distinguishing features of a political theory and political ideology. I will use the work of George Kateb on the main characteristics of political theory and T. Ball and R. Dagger's discussion of the main functions of a political ideology.

Green perspective as theory

According to George Kateb, traditional (as opposed to scientific, cause-effect) political theory has four essential characteristics: moral, inclusive, philosophical, and general. The great works in political philosophy differ in many respects and on different accounts. However, according to Kateb, a political theory will have four main characteristics.

⁴ Andrew Heywood. Key Concepts in Politics (New York: St. Martin's Press, 2000) 55.

The first characteristic (moral characteristic) indicates that a political theory seeks to persuade, convince or convert others to a political attitude or undertaking. Most political theories aim to reform political life; a few to remake it altogether. If we therefore attempt to evaluate political theory, we must begin by identifying the values that are located at the center of a political theory.

The central feature of ecologism is the belief that nature is an interconnected whole which embraces humans, non-humans and the inanimate world. The Greens reject beliefs that may lead to the conceptualisation of humans as somehow a superior species. According to Green thinking, nature possesses an intrinsic value, irrespective of whether or not it has value for humans. This central tenet of Green thought emphasises that everything on this planet constitutes the biotic community: humans, animals, microorganisms and non-sentient objects are all members of the planet's biotic community. They form a vast web of relationships, connections and possibilities. The Greens argue that there is an intrinsic value in this web of complexity, because the integrity of this complex system of interrelationships and interconnections allows for life on this planet.⁵

Several Green values follow from the recognition of interconnectedness and interdependence. The first of these - the respect for life - emphasises that not only human life, but also other life forms, from a barely visible microorganism to the largest whale, deserve respect. The Greens thus value political and social arrangements that work to protect the conditions that nurture and sustain life in its variegated forms.

⁵ Andrew Dobson. Green Political Thought (London: Unwin Hyman, 1990) 55.

In this respect, the Green perspective is different from other political theories. The Greens' ecocentric conception of nature and humans challenges the notion of anthropocentrism, on which all other modern political theories are based. From the ecocentric point of view, the Greens see little difference between communism, socialism and capitalism, because all of them subscribe without questioning the assumptions of anthropocentrism.

According to Kateb, most political theories aim to reform political life and sometimes to remake it altogether. Green thought appears set to achieve the latter. The values that the Greens hold dear call for a new approach to how we live and provide for our daily needs.

The second characteristic (characteristic of inclusiveness) indicates that political theories are interested in whole systems of politics. Although they may turn their attention to specific moral dilemmas and to matters of detailed political practice, their ambition extends beyond that. Political theories are not content with being partial, though they may be remembered chiefly for certain points, solutions, or suggestions. Their work seeks to provide the lineaments of a complete doctrine of government.⁶

The Green theory fulfils the second characteristic as, contrary to the popular perception, Green political thinking is not limited to the issues of saving the environment. In their analysis, the Greens have sought to separate surface symptoms from the root causes of our growing problems. From the Green perspective, in order to remedy our environmental problems it is insufficient to "save the whales" or pass a few laws

⁶ George Kateb. Political Theory: Its Nature and Uses (New York: St. Martin's Press, 1968) 2.

protecting the environment. The Greens have argued that our society must change entirely the direction of its development if it wants a sustainable future: partnership with the rest of nature, “soft technology”, “steady state” economics, human-scale institutions and a population size within the environment’s long-term carrying capacity. Solving one of these problems does not solve the rest, and may only exacerbate them. It is necessary to embrace the idea of sustainability on social, economic and political levels. The principle of sustainability as a condition of survival is a broad plan envisioning change in all aspects of our existence.

The third (philosophical) characteristic indicates that a political theory is engaged in an enterprise in which obvious facts are pondered and elementary questions are asked, in which many things the world takes for granted, or takes as settled, are subjected to close scrutiny.⁷

Central to the philosophical canon of Green politics is a belief that things (ideas, issues, people) cannot be understood in isolation. The Green perspective’s general target of attack is the form of thought that “splits things up” and studies them in isolation, the Greens espouse the form of thought that “leaves them as they are” and studies their interdependence.⁸ The kind of thinking that “reduces” complex issues and phenomena to manageable pieces, contend the Greens, can only produce piecemeal solutions to complex problems, and is bound to fail to comprehend the subject of study. The best knowledge of the universe, human beings and human society, according to Green theory, is acquired not by isolated examination of the parts of a system but by examining the way in which the

⁷ Ibid. p. 3.

⁸ Andrew Dobson. Green Political Thought (London: Unwin Hyman, 1990) 37.

parts interact. This act of synthesis, and the language of linkage and reciprocity in which it is expressed, is often referred to as “holism”. The holistic approach to the world is what sets Green theory apart from liberal political thought, today’s dominant theory advocating a “reductionist” approach to the world.

The fourth (general) characteristic indicates that a political theory addresses not only the urgent problems of today but also attempts to be meaningful and helpful to other generations in learning about political issues of importance.

The central feature of ecologism – the belief that nature is an interconnected whole, embracing humans, non-humans as well as the inanimate world – is concerned not only with separate instances of poisoned rivers or dying species. It provides solutions not only for addressing the most pressing environmental concerns, but also explains why the widespread ecological degradation began in the first place. Green theory draws our attention to the fact that separate efforts to clean up one lake or save one species from extinction will not remedy the fact that our reckless environmental practices have jeopardised the well-being of present and future generations of humans and other species on this planet. In short, the Greens provide answers not only to environmental problems, but also, more generally, attempt to formulate a new answer to the old existential question of “how we should live” by arguing that we should live in harmony with nature because humans are a part of nature.

The Green perspective appears to have the main components of what, according to Kateb, constitutes a political theory. It has core moral values, philosophical principles; it is inclusive and general in its scope. Using Kateb’s criteria of a political theory, it could be

argued that Green thinking does represent a coherent theory, because its four main characteristics are different from other political theories. Green thinking is also distinctive from other political theories in its claim that since humans are a part of nature, the “naturalness” of human beings has descriptive and normative significance for political theory. Nonetheless, as an emerging theory, the Greens still have to clarify their position on many vital issues. For instance, the Greens are known for their commitment to decentralised, direct democracy. To this end, the Greens advocate social organization in small, de-centralised communities, where direct democracy could be practiced. However, it remains to be seen if de-centralisation necessarily leads to a more democratic and more egalitarian society. Moreover, if the most distinctive aspect of Green ontology is interconnectedness, then what are the principles that should govern the norms of human/non-human interaction? These are the questions that remain to be answered by the Green theoreticians. The major substantive task of Green political theory, therefore, will be to determine answers to these questions.

Green perspective as ideology

Unlike Green political theory, the notion of Green ideology is a latecomer to the discourse of political thought. Though the body of literature including scholarly reports on the state of the universe, programmatic writings of extra-parliamentary opposition, new social movements and New Politics analyses have rapidly developed since the 1970s,

“Green ideology” was on the whole neglected by practitioners, ideologues and analysts alike. Only in the 1990s did it fully emerge into the political discourse.⁹

Dagger-Ball’s definition of ideology states that the term ideology has come to refer to a set of ideas that tries to link thought with action. In other words, ideologies attempt to shape how people think, and therefore, act. An ideology, then is

a fairly coherent and comprehensive set of ideas that explains and evaluates social conditions, helps people understand their place in society, and provides a program for social and political action.

All ideologies, according to Ball/Dagger’s description, are born out of crisis. Beginning with a shared sense that something is wrong, ideologies attempt to explain problematic features of social, political and economic life. To determine the essence of a problem, it is necessary to question the underlying assumptions that led to the present crisis. All ideologies offer a prescription for the ills that are troubling society. This definition implies that an ideology usually develops as a counter ideology before its ideas become established. The Green ideology then would be a counter ideology to the dominant Liberal ideology of today. As a counter-ideology it would have to question the underlying assumptions of the dominant world-view and offer its own answers to the crisis of environmental degradation.

An ideology, according to Ball/Dagger’s definition, performs four functions: explanatory, evaluative, orientative and programmatic functions.

⁹ Gayil Talshir. “A Green Ideology? The Concept, Misconceptions and a Reconceptualisation, ” Political Science Association 1998, 20 May 2003 < www.psa.ac.uk/cps/1998/talshir.pdf >.

The explanatory function of an ideology offers an explanation of why social, political, and economic conditions are as they are, particularly in a time of crisis. At such times, the authors argue, people search for an explanation of what is happening. The twentieth century has witnessed a continuing degradation of the planet's ecology. The Liberal ideology explains ecological crisis in terms of individualism, private property and market relations. The individuals, according to the Liberal ideology should be free to pursue their interests and be free from government's intervention, especially in their private economic activity. Individual economic activity in the Liberal society is focused on maximising private material gains. This behaviour is natural, because humans are naturally self-interested and self-centered. This profit seeking private behaviour, according to the Liberal ideology, does not contribute to environmental degradation because capitalist economy does not tolerate spoilage and inefficient use. The fact that in the capitalist economic system common resources tend to be overused is not viewed as a crisis but as an expected outcome in the Liberal capitalist economic system. The commons are overused, because there is no economic incentive for people not to overuse them. In case of ecological degradation, nature should be privatised and its use regulated by market mechanisms. The solution to the environmental crisis, according to the principles of Liberal ideology, is privatisation and de-regulation of natural resource industries. It is believed that an increased demand will generate higher prices and thus will slow down the resource use to the most efficient level.

Green ideology, on the other hand, offers an alternative explanation of the underlying causes of the environmental crisis. The persistence of an environmental crisis, despite privatisation and deregulation, has shown that the Liberal explanation does not

constitute an in-depth understanding of the environmental crisis. The Green ideologists believe that our social, economic and political problems for the most part are caused by our intellectual relationship with the world and the practices that stem from it. The human-centred conception of the universe – anthropocentrism – has upset the balance between humans and the rest of nature. Anthropocentrism, according to the Greens, is the mistaken belief in human beings as self-sufficient and sovereign masters of nature and our planet. This belief, according to the Greens, has led to a disregard for nature, its cycles and processes, and stimulated the development of an unsustainable economy.

The second, evaluative, function of an ideology supplies standards for the evaluation of social conditions. Both the Liberal and Green ideologies explain why the environment is in crisis and offer their evaluations of the phenomenon and the policies designed to address it.

From the Liberal perspective, economic growth is seen as a positive development. Liberals support free trade as beneficial economically because it is assumed that trade stimulates economic growth, and economic growth, in turn, benefits everyone in the capitalist society. According to the Liberal ideology, continuing economic growth is a necessity for maintaining a high consumption level, which is synonymous with social progress. Economic globalisation then is seen as a “normal” and highly desirable development.

The emerging Green ideology offers different criteria for assessing and evaluating common practices and policies. From the Green perspective, continuous economic growth, which is usually achieved through intense exploitation of the natural environment

and wide application of industrial technology, is harmful to the environment and human health and as such, cannot be considered social progress. To be sure, the Greens are not advocating a return to the pre-industrial style of life, but they are opposed to the scale and the kind of economic activity that emerged in the industrial age, which was characterised by a commitment to rapid economic growth, mass consumption, and large-scale production. Instead, the Greens advocate local “small scale” economy, and a small-scale society where each individual can see the impact of his or her action on the environment and design and implement modifications to the lifestyle if it is too damaging to the environment.

The third, orientation, function of ideology supplies a proponent of an ideology with an orientation and a sense of identity – of who he or she is, the group (race, sex, nation) to which he or she belongs, and how he or she relates to the rest of the world.¹⁰

The proponents of the Liberal ideology think of themselves as individuals who should be free to pursue their own interests with some reservations, without government interference. Liberalism pictures people as rational individuals who have interests to pursue and choices to make. The most important part of the Liberal identity is our identity as an individual – not a group – identity.¹¹ Differences of race, culture, gender and religion are ultimately superficial.

From the Green perspective, individuality is only one of human characteristics, but not the defining one. Humans cannot live outside society and be free from its influences; at

¹⁰ Terence Ball, Richard. Dagger. Political Ideologies and the Democratic Ideal, 5th ed. (New York: Pearson Education. Inc., 2003) 5.

¹¹ Terence Ball, Richard. Dagger. Political Ideologies and the Democratic Ideal, 5th ed. (New York: Pearson Education. Inc., 2003) 5.

the same time human society cannot exist outside nature. Humans and nature are intimately interconnected, and therefore the principle of interconnectedness should be the starting point for building social order. Greens think of themselves as members of a species whose health, economic well-being, and entire existence is deeply dependent upon other species and upon the conditions that nurture them. Interrelatedness and ongoing processes are the lessons the Greens take from and apply to the ecosystems surrounding us.

The fourth, political program, function, sets out a general program of social and political action. With regards to the programmatic function, Liberals espouse programs promoting individual liberty and opportunity. Historically this has meant that Liberals opposed religious conformity, ascribed status and political absolutism, and the tyranny of majority opinion. With these obstacles removed, individuals are free to worship (or not) as they see fit; to rise and fall in society according to their efforts and ability; to compete on an equal footing in the marketplace; to exercise some control over government and to live, think and speak in an unconventional ways. Individual liberty however, was translated into the right of private ownership. With the rise of environmental issues, the Liberals contend that the solution to the overexploitation of “commons” is the conversion of the commons into private ownership.

The political action plan of the Greens, especially in regards to the institution of private property, is less straightforward. As mentioned before, the Green movement is comprised of diverse groups that have different short and long-term goals. Many groups within the Green movement chose to practice shallow environmentalism in order to get the

attention and support of various governmental agencies. Moreover, except in the case of the Greens in Germany, Green parties have not been able to try their hand at governance or at least power-sharing at the federal or national level. It also remains to be seen how ecological theory can be applied in concrete policy settings. It therefore is difficult to determine the over-all Green approach to political action. Thus the fourth function of an ideology in the case of Green ideology is yet to be fully formulated and implemented.

For these reasons, I will not attempt to classify the Green political thought in this thesis; instead I will refer to it as political perspective, which incorporates both theoretical and ideological elements. Of more importance, however, is what unites the ideological and theoretical elements in any political perspective.

Human nature and political perspective

Traditionally, the concept of human nature is a starting point for any political theory or ideology. Human nature refers to what every political theory claims to be the essential and immutable character of all human beings. It highlights what is innate or “natural” about human life, as opposed to what human beings have gained from education or through social experience.¹² In political theory, the concept of where we are located in nature and our relationship with nature profoundly shapes our understanding of how our political and social life ought to be organised.

The question of what constitutes “true” human nature has been asked by ancient philosophers and contemporary writers alike, because the answer to the question of human

¹² Andrew Heywood. Key Concepts in Politics (New York: St. Martin’s Press, 2000) 21.

nature provides the timber with which every political theory must be constructed.¹³

Plato's politics, for instance, follows directly from his understanding of human nature.

Plato argued that the human soul is composed of three parts: an animal-like desiring part, a human-like emotional part, and a god-like intellectual part. Plato then organised social and political structure to accommodate this "natural" composition of human nature:

human society must consist of three classes that represent the three facets of human nature.¹⁴ Merchants and tradespeople, who are mostly moved by their material desires, form the lowest class. Soldiers, who are mostly moved by their emotions such as love of honour, form the middle caste. Philosophers and rulers, who are mostly moved by their intellect, form the top caste. Thus, political and social structure in Plato's world-view was derived from his understanding of human nature.

Similarly, Hobbes, one of the founders of Liberal political theory, claimed that since humans are by nature violent power-seekers, the only reasonable way to organise society is to make central government very strong. This "Leviathan", as Hobbes called supreme governmental power, would be capable of forcibly maintaining peace and order among its subjects.¹⁵

Thus, the question of human nature becomes essential to understanding the roots of an established political view or forming a new political perspective. To qualify as a distinct perspective, Green thought must have its own concept of human nature, different

¹³ Paul Thiele. Thinking Politics. Perspectives in Ancient, Modern and Postmodern Political Theory (Chatham, New Jersey: Chatham House Publishers, Inc., 1997) 33.

¹⁴ Ibid. p.32.

¹⁵ Paul Thiele. Thinking Politics. Perspectives in Ancient, Modern and Postmodern Political Theory. (Chatham, New Jersey: Chatham House Publishers, Inc., 1997) 34.

from the dominant Liberal thought. This thesis therefore will focus on examining the Green concept of human nature and comparing it to the Liberal concept of human nature.

If we accept the premise that the Liberal and Green concepts of human nature is the starting point of a political perspective, then the difference in the concept of human nature must be reflected in a different approach to social and economic problems. This thesis will examine the implications of the different conceptions of nature and human nature on the respective formulation of political arrangements. If, as the Liberals believe, humans are not part of nature, are Liberal social and economic models also “outside” nature? If, however, as the Greens argue, humans are a part of nature, what are the principles that human society should be organised around? Chapter I examines the Liberal argument that “nature’s” principles cannot be the foundation of social theory and the Green belief that only the principles derived from nature can provide the basis for an environmentally sound society. The first chapter will also analyse how our understanding of the world shapes our concepts of human nature and social design. If the Green concept is much more than just an update in our understanding of the universe, then can this new understanding provide sound principles for human interaction with nature? Chapter II will look at the underlying principles of the Liberal and Green economy, because economy determines the pattern of interaction between humanity and nature. If, as the Liberal supporters claim, Green principles can be adapted to the existing economy, then our society need not re-evaluate its intellectual relationship with nature. However, if the Liberal model of economy is incompatible with the Green principles of interaction with nature then a sustainable society cannot be achieved without changing our economic model. Chapter III will compare the Liberal and Green concept of a sustainable society.

If, as the Liberals claim, a sustainable society can be achieved without an ethical shift in our values regarding nature, environmental problems can be solved with new technology, the key to achieving sustainability is to continue the present mode of interaction with nature albeit with better management and better technology. Chapter IV will trace the roots of the Liberal belief in the “technological fix” to environmental problems and will evaluate the possibility of alternative technologies.

It will be argued that the difference in the concept of human nature necessarily implies a difference in the social and economic model. In the context of the environmental crisis, Liberal thought perpetuates an economically and socially unsustainable society. From the Green perspective, the roots of the present environmental crisis can be traced to the Liberal concept of nature, human nature and the place of humans within it. The Green perspective on nature and the place of humanity in it, emerged partly, as a response to the inability of Liberal ideology to address wide-spread environmental degradation. Green political thought, it will be argued, which views humanity as an integral part of nature, is in tension with the Liberal premise, which defines humans as apart from nature and not dependent on it for its survival. While there has been an attempt to assimilate the Green political discourse into the dominant Liberal rhetoric in the form of “sustainable development”, this attempt was more rhetorical rather than ethical. Adopting Green ethics challenges the anthropocentric view of nature and challenges the economic, social and political principles that support the industrial economy of the Liberal society.

CHAPTER I

Green vs Liberal concept of nature: political, social and economic consequences for the environment.

Critics of Green political thinking have argued that the principles for an ecologically friendly social design cannot be inferred by simply observing nature and natural processes¹⁶. While acknowledging that Green thought has useful insights about how best to protect our natural environment, critics of the Green perspective have argued that neither the social vision nor the political basis for an ecologically sound society can be directly derived from ecological premises. A deeper understanding of the environment, critics argue, can be a part of political theory but it does not provide a basis for such a theory. This chapter will address this criticism of the Green political perspective by contrasting the Liberal and Green concepts of the universe and the place of humanity within it. It will be argued that most political theories not only base their version of human nature on their understanding of the cosmos, but derive their political vision for social organisation directly from premises obtained from observing nature. The classical Liberal concept of nature was influenced by the state of knowledge of the universe at the time when the main principles of the theory were formulated. By tracing the roots of the Liberal conception of nature to the mechanistic model of the universe, it can be shown that the Liberal concept of nature and its version of social design were influenced by seventeenth century astronomy and physics.

¹⁶ Among the critics sharing this position are L. Martel, M. Ryle, and the Economist.

Similarly to the Liberal and other political theories, the Green theory also relies on scientific knowledge about our physical world in its formulation of the Green concept of nature and the place of humanity in nature. As this chapter will argue, the Green concept of human nature draws its knowledge from the twentieth century scientific understanding of the universe, which rendered the universe to be a more complex system than was earlier imagined. It will also be argued that the Green concept of nature is much more than just an update in our scientific understanding of the universe; rather, Green theory represents an entirely new approach to the conceptualisation of human nature and the goal of an ecologically sound society.

In most political theories, the conception of where we are located in nature and our relationship with nature profoundly shapes our understanding of how political and social life ought to be organised. The Liberal understanding of nature consists of many elements that were incorporated into the Liberal vision from classical and medieval concepts of nature. Despite much continuity, however, the Liberal concept of nature represented an important break from the traditional understanding of the universe and the place of humanity within it.

Classical concept of the universe and human nature

In the vision of the ancient philosophers, the universe was seen as an embodiment of beauty, harmony and order. Pythagoras called the universe a cosmos, a "beautiful order" and explained that the world-structure arises from *harmony* or the "fitting

together" of different elements through proportional relationships.¹⁷ The universe's harmony was reflected in the structure of galaxies, trees, snowflakes, the deeply elegant forms of living creatures, and the proportions of the human body. According to the classical world-view, in the harmonic structure of the living universe all individual parts fit together to make up the greater whole. Plato, for example, described the universe as "one whole of wholes" and as "a single living creature which encompasses all of the living creatures that are within it."¹⁸ The universe as understood by the ancient philosophers was also orderly with a clearly established hierarchy: according to the Aristotelian understanding of cosmos, the universe had the Earth at its centre with the stars fixed on a translucent sphere that revolved around the Earth.

The relationship between the universe's parts was characterised by the interdependence of spiritual and material phenomena. According to this understanding of how the universe works, humans were an integral part of this structure and humanity, therefore, had to fit harmoniously into this structure. The philosophical wisdom of the time adopted the view that since humans occupied a niche in a cosmic order which they had not created, piety involved revering the cosmic order as sacred; justice involved keeping one's place, performing one's function, and giving everything its due.¹⁹ The good life was seen as a life in accordance with virtues, one of which was the life of self-sufficiency that made minimal demands upon the natural environment.

¹⁷ David Fideler. "The Greek Idea of Cosmos and Its Contemporary Meaning". Alexandria 4, 5 August 2003 <<http://www.cosmopolis.com/df/what-is-a-cosmos.html>>.

¹⁸ Ibid.

¹⁹ John Rodman. "Paradigm Change in Political Science: An Ecological Political Science." American Behavioral Scientist 24 (1980): 49-78.

Viewed from the Green perspective, the classical concept of nature had many attractive features: a holistic approach to the understanding of the universe, an emphasis on the interdependency of all living and non-living creatures and economic self-sufficiency. However, from the Green perspective, the classical understanding of human nature had some problematic features. Although the classical understanding of human nature did not dispute the fact that humans were natural beings, it separated human nature into two conflicting forces.

Human nature, according to classical thinkers, was two-fold. On one hand, human nature consisted of human virtue (articulated as the ability to speak, reason, know and worship God, seek justice and create tools); on the other, it had elements of other beings, especially those of brute beasts.²⁰ A virtuous man attempts to maximise his ‘human’ features and limits the “wild nature” inside him. In accordance with the logic of virtue, the good or happy life was defined as activity in accordance with virtue and excellence. Writers such as Plato and Aristotle focused on the internal condition of the soul – wisdom, justice, temperance, faith, charity and humility.

Furthermore, the classical concept of human nature as consisting of two mutually exclusive forces divided society into those who possessed virtue and those who did not. The classical purpose of social design was to encourage those possessed of a high degree of human virtue and excellence to join the ruling ranks of society and to leave those who willingly or unwillingly possessed less virtue in a subordinate position. This understanding of human nature justified a rigid social hierarchy which questioned the “humanness” of

²⁰ John Rodman. “Paradigm Change in Political Science: An Ecological Political Science.” American Behavioral Scientist 24 (1980): 49-78.

women and slaves, as they were perceived as not capable of possessing virtue or excellence. Thus, the notion of virtue was used to legitimise the institutions of slavery and patriarchy. In hindsight, the classical understanding of nature resulted in social organisation which, while prescribing a life of harmony with nature, nonetheless created institutions of human and non-human enslavement. Animals were exploited as energy slaves and transportation sources, and the patriarchal organisation of society allowed for female subjugation and exploitation.²¹

Viewed in retrospect, the classical concept of human nature had some ecologically problematic elements. Although the universe was seen as an interconnected whole, the ancient philosophers did not perceive human society as also interconnected, interdependent and therefore equal in its parts. Social harmony could not result from equality and equal participation, but only from lower classes accepting the “natural rule” of the upper classes. Indeed, the classical society was one of rigid social hierarchy, in which many individuals and even entire social classes were perceived as unworthy and thus excluded from social discourse. Moreover, even though the ancient philosophers acknowledged and celebrated the diversity of surrounding nature, the notion of the ancient city was premised on the homogeneity of a shared religion and race. From the Athenian democracy’s trial of Socrates to the Roman persecution of Christians, this intolerance of heretics suggests that the classical understanding of a well functioning society was

²¹ Ibid.

incompatible with the ecological principle that diversity is a source of stability and vitality.

22

Medieval concept of nature and human nature

The medieval conception of nature absorbed many classical philosophical traditions. The medieval understanding of nature, although predominantly theistic, continued the classical anthropocentric tradition of a “natural” hierarchy. Aquinas, as had Aristotle before him, maintained that there is a divine hierarchy in the world: humans ranked higher than animals, plants higher than non-sentient beings, and God was the pinnacle of the universe. This “natural” hierarchy was recreated in the social organisation of medieval society: God as supreme authority, his representatives – monarchs and aristocrats - ruled their subjects; and lower classes exploited animals and the earth to provide for society’s daily needs. This order was accepted as divine and, therefore, as unquestionable by either science or by political theory.

The medieval philosophers understood the universe as a static and closed entity with finite limits. The medieval model of the world supported a social structure that was not only hierarchical but also static. Everyone, whether serf, noble, or free commoner, was born into a certain rank or estate in medieval European society and could do little to change it. The Church provided an exception to this rule, as people from all ranks of

²² John Rodman. “Paradigm Change in Political Science: An Ecological Political Science.” *American Behavioral Scientist* 24 (1980): 49-78.

society could hope to find a place among clergy. In other respects, medieval society was firmly rooted in ascribed status. Nobles were those born into the nobility, while the children of free commoners and serfs were virtually locked into the social position of their parents.²³ This social order was supported by the power of the state and by the religious authority of the Christian Church.

The medieval concept of human nature continued the classical tradition of placing limits on human behaviour; however, the medieval philosophical discourse on nature and human beings was dominated by the principles of the Christian faith. According to the Scriptures, nature was a realm made up of earth, plants, animals, humans, heavenly bodies, and supernatural beings created by an all-powerful God. Humans occupied a niche in the cosmic order, an order they had not created, but which was given to them by God. Since nature was viewed as sacred, humans over-exploiting and despoiling nature risked bringing disaster upon themselves and those around them. The Christian belief system, therefore, continued the classical tradition of placing limits on human behaviour towards nature but provided different reasons for this behaviour: in the classical paradigm, respecting nature was a way of virtuous life, whereas according to the medieval understanding of human nature, humans respected their limits out of fear of God's retribution.

The teachings of the Christian Church also perpetuated the classical tradition of viewing humans as distinct from other living creatures. Humans, according to the Christian Church, were created in the image of God and, as such, they were qualitatively different

²³ Terence Ball, Richard. Dagger. Political Ideologies and the Democratic Ideal, 5th ed. (New York: Pearson Education. Inc., 2003) 47.

from the rest of nature. Only a human being had a soul, and the possession of the immortal soul set humans apart from the rest of the natural world. Thus, the Judeo-Christian tradition furthered the classical notion of virtue that separates humans from nature, in effect completing the transition from the belief that “man was *a part* of nature to the view of a man as *apart* from nature”.²⁴

Viewed in retrospect, both the classical and medieval emphasis had many features that could be considered “ecologically friendly”. Both classical and medieval concepts of human nature were concerned with maintaining limits on human activity towards nature and discouraged intensive exploitation of forests, rivers, and lakes. However, both classical and medieval paradigms, although acknowledging the interconnectedness of everything in nature, including the dependence of humanity on nature, did not envision the interconnectedness of human society as consisting of equally important parts. Strict hierarchy discouraged tolerance or diversity within medieval societies. In particular, Christian Europe was extremely intolerant of any dissent and rigorously persecuted heretics and those attempting to question the established social order.

The most important classical and medieval legacy was the concept of human nature that focused on the faculties that separated humanity from nature. The emphasis on what separates, rather than unites humanity with its surroundings, forged a clearly anthropocentric attitude towards nature: since only humans can possess virtue and have an immortal soul, humans are “above” nature and human needs are therefore central to the nature – human relationship. This anthropocentric tendency of the medieval world-view

²⁴ Walter H. O’Briant. “Man, Nature and the History of Philosophy,” Philosophy and Environmental Crisis, ed. William T. Blackstone (Athens: University of Georgia Press, 1971) 79.

was not challenged in the transition from the classical to the modern understanding of the cosmos.

Liberal concept of the universe and human nature

The modern understanding of nature was shaped, in part, by the rise of modern science. Scientific inquiry questioned “the divine order of things” and replaced the earth-centred conception of the cosmos with the sun-centred view. Generally speaking, the central thrust of the modern understanding of the relationship between humanity and nature was that of emancipation. Science was an important tool in the emancipation of humans from subjection to natural forces. Scientific discovery and technological development were harnessed to improve human understanding of nature and to learn how to manipulate powerful natural forces in human favour. Scientific innovation in the modern age created a new model of the universe – the universe as a complex machine, whose inner workings could be understood by reducing it to a collection of solid and movable particles. Scientists such as Francis Bacon, Rene Descartes and Isaac Newton channelled scientific inquiry into developing a new scientific method, according to which “splitting things up” and studying them in isolation was the only right way to gain knowledge of the universe.²⁵ The world, the assumption went, is nothing more than a collection of objects. Every object can be “broken down” to smaller particles. In the extreme interpretation of this world-

view, even the human body was viewed as nothing more than a collection of different body parts, a manifestation of a particular kind of a DNA. It was assumed that learning about the nature of different parts of either the universe, a natural phenomena or even a living human body, understanding the way they are put together, brings an in-depth knowledge about the object of study, be it a chemical reaction or a living breathing human body.

In the modern understanding of the universe, the scientific approach to nature replaced the old conception of nature as an interconnected harmonious living organism with the new vision of the universe as a working machine, whose parts and processes can be studied in isolation and ultimately understood in full. Politically, the increasing importance of science in European societies resulted in several important developments. First, relentless scientific progress was undermining the power base of the dominant medieval knowledge producer - the Church. The Christian faith, by losing its importance in modern society could no longer enforce the religiously inspired limits on environmental exploitation. Second, science and the practical application of science – technology – enabled humanity to effectively exploit nature for its use. Third, scientific developments both removed the source of religious fear and reverence of nature and at the same time reinforced the deep-seated Judeo-Christian belief that humanity is the Lord of the Earth, as the Creator had given it to humans for their use and enjoyment. This last development cleared the way for a new society with a new concept of nature and of the relationship between humanity and nature. Intentionally or not, the development of a scientific view of nature helped to further distance humanity from nature; scientifically understood nature

²⁵ Andrew Dobson. Green Political Thought (London: Unwin Hyman, 1990) 37.

was no longer feared or revered, but studied and exploited. Modern science and technology obscured not only the interconnectedness of everything in the universe, but also sidelined the interdependent side of the human-nature relationship. In the modern view, nature became a resource, rather than a natural system that sustains human and other forms of life. Just as the other side of the coin of ancient democracy was human slavery, so the flip side of the coin of modern human freedom has become the domination and exploitation of external nature.²⁶

The growing body of scientific knowledge of the universe and the increasingly confident assertion of human autonomy from the oppression of nature are followed by a new concept of human nature. The modern conception of nature differed dramatically from the classical and medieval understanding. Both the classical and medieval paradigms, although anthropocentric at their core, placed limits on spoiling or overexploiting the natural environment. As the authority of the Church in upholding the medieval world-view weakened, the scientifically Enlightened society was receptive to new ideas and principles for the organisation of social and political order. From the seventeenth century on, the ideological vacuum left by the weakening of the Church was beginning to be filled with new ideas of social organisation. The most influential philosophers of early modern Europe attempted to blend the new scientific knowledge of the universe into a new vision of society that would be suitable for a politically emancipated and scientifically empowered society. Because Newtonian mechanics generated a lot of enthusiasm among the thinkers of the seventeenth century, they attempted to apply Newtown's vision of the physical universe to social science in order to discover "social physics". The Newtonian

²⁶ John Rodman. "Paradigm Change in Political Science: An Ecological Political Science." American

theory that the universe was rational generated a belief that human society should also be organised along rational and scientifically tested principles. And, since the universe consisted of separate “movable” parts, so also must human society consist of unrestricted free individuals. The dominant figure in the adaptation of Newtonian physics to social design was the Liberal philosopher John Locke.

Strongly influenced by Descartes, Newton, and Hobbes, Locke’s writings had a decisive impact on the following centuries’ social thought. Following Newtonian physics that envisioned the physical world as made up of separate particles, Locke envisioned human society as also made up of separate building blocks. The basic separate blocks of society, according to Locke, were individuals. He further reasoned that if the Newtonian physical universe was governed by the laws of motion, so should a human society be governed by the laws of nature. In this application of Newtonian physics to the analysis of human nature, Locke argued that human society consists of separate individuals (as the universe consists of physical particles) whose actions are governed by the natural law of individual interests (as the law of gravity governs the physical world).

Furthermore, as physicists reduced the properties of gases to the motion of their atoms, or molecules, so Locke attempted to reduce the patterns observed in society to the behaviour of its individuals. Thus he proceeded to first study the nature of the individual human being, and from that to abstract principles of human nature and apply them to economic and social problems.²⁷ According to Locke, all human beings were rational, equal and in their actions motivated by what he assumed to be their own self-interest.

Behavioral Scientist 24 (1980): 49-78.

²⁷ Freya Mathews. The Ecological Self (London: Routledge, 1991) 22.

When Locke applied his theory of human nature to social phenomena, he was guided by the belief that there were laws of nature governing human society, similar to the laws governing the physical universe. As atoms in a gas would establish a balanced state, so human individuals would settle in a society in a “state of nature”.²⁸ Thus the function of the government was not to impose laws on the people or try to make them good, but rather to discover and enforce natural laws that existed before any government was formed.²⁹ According to Locke, these natural laws included the freedom and equality of all individuals as well as the right to property, which represented the fruits of one’s labour.

Another influential thinker of the time - Adam Smith – employed scientific theories to develop the doctrine of laissez-faire which provided the economic basis for a new rational and individualistic society. Also from natural physics, Smith adopted the theme of laissez-faire, a rationalising cosmic force he called “the invisible hand”. Just as the universal laws of gravity guide the movement of atoms in the universe, Smith reasoned that the invisible hand of the market would guide the individual self-interests of all entrepreneurs, producers and consumers for the harmonious betterment of all. Betterment, however, was defined as the production of material wealth. In this way, a society would be built that was independent of individual intentions and based on the objective science of economic activity.

Locke, Smith and their followers formulated the principles that became the foundation for the Liberal theory of human nature. In Liberal theory, human beings are perceived as self-interested beings focused solely on maximising their happiness and

²⁸ Fritjof Capra. The Turning Point: Science, Society and the Rising Culture (New York: Simon and Schuster, 1982) 69.

²⁹ Ibid. p.200.

satisfying their preferences. Accordingly, humans by nature are competitive. The acceptance of natural competitiveness as representative of human action in general justified a free market model of society where independent rational individuals compete against each other in order to maximise their advantages and material gain. The role of government is to promote economic growth and to stimulate wealth production and job creation. In contrast to the classical idea of the state's role in society, the government according to the Liberal conception of nature is not the creator of conditions for the good and virtuous life for its citizens. Rather, the government is conceptualised as a neutral institution that is designed to protect private property and to respond to citizen preferences. Thus the Liberal theory formulated a clear vision of society based on then current model of the universe. Unlike medieval society, the Liberal vision of society accepted a greater degree of social mobility and freedom from religious and political persecution.³⁰

In summary, the scientific advancement of early modern Europe replaced the medieval earth-centred world-view and the resulting concept of a static hierarchical society with a new heliocentric view, in which the universe was a machine whose parts and functions can be broken down to manageable pieces. The modern understanding of the universe shaped a new understanding of human nature and the relationship between humanity and nature. The modern concept of the human/nature relationship broke away from the classical and medieval tradition of viewing humanity as deeply interconnected and interdependent with nature. Science and its proponents also disregarded the importance of traditional limits on nature's use. While abandoning the notion of limits and human

³⁰ Terence Ball, Richard. Dagger. Political Ideologies and the Democratic Ideal, 5th ed. (New York:

dependency on nature, the modern view of the universe perpetuated the ancient tradition of anthropocentrism, regarding modern society as “above” and “apart” from nature’s processes and cycles. These modern anti-ecological tendencies were intensified with the Liberal view of humans as self-centred and profit-oriented individuals free from environmental and social influences.

However strong the link between the scientific image of a machine-like universe whose parts are only loosely connected to each other and the Liberal concept of humans as independent entities unconnected to their natural and social environment, this does not validate the argument that the image of nature always precedes the image of society, or vice versa. It does, however, entail that there is an intimate connection and a reciprocal relationship between images of nature and our images of society.³¹

Green concept of the universe and human nature

From the Green perspective, the Liberal concept of nature inherited a design flaw that was built in to the acceptance of modern science’s capability to accurately represent reality. The scientific method of assessing reality rests on the assumption that real knowledge consists of the quantification of “essential” physical properties of natural phenomena. This approach to nature provides a selective view of reality: the scientific method takes into final analysis only certain characteristics, excluding others. Viewed from the prism of the scientific method, the universe loses its spiritual and qualitative meaning;

Pearson Education. Inc., 2003) 47.

³¹ John Rodman. “Paradigm Change in Political Science: An Ecological Political Science.” *American Behavioral Scientist* 24 (1980): 49-78.

it is no longer an interconnected system supporting life, but a collection of phenomena existing in a disconnected vacuum, without purpose, waiting to be “discovered” and put to use. This particular method of reducing complex phenomena to basic building blocks, and of looking for the mechanisms through which these interact, is the “scientific method”.

Thus the Liberal concept of nature is built upon a method that can only produce a one-sided reality, because it focuses on selected properties and takes into consideration mainly the “quantifiable” characteristics of phenomena. It is not surprising then that just as the scientific method deliberately concentrates on only one aspect of reality – its quantitative physical features, so the Liberal belief that human beings are first and foremost, individuals, focuses only on one aspect of human nature. Presenting Liberalism as the only accurate theory that reflects the true state of human nature is an ideological attempt at dismissing other political theories that reflect other human realities. More importantly, as the scientific view of the universe continued to be updated and modified in later centuries - so also should have Liberal theory undergone theoretical adjustments. In reality, however, the Liberal theory was not updated or modified; it became the dominant theory of human nature, imposing its one-sided view of nature and human nature and, in fact, creating a monoculture in contemporary political discourse.

The post-modern understanding of nature begins with the new discoveries in physics, chemistry and biology, which portray the Newtonian models of the universe as too restrictive and unrepresentative of physical reality. Charles Darwin, for example, presented overwhelming evidence in favour of his theory of biological evolution, according to which all living beings have evolved from earlier, simpler forms under the pressure of environmental change. Darwin also proposed an explanation, based on the

concept of random mutation and natural selection, which remains a cornerstone of modern biological thought. Darwin's discovery of evolution in biology effectively undermined the Newtonian concept of the world as a machine that emerged fully constructed from the hands of its Creator.³² Instead, after Darwin, the universe had to be pictured not as static matter, but as an evolving and ever changing system in which complex structures developed from simpler forms.

Later, Einstein's theory of relativity brought about a drastic change in the concepts of time and space. While Newtonian physics pictured matter as passive and inert, Einstein saw it in a continuously moving motion. The universe was not static; in order to provide an accurate description of phenomena involving velocities close to the speed of light, Einstein developed a "relativistic" framework that incorporated time and space.³³ The relativistic view of matter links the forces between constituents of matter to the properties of other constituents of matter, thus showing the universe as one indivisible, dynamic whole whose parts are essentially interrelated and can be understood only as patterns of cosmic process.

At the end of the nineteenth century, the mechanistic view of the world had lost its authority as the fundamental theory of natural phenomena. Darwin's theory of evolution and Einstein's relativity theory involved concepts that clearly went beyond the Newtonian model and pointed at a universe that was far more complex than Descartes and Newton had imagined. Nonetheless, the political principles that were modelled upon the Newtonian understanding of the natural world have remained unchanged in Liberal

³² Fritjof Capra. The Turning Point: Science, Society and the Rising Culture (New York: Simon and Schuster, 1982) 72.

political thought. Individualism, based upon the political adaptation of the Newtonian vision of the universe as consisting of separate particles, is still the cornerstone of Western society. Even though we now know that nature is not a composite of isolated building blocks, but appears as a complicated web of relationships between various parts of a unified whole, the reductionist method of solving social, economic and political problems remains unchanged. Such political thinking, instead of focusing on webs of relationships, interdependencies or socio-political connections that extend over time and space, continues to focus only on separate problems and reductionist ways of “solving” them.³⁴

Recently, the Green perspective has challenged the dominant Liberal theory of human nature. The Green movement began to question the scientific knowledge structure by pointing out the multiple environmental failures resulting from the reductionist approach to nature and social organisation. The Greens countered the Liberal concept of human nature with the claim that individualism is only one side of human nature; the other is the social side because individuals cannot exist in isolation. People can only exist within a larger social structure and, outside that, within the matrix of nature.

The Greens argued that the Liberal concept of human nature is not only flawed but also dangerous and irrelevant. It is dangerous, according to the Green movement, because anthropocentric tendencies within Liberal political thinking contributed to the social design that produced ecological problems of such magnitude that environmental degradation is now threatening life on Earth. At the same time, such a concept of human nature is irrelevant, because Liberal “natural” competition and the self-interested behaviour that

³³ Ilya Prigogine. The End of Certainty: Time, Chaos, and the New Laws of Nature (New York: The Free Press, 1997) 73.

underpins modern social design have been shown to be one-sided and incomplete. The new developments in the understanding of evolutionary biology show that in reality competition is not the dominant strategy in nature and that organisms tend to satisfy rather than maximise their preferences, that they tend to find niches which protect them from competition, and that many organisms form symbiotic relationships to further their chances of survival.³⁵

The Green concept of nature is shaped in part by new developments in physics and biology. In particular, an important influence on the Green concept of nature has been the systems approach in biology. From the systems approach, cells, like organisms and groups, are at the same time units and complexes, individuals and communities. At each level of organisation, there is a dynamic balance between self-assertive (independent whole) and integrative (dependent part) tendencies. Conventional scientific method understands phenomena by looking at constituent parts and parts of parts. Systemic thinking maintains that the concept of “part” as a discrete entity is really an illusion which blinds us to the dynamics of the *relationships* involved in the system. The unit of survival is not the organism, but the organism *and* its environment.

This systemic approach points to an altogether more complex, dynamic and fascinating model of the universe than that afforded by the modern scientific worldview. Instead of a mechanistic world, we see one that is characterised by organic, complex, dynamic interrelationships. Instead of linear cause and effect, we see a complex web of cyclical interconnections across time and geographical space. Instead of the world

³⁴ Robert C. Paehlke. Environmentalism and the Future of Progressive Politics (London: Yale University Press, 1989) 211.

analysed into discrete parts, we see relative wholes which, by virtue of their organisation, are greater than the sum of their parts.³⁶

Viewed from this perspective, the Green concept of nature involves the understanding of the universe as a web of interconnections and mutual dependencies within which we and other species live. Humans are not only connected with one another but with other species of animals and plants. These include not only the living entities on which we depend for nutrition, but our connection with other living forms includes forming work and leisure relationships with plants and animals. Moreover, humans not only live in the natural environment, but are themselves environment for other living forms – such as various micro-organisms that live within us and without which the human body cannot function. We all, the Green perspective emphasises, are interdependent participants in the cycle of birth, life, death, decay, and rebirth. According to this understanding of the world, not only are we all constituted by our biological and social relations but also everything we do has social and ecological repercussions. Green theory rejects the Promethean notion that humans are capable of fully controlling all their interventions in the natural world, and warns that ecosystems behave in unpredictable ways and may even be more complex than we can ever know.³⁷

Several other Green values flow from the recognition of interconnectedness and interdependence. The first of these is the respect for life. The Greens argue that we must respect not only human life but also other forms of life on this planet. Because everything

³⁵ Judie Davidson. "Sustainable Development: Business as Usual or a New Way of Living?" Environmental Ethics .22. (2000): 25-42.

³⁶ Stephen R. Sterling. "Towards an ecological world view," Ethics of Environment and Development: Global Challenge, International Response, eds. R. Engel, J.G. Engel (London: Belhaven Press, 1990) 81.

is interconnected, the fate of other species is tied to the fate of humanity. Since life requires certain conditions to sustain itself, the second Green value flows from this premise – we have an obligation to respect and care for the conditions that nurture and sustain life in its many forms.³⁸ To damage one part of the life-sustaining eco-system is to damage the other parts as well, and to endanger the existence of living creatures that are dependent upon the integrity of this system.

Based on its vision of the universe, the Greens also view the individual in a different light. Although most people now live in large cities that break natural cycles and disconnect us from nature, Green theory views humans not as just intimately connected with nature, but as nature themselves. As we eat, drink and breathe, we constantly exchange energy and matter with our environment. The human body is continuously wearing out and rebuilding itself – in fact, we replace almost all molecules in our bodies about once a year.³⁹ Thus Green theory advocates a view of an individual as a natural being intimately connected to its natural and social environment. To acknowledge this is not to overlook or deny the enormous power humanity has over nature. On the contrary, it requires that we recognise the extent of our power and take full responsibility in restraining it and using it wisely.

This conception of nature and the relationship of humanity with nature has often been referred to as holistic. From the holistic conception, physical reality is represented in dynamic, indivisible, systematic terms. Green theory espouses the principle of relationality

³⁷ Robyn Eckersley. "Politics," A Companion to Environmental Philosophy. ed. D. Jamieson (Malden, Massachusetts: Blackwell Publishers Inc., 2001) 318.

³⁸ Terence Ball, Richard. Dagger. Political Ideologies and the Democratic Ideal, 5th ed. (New York: Pearson Education. Inc., 2003) 237.

as an antidote to the construction of moral hierarchies – of “lower” and “higher” beings.⁴⁰ According to the relationality principle, individuals take their identity from the wider systems within which they are embedded. In such a concept, the attributes of any individual would be a function of a wider system or field to which it belonged. Individual human attributes, such as mind, thus cannot be regarded as the exclusive province of particular individuals, such as human beings, but rather must be seen as belonging to nature at large. In this way, by making the system itself the locus of all attributes, Green theory breaks away from the ancient tradition of ranking some individuals over others, because the concept of “higher” attributes, is eliminated. It follows then that the part (humankind) cannot dominate the whole (the natural world). Thus by seeking to subjugate the planet, by imposing human domination, humankind is threatening its own existence. Green thinking thus represents a shift in Western forms of knowledge through offering knowledge organised around principles of relationality rather than division.

In summary, Green political thought is not the first attempt to accommodate the new developments in our understanding of the natural world to our social organisation. Most political theories of the past, especially Liberal theory, have built their vision of society around the understanding of the universe and the place of humanity within it. Green political thinking is also not the first to see humans as interconnected with their natural environment and nature as a complex and harmonious entity. The Green notion of limits is also not distinctly new. At the same time, however, the Green concept of nature and human nature is distinct from the Liberal conception of human nature. In fact, Green

³⁹ Mathis Wackernagel, W. Rees. Our Ecological Footprint: Reducing Human Impact on Earth (Gabriola Island, B.C.: New Society Publishers, 1996) 7.

⁴⁰ Robert E. Goodin. Green Political Theory (Cambridge: Polity Press, 1992).

theory is the first to confront the anthropocentric continuum that has conditioned ideas of social design for over two millennia. Green theory advances the notion of the intrinsic value of nature - nature should not be valued simply because it looks after us; rather it should be valued for its own sake, because nature has its own inherent value, dignity and beauty. The notion that nature ought to be valued for its own sake – an ecocentric view of nature – is the most distinct feature of Green political thinking. The ecocentric conception of nature challenges the most fundamental principles of the modern conception of the universe – the notion of human supremacy and domination of nature.

Green theory is also distinctive in taking the fact that humans are a part of nature as having constitutive implications for political theory. Thus, according to Green theory, humans are to be seen not just as rational individuals (as in Liberalism) or as social beings (as in Socialism) but as natural beings. The distinctiveness, though, lies not simply in the recognition of the fact that humans are natural beings, which is unlikely to be disputed by most modern theorists, but that acceptance has descriptive and normative significance for political theory.

CHAPTER II

Green vs Liberal economy

The economy is the dominant factor in determining a society's interaction with nature. As a particular method of providing for society's daily needs, economy plays a vital role in the development of society. Given the importance of the economic system, the question of whether the present economic system is capable of arriving at an ecologically sustainable form of interaction with non-human nature is of global importance. This chapter will address the claim that the capitalist economy is compatible with Green ecological objectives. The critics of the Green perspective often argue that an economy build around Green principles would mean a return to subsistence economy and the end of modern prosperity. It would be much wiser, the argument goes, to adapt select Green principles to the present economic model. This chapter will assess the underlying assumption of this claim - whether the principles of Green economy could be successfully adapted to the existing economic system.

In order to assess the validity of this claim, it is necessary to determine the underlying principles of the capitalist model of interaction with nature and evaluate its compatibility with ecological imperatives. This chapter will examine the theoretical developments that allowed for the rise of industrial capitalism as the prevailing model of human/nature interaction.

Liberalism and the private ownership of nature

Whenever modern economics is considered, the political philosophy of Liberalism must be addressed. Understanding its role in the modern discipline of economics is essential because of the economistic nature of modern Western society.⁴¹

The essence of the Liberal concept of nature is that pieces of non-human nature can be privately owned. Though private ownership of nature is now a common dogma, it was not the case at the beginning of the capitalistic regime. Then the conception of nature as privately owned required justification. John Locke in his *Second Treatise of Civil Government*, published in 1690, proposed an idea that the best social arrangement regarding the natural world is such that allows for private ownership of nature and its constituents. The right of property, Lock argued, allows humans to use the natural plenty for human purposes.

To show how people could obtain the right to exclusively own parts of nature, Locke developed a theory according to which everyone has property in one's own person: one owns one's labour. Locke believed that if a person applies his labour to a part of nature, he makes that part of nature his property.⁴² At a closer look, however, Locke's theory is not as convincing and straightforward as it appears today. It could be easily argued that putting one's labour into a part of nature results in the loss of ownership of

⁴¹ Joel Jay Kassiola. *The Death of Industrial Civilisation: The Limits to Growth and the Repoliticization of Advanced Industrial Society* (Albany: New York Press, 1990) 83.

⁴² I am using he/his/him because women were excluded from private ownership and were considered property themselves.

one's labour rather than the acquisition of property in non-human nature. Many aboriginal cultures espouse exactly this view of nature/human interaction.⁴³

While Locke's justification for private ownership of nature fails in the face of the extreme ecological degradation unleashed by such an approach, it is nonetheless significant in the Green analysis. It shows how foreign the idea of private ownership of nature was prior to the development of capitalism, to the extent that it warranted justification by Locke. At the time, Locke was trying to justify a nascent economic system that had not yet become acceptable.⁴⁴

Locke recognised limits to his justification of the right of property. He argued that the legitimacy of the process of the privatisation of nature rests on two conditions, which require people not to acquire property excessively and not to spoil their property.⁴⁵

According to Locke, one could not legitimately acquire more than could be used fruitfully.

This limitation means that people may legitimately take from the commons by means of labour what is their share; however, when people exceed this, they act contrary to the valid claim of others to these resources. The appropriation and use of land thus must be non-destructive and non-wasteful; acting otherwise violates the interests of others.

Though these limitations were put in place by Locke to restrict and prevent the spoilage of nature, in hindsight, they were insufficient to prevent wide-spread environmental degradation. Developing his theory, Locke assumed that no rational man would want to

⁴³ Andrew McLaughlin. Regarding Nature: Industrialism and Deep Ecology (Albany: State University of New York Press, 1993) 25.

⁴⁴ Ibid. p.28.

⁴⁵ Markku Oksanen. "The Lockean Provisos and the Privatisation of Nature," Justice, Property and the Environment: Social and Legal Perspectives, eds. Hayward, Tim, and John O'Neil (Aldershot, England: Ashgate Publishing Inc., 1997) 97.

accumulate beyond what he or his family could consume.⁴⁶ Indeed, in a barter economy, one's greed was limited by the fact that food can go bad and livestock could get sick and die. However, with the development of money as the means of exchange, the Lockean restrictions on the use of nature were rendered ineffectual. The introduction of money made it possible and rational to exchange one's product for "unspoilable" assets – capital. In a monetarised economy, one can accumulate any amount of land and other resources without violating Locke's spoilage limitation, because turning these resources into money prevents their spoilage: gold and silver do not go bad. In fact, in a capitalist economy it makes sound financial sense to exploit natural resources in order to gain money that can then be invested elsewhere.

Locke developed his theory using the concept of markets as they existed in agrarian societies. Locke's followers accepted this economic theory as a true representation of human nature and the natural order by which humans should live. Today, Lockean economic principles are deeply entrenched into the fabric of Western societies, and Locke's economic theories are still in use without major modifications. No substantial changes have been made to Locke's basic theory to take into account the consequences of industrialisation, the development and entrenchment of the monetary system, the growth of large corporations and institutions, and the development of advertising, each of which characterizes contemporary society. This unquestionable acceptance of economic principles developed in an era before the environment became an issue prevents the needed changes to the view of nature as something that can be privately owned.

⁴⁶ C.B. Macpherson. The Political Theory of Possessive Individualism: Hobbes to Locke (London: Oxford University Press, 1962) 2.

From the Green perspective, the essence of the Liberal approach to nature is the preference of freedom over equality. As argued in Chapter I, the Liberal view of nature as disconnected lifeless matter, stimulated a view of humanity as disconnected from its social and natural environment. Consequently, rather than viewing individuals as intimately connected to their social and natural environment, which shapes individuals and in turn is being shaped by them, Liberal theory perceives human beings as above all singular individuals. Individuals in the Liberal theory are also rational and capable of rising above their environment. In political terms, if one thinks of individuals in an atomistic “disconnected” way, liberty tends to have priority over equality. If, by contrast, one regards individuals as necessarily related and connected to their social and natural environment, and of social relations as prior to individuality, then equality takes priority over freedom.⁴⁷

In the Green analysis, Liberal theory, by choosing to emphasise the part of human nature that allows for free will and the individualness of human beings, has created an economic system that also favours economic freedom over economic equality. Moreover, from the Green holistic point of view, the Liberal concept of nature inspired inequality not only within human societies, but also in terms of imbalance and inequality in the human-nature relationship. This inequality is manifested by the fact that Liberal economic theory has downplayed the fact that human economy is only one part of, and ultimately dependent on, nature. Conceptualising human society as independent from nature, clears the way to thinking about nature as something that can be owned by individuals and used as if nature consisted of separate parts. The Greens have argued that ownership of parts of

⁴⁷ Tim Hayward. “What is Green Political Theory?” Political Studies Association 1998, 20 March 2003

nature is inherently harmful; it perpetuates the notion of disconnected nature when in fact everything in nature is connected. In this way, for instance, Liberal society can “divide” and own parts of a river. In the Green analysis, because a river exists within the river ecosystem, it cannot be divided. A river’s ecosystem consists of streams that feed into it, nearby fields, and a variety of living organisms that live in or by a river. Dividing and owning a river in most cases would mean to undermine the integrity of the river’s ecosystem that supports it.

In the Green conception, the economy should be organised around the principle of equality, with the emphasis on the interdependency of the human-nature relationship. If nature and humanity are equal and interdependent, one part of this interdependent relationship (humanity) cannot own another part (nature). Moreover, some Greens are of the view that the Earth owns us, since we are all its creatures. One species (humans) cannot own other species or a part of nature. The worldview that produces this social convention needs to be overturned and replaced with a convention that humans have a right to use nature but not own it. Nature must remain a common.

Liberalism and Capitalism

In the Green analysis, the Liberal concept of where we are located in nature downplays the interdependence and interconnectedness of humanity with nature. Similarly, an economy that is based on Liberal principles is not designed with the acknowledgement that the human economy is only a part of “greater economy” that is the biosphere of this

planet. Liberal ideas, in the Green view, have created the economy that is fundamentally limited in its ability to work within the matrix of nature without disrupting nature's cycles and processes.

It has been argued that seventeenth-century Liberal ideals installed many essential principles without which capitalism as an economic system would not be able to flourish. As a new political theory, Liberalism had discarded traditional concepts of society, justice and natural law, and deduced political rights from the interests and wills of dissociated individuals. An individual in Liberal theory is seen as neither a moral whole, nor as a part of a larger social whole, but as an owner of himself (and in most recent interpretation – herself). Individuals are free (and happy) as much as they are proprietors of their personal capacities. Free individuals that have property in their own person and their labour are freed by the Liberal society to engage in voluntary market exchanges. The ideal Liberal society then is a lot of free individuals related to each other only as proprietors of their own capacities and the property they acquired in exercising their capacity. Political society and the state then become devices for the protection of this property and for the maintenance of an orderly relation of exchange.⁴⁸

The individual's freedom to engage in market relations is a cornerstone of the development of capitalist economic relations. Liberal society allowed for freedom to pursue one's self interest, which in the context of capitalism came to mean economic self-interest. As Liberalism places the greatest emphasis on individuals, social and economic schemes under capitalism are often constructed so as to work to the advantage of those individuals, rather than to the benefit of all members of society. Thus the tension that often

arises between the continual development of efficient economies and the preservation of the environment is a result of emphasis on individual profit over the regard for public good that is a clean environment. By turning nature into a commodity and by relying solely on the Lockean view of property ownership as a fundamental principle (without making reference to the Lockean injunction about destroying nature), Liberal society has instituted a socio-economic system that leaves little room for the protection of nature.⁴⁹

It is believed, however, that Liberal society with capitalism as its economic model, although encouraging economic self-interest, is still able to protect the public good. Adam Smith argued that a system of self-interested independent economic actors would not only maximise individual freedom, but would maximise social good as well.⁵⁰ However, the notion of the common good is problematic in Liberal theory. Liberalism views society as existing not to find some higher collective good but in order to ensure individual rights. The proper role for the government then is to protect a narrow scope of individual rights – freedom, liberty and property. This definition of public good justifies the creation of an infrastructure which makes this protection possible: public laws that consistently uphold the system for the accumulation and of property; courts to arbitrate between competing interests; jails to house those who have violated the norms of Liberal society; and ultimately, a structure to measure the aggregate individual good – elections to chose representatives for public office. Beyond this, Liberal government has little authority. Environmental crisis, a comprehensive solution to which requires a re-definition of what

⁴⁸ C.B. Macpherson. The Political Theory of Possessive Individualism: Hobbes to Locke, (London: Oxford University Press, 1962) 3.

⁴⁹ Rory O'Brien. "Law, Property, and the Environment: An Introduction," Thinking About the Environment, eds. M. A. Cahn and Rory O'Brien (New York: Sharpe, Inc., 1996) 63.

can be owned privately, and as such requiring an overhaul of the economic model, presents an ideological challenge to a society built around the Liberal principles of individual economic self-interest.

From the Green perspective, the pollution and destruction of the natural environment reflects one way in which the collective needs of society are ignored in capitalist economy. Society at large has an immense stake in protecting our natural environment, but this interest is not mirrored in the mechanisms that determine production priorities. Production for private gain might have made sense in an earlier age characterised by open frontiers and an apparently limitless natural environment. Today, production for private profit has reached a point where it undermines the entire life support system of our planet.

Liberal capitalist society is based on the freedom to own and pursue the acquisition of private property, which is considered an inalienable right. As such, the state has limited authority to mandate how citizens use their property. Comprehensive environmental policy, the Greens point out, would be predicated on the state's regulation of private resources and behaviours. If the main goal of Liberal society is to preserve property rights, environmental regulation challenges the ideological basis of the Liberal political and economic order.⁵¹

In the absence of an explicit language of communal rights, there is little prospect of limiting concrete property rights for an abstract public good. The narrow Liberal definition of communal good has consistently allowed individual and corporate claims of property

⁵⁰ Matthew Alan Cahn. Environmental Deceptions: The Tension Between Liberalism and Environmental Policymaking in the United States (Albany, N.Y.: State University of New York Press, 1995) 11.

rights to outweigh the need for serious environmental regulation. As a consequence of the parameters imposed by the problematic Liberal definition of communal good, public policy in liberal capitalism is fundamentally limited in its ability to adequately confront the environmental crisis.⁵²

The relationship between Liberalism and capitalism is then not accidental. Rather, capitalist economies are a function of Liberalism. If Liberalism is predicated on the freedom of individual pursuit of self-interest, much of this pursuit is economic in nature. The necessary components of a capitalist economy – private property, competitive self-interest, economic liberty, and minimal government – are precisely the same components present in a Liberal society.

As discussed in Chapter I, the emphasis on a disconnected, dissociated individual as a political unit has placed an emphasis on the freedom of individuals over equality among individuals, and the human dominance of the human-nature relationship. Similarly in economic terms, there is a preference for economic liberty over economic equality. In order to construct an economy that recognises the fact that we are not “free” from our environment, we should begin by discarding the erroneous belief that if something is good for an individual or a group, then more of the same will necessarily be better and will benefit society as a whole. In the Green view, an economy that works with and not against nature will have to be built on the principle of the equality of the nature/humanity interaction. In an equal interaction, nature cannot be spilt into parts and exploited for human purpose only; it can only be enjoyed in common not only with other humans but

⁵¹ Matthew, Alan Cahn. Environmental Deceptions: The Tension Between Liberalism and Environmental Policymaking in the United States (Albany, N.Y.: State University of New York Press, 1995) 14.

⁵² Ibid. p.7.

with other species as well. Unfortunately, the prevailing creed today is still the Liberal notion that the common good is best served when all people and institutions maximise their own material wealth. The whole thus is identified with the sum of its parts. The fact that it can be either more or less than this sum, is ignored.⁵³

Capitalism, economic growth and the environment

The holistic approach to economy recognises that the economy is a living system composed of human beings and social organisations in continual interaction with one another and with the surrounding eco-system on which our lives depend. Like an individual organism, a holistic economic system is a complex web of relationships in which animals, plants, microorganisms, and inanimate substances are all interlinked and interdependent; a network of processes involving the exchange of matter and energy in continual cycles.

In contrast, the economic model of capitalism is based on disconnecting human economic activity and natural economic activity. While nature's economic model is a circle, a closed system that produces no waste which cannot be transformed into other matter and then re-absorbed, capitalist economy is based on a model that is best conceptualised as an open-ended straight line where resources are taken for granted and waste is simply buried in landfills. The mismatch of circle vs line dynamics becomes evident with a closer look at the concept of this dynamic. The market image of material flow in society is that nature is developed into resources and commodities, which are

⁵³ Fritjof Capra, and C. Spretnak. Green Politics (New York: E.P. Dutton, Inc. 1984) 84.

produced, sold, used and then discarded. It is assumed that materials flow through the system, disappearing from markets when placed in a landfill, when in fact nothing simply disappears in nature. Recognising the fact that the human economy cannot operate on a linear principle while everything else in nature is non-linear is the most important principle of the Green economy.

According to Green analysis, the most dangerous outcome of the linear view of economic activity is the requirement that economic growth must constantly expand. In nature, most living organisms and substances go through a cycle of birth, growth, decline, decay, and re-birth. However, the human economy is expected to grow continuously, without conforming to the natural cycle of birth and decay. The question then arises as to why the Liberal society insists on capitalist economy to continuously grow without limits when the only thing in nature that grows without limits is cancer?

As discussed previously, the Liberal economic system tends to create and perpetuate social and economic inequality. In capitalism, production and distribution of economic goods is typically generated through competitive markets. The market-based distribution tends to distribute wealth unequally - inevitably creating economic inequality. This economic inequality is further legitimised through the political institution of private property. In Liberal theory, however, inequality is not a problematic notion: it is considered inevitable and to a degree beneficial for economic development. In a Liberal capitalist society, the problems that arise from inequality are addressed with the doctrine of unlimited economic growth.

Critics of capitalism, such as Kassiola, in his *The Death of Industrial Civilisation*, pointed out that the Liberal society is willing to accept a large degree of social inequality

because it values economic freedom of its members more than equality.⁵⁴ However, at the same time, the Liberal society is fearful that the growing gap between the rich and the poor might raise the issue of non-market mechanisms of wealth distribution. Continuing economic growth is accepted as an answer to the problem of inequality, because economic growth has the ability to improve the standard of living of the lower classes. Indeed, the standard of living in Western nations has steadily increased over the last two centuries, as capitalism entrenched itself as an economic system. However, a large gap between rich and the poor remains, and is growing. Thus the Liberal economic theory endorses the policy of unlimited economic growth, because economic growth is a means to avoid undesirable attempts at redistribution. As long as economies are growing, the lot of the poor will improve (or at least retain the illusion of improvement). This commitment to the value of endless economic growth has two essential points: to avoid redistribution which harms the rich; and to help the poor increase their own income without taking assets away from the rich. This maintains the higher ranking of the rich while avoiding the implementation of a policy of genuine equal redistribution, which would close the growing gap between rich and poor.⁵⁵ Understanding unlimited growth as a solution for inequality helps explain why most Liberals are staunch supporters of economic growth – according to them economic growth is needed to help the poor better their lot.⁵⁶

The immense importance of the doctrine of unlimited growth is made evident by the fears expressed by pro-growth economists concerning the Green prescription of the

⁵⁴ Joel Jay Kassiola. The Death of Industrial Civilisation: The Limits to Growth and the Repoliticization of Advanced Industrial Society (Albany: New York Press, 1990) 73.

⁵⁵ Joel Jay Kassiola. The Death of Industrial Civilisation: The Limits to Growth and the Repoliticization of Advanced Industrial Society (Albany: New York Press, 1990) 73.

curtailment of economic growth. They not only fear economic chaos, but also social collapse resulting from the destruction of the illusion of growth.

The Greens object to the Liberal solution to inequality. They point out that economic growth in the capitalist setting has traditionally been achieved through the increased use of natural resources. Although wealth may appear to be produced through economic growth, wealth production occurs generally only through the increased exploitation of natural resources, normally in an increasingly non-renewable manner, and almost entirely through the increasing use of fossil fuels.⁵⁷ Thus in the Liberal capitalist society the solution to the problem of inequality is addressed through the increased use of natural resources.

In the Green analysis, equality should be based on the principles of interdependence and interconnectedness, not separation and independence. The notion that economic growth improves the lot of the poor is only partially true. It ignores the fact that it is the poorest classes in society that bear the brunt of environmental destruction as they are the one's most likely to be living in the places of environmental destruction. Moreover, the Liberal solution to inequality, which is political in nature and should be addressed primarily through political and not economic means, wastes valuable non-renewable resources.

In the Green analysis, unlimited economic growth within a finite ecological system will eventually exhaust non-renewable resources. The Liberal answer to the problem of resource scarcity is to rely on market mechanisms to make decisions about the way society

⁵⁶ Joel Jay Kassiola. The Death of Industrial Civilisation: The Limits to Growth and the Repoliticization of Advanced Industrial Society (Albany: New York Press, 1990) 85.

interacts with non-human nature. Defenders of capitalism often claim that the market economy maximises efficiency in the allocation of scarce natural resources. However, price, the economist's usual measure of scarcity, does not always reflect many important aspects of scarcity. For many resources, large increases in energy have been required to supply society with cheap raw materials as these raw materials were depleted or mismanaged. Since energy in the United States, for the most part, has not been scarce (domestic and foreign reserves have been exploited at great rate) the prices for raw resources have not increased in the United States, even though the highest grades of virtually all major US resources have been exhausted. Should energy become scarce in the future, as it did in the period in the 1970s, then probably all resources will become scarce, as occurred in the immediate aftermath of the oil crisis. When international prices for energy declined again, so did the prices of raw materials.⁵⁸ Prices thus cannot accurately reflect scarcity, because pricing is influenced by other, sometimes political, factors.

Markets are not an ecologically adequate mode of interacting with the rest of nature. In the course of market exchange, the ecological consequences of this exchange are not taken into consideration. Capitalism, by leaving fundamental environmental decisions to market forces (as opposed to the social need), only accounts for nature as far as it is measured by money and market price.

From the Green perspective, Liberalism and Capitalism do not create a stable socio-economic system. Liberalism, with its inability to protect the collective environmental good, combined with capitalism which addresses inequality tensions with

⁵⁷ Charles A.S. Hall. "Sanctioning Resource Depletion: Economic Development and Neo-Classical Economics," The Ecologist 20.4 (1990): 99-104.

unlimited economic growth, are a particularly dangerous combination for the environment. The Liberal economic model is then based on the assumption that we live in an unlimited world, when in reality our planet, as well as its resources, are very much limited and finite. The inability of the Liberal economic model to transform itself and its practices to accommodate the principle of limited nature constitutes an ideological failure. From the Green analysis, the transition to an ecologically sound economy would have to be accompanied not only by the loss of the growth imperative, but also by the loss of the ideological underpinning of the present economic system. From this perspective, the proposition that Green principles could be adopted to the existing economic model seems farfetched to say the least.

From the Green theoretical perspective, a redesign of the present economic model must restore the balance in the nature-human relationship. To this end, since the human economy is located within the larger matrix of nature, it must therefore be in synchrony with nature's cycles and work alongside nature's processes. In the Green critique, environmental damage is due to the fact that the capitalist economy appears to be working against natural cycles and processes. The incompatibility of the capitalist economy with "nature's economy" can be illustrated by the analogy of a line and a circle. The pattern of natural economy is that of a circle: everything in nature "must come from somewhere" and "must go somewhere". Thus the natural economy resembles a circle: from the beginning to the end, there is no waste in nature. Species and substances that do not fit into this cycle perish. In contrast, human economy, particularly in its capitalist form, resembles a line. It begins with resource extraction, continues to product manufacturing, use and then

⁵⁸ Charles A.S. Hall. "Sanctioning Resource Depletion: Economic Development and Neo-Classical

disposal. The human economy ends when used products are discarded, and as trash are deposited in a landfill. In contrast to nature's economy, human waste, for the most part, cannot be decomposed, turned into new substances or support other living forms. Human economy generates an immense amount of refuse, and this refuse leaks toxins into the air, water and soil for hundreds of years. In the Green analysis, the human economy assumes that garbage "disappears" when it is deposited into a landfill. However, as Green critics point out, it does not disappear because everything in nature "must go somewhere". The harmful substances that are released into the bio-sphere through reckless use and disposal will not "disappear" but will find their way back into the human body, food chain and living environment. As Greens have pointed out, the very term "waste disposal" is an illusion. Waste can change its form but it cannot be thrown away because the Earth is a closed system with respect to matter. There is no "away". Everything has to go somewhere. Nothing disappears.⁵⁹

Nonetheless, the human economy continues to operate according to principles that re-enforce the linear tendencies, the most environmentally damaging of which is the profit motive.

Economics," The Ecologist 20.4 (1990): 99-104.

⁵⁹ Jonathon Porritt. Playing Safe: Science and the Environment (New York: Thames & Hudson Inc., 2000) 97.

Capitalist production and the environment

As a linear model of producing for society's needs, capitalism need not concern itself with cause and effect relationships. As a result, within a capitalist system of production, it is possible to produce for profit and not just subsistence, without assessing the environmental damage of such production. The Greens have objected to the capitalist mode of production because the most important way of maintaining high profits in saturated markets is to blur the distinctions between human needs and wants.

According to ancient Taoist teachings, our natural state is one of few desires (wants). It is believed that when our desires are unnaturally increased, it results in psychic and physical imbalance, which is detrimental not only to an individual but to society as well. Yet in the capitalist economy, our wants and desires are purposely exaggerated in order to increase sales and through sales - profits. Increased profits are achieved through increased consumption. In a capitalist economy, consumption is stimulated through the art of advertising, which is a crucial element in the ability of big companies to "manage" consumption: to create and maintain demand in the marketplace. For the capitalist economy to work not only must the consumers increase their spending, they must do so predictably. As a consequence of such practices, the massive doses of constant advertising contribute to ever increasing consumption. Through television, switched on for more than seven hours a day by the average American family, advertising shapes people's imagery, distorts their sense of reality and determines their views, tastes, and behaviour.⁶⁰

⁶⁰ Capra, Frijof, and C. Spretnak. Green Politics (New York: E.P. Dutton, Inc., 1984) 92.

The profit motive distorts the production process in the capitalist system. Production for profit means that only those social needs that appear as “dollar votes” will be met. Thus energy and finite resources are devoted to the invention and promotion of new products for popular consumption. In the capitalist society it is possible to have a production process that satisfies frivolous wants before serious needs are provided for. Such economic activity that is focused on socially unnecessary production often leads to irreparable environmental damage.

In a sense, capitalist production for want rather than for need creates an irrational economic system. Its irrationality is shown by the fact that the capitalist economy wastes scarce resources on socially unnecessary or low-priority production while failing to meet many essential needs. At the same time, this production generates incredible amounts of waste that cannot be re-absorbed and re-integrated into the ecosystem. This irrationality of wasteful production is particularly evident in food production. In the capitalist economy, the need for food is met through the production of food for profit. But in order to earn higher profits, agribusiness firms seek to fulfil not just the simple need for subsistence: food producing firms are in the business of earning profits. Thus the logic of the food business is to encourage consumption of foods that are profitable, not necessarily nutritional. For example, agribusiness promotes foods with high sugar and cholesterol content because it is sensitive to profit, not to tooth decay or fatty heart tissue. It advertises foods containing additives, on which profit is higher than on nutritionally sound foods. In the end, the capitalist system of production generates a food supply which, rather than providing nutrition, is detrimental to people’s health. In the process, the profit-oriented food production destroys top-soil through overexploitation and extensive

pesticide use. In all societies people must eat; but in a capitalist society this fundamental need has been reshaped socially to appear as a specific market demand for steroid-fed beef, non-dairy creamers, oranges artificially died bright orange, sugar-soaked flakes and sweetened granola bars.⁶¹

Yet another example of the linearity of the capitalist model is the practice of externalising costs. Again, it is assumed that parts of nature can be spoiled without affecting other parts and the larger eco-system. In production for profit the ecological damage is ignored because it is not a factor in the cost of running a business. The terms “external economy” or “economic externality” is used by economists to refer to benefits and costs resulting from private actions that do not result in corresponding monetary gains or losses for an individual or a firm.⁶² In a capitalist economy, an effort to maximise profit often leads to vigorous attempts to externalise the environmental costs of doing business. For instance, instead of paying for processes that would reduce the yield of pollutants (an expense, and hence a reduction of profits), the owner of a factory will try to push the pollutants (and more broadly their cost) out onto nature and the public at large.

Finally, production for profit creates great pressures for economic expansion, independent of the need for growth. But the more productive an economy becomes, the more questionable is the desirability of increasing production of socially unwarranted goods. In this situation, continual expansion exacerbates the problem of maintaining an ecological balance between human beings and their environment. The higher the rate of production, the faster natural resources are used up or destroyed and waste products are

⁶¹M. H. Best, M. H. and W.E. Connolly, “Nature and Its Largest Parasite,” The Capitalist System, ed. Richard C. Edwards, M. Reich, T. Weisskopf (New Jersey: Prentice-Hall, 1986) 349-357.

dumped back onto land and into water. Yet because capitalism continuously seeks new outlets for profitable reinvestment, continuous growth in productive capacity is inherent in capitalism and could not be restrained without fundamental change in the mode of production.

In the Green critique, production for profit is a self-perpetuating cycle of waste creation and resource depletion. The efficiency of production should not be measured in terms of net profits, but in terms of satisfaction of real needs instead of wants. In order to re-design the present economic system from its linear model to one that resembles natural economic cycles, it is necessary to replace profit production with socially responsible production that is geared first of all to subsistence (need) satisfaction. Production should not be undertaken until solutions for re-cycling and re-use are in place. In this way the human economy will more closely resemble the planet's biosphere, which continually recycles energy and matter. The Green critique of *what* is produced (armaments, wasteful packaging, dangerous chemicals and frivolous household gadgets) is followed by a critique of *how* things are produced in the modern Western societies. In particular, the Greens have objected to the industrial model of economic activity.

⁶² Edwards, Richard, C. M.E. Reich, and T.E. Weisskopf. The Capitalist System (Englewood Cliffs, New Jersey: Prentice-Hall, 1986) 316.

Industrial capitalism

Recognising the nonlinearity of living systems is the very essence of ecological awareness. It suggests that in order to successfully manage an economic system, all its structures should be of optimal size. Deviation from “an optimal size” principle, in the Green analysis, inevitably leads to the destruction of the biosphere. Industrialisation of capitalist production constituted a decisive change in humanity’s relation with nature, ultimately violating the optimal size principle of Green economy.

Industrialism and Capitalism are not exactly the same thing, but historically they seem to have required each other to attain their full development. Capitalist production, as argued previously, is profit (and thus growth) oriented and leads to the production of socially unwarranted goods for want rather than need satisfaction. The industrial mode of production enables a capitalist producer to provide for need and want satisfaction on a large scale through mechanised harnessing of nature’s energy and resources. While capitalism’s profit motive supplied the driving force for industrialism’s constant technological revolution, industrialism’s technological power enabled capitalism to harness the wealth and energy of nature in order to produce more faster. Such break-throughs as steam power and especially the use of fossil fuels like coal were essential to go beyond the natural limits of agricultural productivity and photosynthesis and so institutionalise constant growth on a large scale.⁶³

The Greens thus object not only to what is produced by the capitalist mode of provision but also how it is produced. The rise of industrial production marked a sharp

break in the relationship of the human economy to the biosphere. Rather than enabling humans to transcend ecological limits, this era is seen by the Greens as one when humans launched themselves down an environmentally unsustainable path. With its emphasis on rapid economic growth and mass consumption, the industrial age encouraged humans to draw excessively on renewable and non-renewable resources of the world.⁶⁴ In addition, industrial societies began to produce waste, pollution, and toxic by-products at levels that could not be absorbed in a sustainable way by the biosphere. On both “the input” and “output” sides, industrial economies are viewed as having produced an unsustainable relationship between the human economy and the “greater” economy that is the planet’s biosphere.

Industrialisation represented a major break of what Marx called “the tyranny of Nature”. In industrialised settings, humans appeared to be “free” of nature and nature’s whims. As long as humans lived primarily in localised agricultural settings, the dependence of the humans on their natural environment was obvious. In everyday life, this set the limits of what was possible in a very clear way.⁶⁵ The rise of the industrial age, however, enabled humans to overcome the limits imposed by nature as new energy sources were unleashed and constraints of space were increasingly transcended.

The Greens have pointed out that industrialisation was made possible through substantial but largely “invisible” subsidies. Unpaid domestic labour is one of these subsidies. The undervalued materials of nature, the value of which is reduced simply to the

⁶³ Milani, Brian. Designing the Green Economy: The Postindustrial Alternative to Corporate Globalisation (Boston: Rowman & Littlefield Publishers, Inc., 2000) 5.

⁶⁴ Helleiner, Eric. “New Voices in the Globalization Debate: Green Perspectives on the World Economy,” Political Economy and the Changing Global Order, eds. Stubbs, Richard and Geoffrey R.D. Underhill. (New York : Oxford University Press, 2000) 60.

cost of their processing, is even a more telling example. Even more invisible are the complex services nature provides through the provision of water, air, and soil by acting as a sink for the absorption of humanity's wastes, and more generally through the complex self-regulation of the ecological balance that makes life possible.

The ecological consequence of the functioning of large, industrial scale production is that the malfunctioning of this kind of production also happens on a very large scale. Nuclear reactor malfunctions and run-away genetic experiments can only happen within the industrial production framework. This is why the Greens do not see much difference between capitalist, socialist and communist societies. The desire to rise above nature and harness its power through industrial technology in order to achieve rapid economic growth has resulted in a remarkable similarity between capitalist and communist economies. These two politically different social models are paradoxically similarly committed to industrial growth with increasingly centralised and bureaucratic control, whether by the state or by private organisations. Similarly, there has been large-scale environmental destruction in both capitalist and communist societies.

Despite these and other major problems with the essentials of contemporary capitalist economics, the basic concepts of the market economics approach have recently been adopted in principle by the International Monetary Fund (IMF) and the United States Agency for International Development (USAID) and are routinely used by other development agencies and governments around the world. Through these institutions, capitalist economic principles are exported to non-western nations across the globe. Poor nationals are urged to industrialise, because industrialisation is seen as a solution to most

⁶⁵ Ibid.

developmental issues of poor nations. However, before the analysis of environmental consequences of this export is undertaken, it is useful to examine the nature of industrial capitalism.

Globalised markets and the environment

The globalisation of trade over the past 50 years in particular has had important ramifications around the world that have affected the natural environment in the North and South alike. Globalisation has been described as an outcome of recent significant improvements in transportation and communications technology. These technological changes have facilitated increased trade, investment and financial flows, which in turn have promoted corporate flexibility. This flexibility is exercised in production location decisions (including outsourcing) and natural resource access. This newly acquired flexibility has negatively impacted the environment in both the developed and developing countries. Globalisation allowed the developed countries to shift labour/resource (and as a rule pollution) intensive production to the South where cheap labour and loose enforcement of environmental regulation results in greater profits. However, this move has not benefited the environmental situation of the rich countries because such an approach (out of sight, out of mind) has reduced the incentives to develop and implement environmentally clean technologies and renewable energy production. The United States, for instance, continues to be an oil glutton, consuming twice as much gasoline per capita as any other country and contributing 21 percent of the global emission of green gasses while sheltering only 5

percent of the world population.⁶⁶ Recently, the United States undermined the efforts of the international community to curb global pollution by rejecting the Kyoto agreement because it would undermine the “American way of life” – i.e. the extremely energy intensive and polluting way of life.

In other words, globalisation encourages the developed countries to exceed their carrying capacity (though not global carrying capacity) through the import of resources and the export of waste. For example, to meet its food and timber demands alone, the Netherlands appropriates the production capabilities of an area that is 10 times its own acreage of farmland, pasture and forest.⁶⁷ The waste generated by these unsustainable practices is often exported to the poor countries, despite international agreements design to curb such practices.

In the developing countries, globalisation is speeding up the depletion of natural resources and intensifying environmental pollution. Investment policies based on free-trade agreements encourage borrowing from the developed countries and hence growing indebtedness. Pressure to service the debt encourages the mining of natural resources to get a quick return on investment. Locked into free-trade agreements, many developing countries are forced to exploit their natural riches to compete on international markets and acquire much needed foreign exchange. Environmental destruction that most often follows these developmental policies is not seen or experienced by the consumers of the North for whose benefit most environmentally damaging products are produced. Thus globalisation

⁶⁶ Goodstien, Eban. “Malthus Redux? Globalization and the Environment,” Globalisation and Progressive Economic Policy, eds. Baker, Dean, Epstein, and R. Pollin. (Cambridge: Cambridge University Press, 1998): 298-321.

of international trade is damaging to both developed and developing countries by spatially separating the costs and benefits of environmental exploitation. In the North, globalised trade reduces incentives for the development of cleaner technologies which could initiate lifestyle changes, since it disguises environmental limits.⁶⁸ The flip side of this process is an accelerated and unsustainable depletion of natural resources in the South.

Globalised capitalism, growth and the environment

Advocates of globalisation argue that liberalisation and deregulation increases trade and promotes economic growth. Economic growth stimulated through free trade policies enables countries to make better use of their comparative advantage and raise their incomes. In the end, increased income leads to greater prosperity and lower population growth rates⁶⁹. Further, as developing countries grow richer they can afford to clean up and protect their environment. At the end, growth is good for the environment. Although there might be an element of truth in this model, the evidence against it is generally more persuasive. The evidence from East European countries shows that growth

⁶⁷ Goodstien, Eban. "Malthus Redux? Globalization and the Environment," Globalisation and Progressive Economic Policy, eds. Baker, Dean, Epstein, and R. Pollin. (Cambridge: Cambridge University Press, 1998): 298-321.

⁶⁸ Goodstien, Eban. "Malthus Redux? Globalization and the Environment," Globalisation and Progressive Economic Policy, eds. Baker, Dean, Epstein, and R. Pollin. (Cambridge: Cambridge University Press, 1998): 298-321.

⁶⁹ Clapp, Jennifer. "The Global Economy and Environmental Change in Africa". Political Economy and the Changing Global Order. Eds. Stabbs, Richard and G. Underhill. Toronto: Oxford University Press, 2000. p.212.

is insufficient to ensure improvement of water and air quality. Pollution levels remain unchanged regardless of levels of economic growth.⁷⁰

Moreover, many facets of environmental quality continue to deteriorate with economic growth, even in rich countries. These include increases in unregulated pollution such as carbon dioxide; increases in pollutants tied to local production sites such as hazardous nuclear or municipal wastes, oil spills, and traffic congestion; and pressure on natural ecosystems and scarce environmental resources such as beaches, wetlands, biodiversity reserves, and wilderness areas.

Finally, if liberalised trade does indeed promote growth, can we afford to wait for growth alone to resolve environmental problems? For instance, if we grant Mexico a very generous average economic growth rate of 4 per cent a year, it will take the country 25 years to achieve a cut-off of around \$4,000 per capita at which urban air quality appears to begin to improve. Until that time, air quality in Mexico City, already the worst in the world, will continue to deteriorate.⁷¹

From the Green perspective, the industrial type of global production must be replaced with small-scale local production. This model of production has many environmental benefits. In small-scale localised production, ecological awareness is high as any over-use of resources will be visible and thus more likely addressed. In contrast, large-scale global economies create large-scale global environmental problems that are extremely dangerous because they are not visible to most people and thus extremely

⁷⁰ Goodstien, Eban. "Malthus Redux? Globalization and the Environment," Globalisation and Progressive Economic Policy, eds. Baker, Dean, Epstein, and R. Pollin. (Cambridge: Cambridge University Press, 1998): 298-321.

difficult to address. The question of scale plays an important role in the Green concept of human economy. Small is beautiful, according to the Greens, and this principle is essential in restoring ecological balance.

Most important to the restoration of balance is a halt to the spread of the monoculture that is capitalist economy. By imposing its economic model on other societies, it challenges traditional patterns of human life that had often developed long-standing and viable relationships with local ecosystems. The result is an economic monoculture that undermines the Green belief that diversity is a source of stability.

Although there is evidence that environmental destruction by humans preceded capitalism, (for instance, the conversion of North African granaries into desert is well known) it was only with the rise of industrial capitalism that humanity was enabled to threaten life itself on the Earth. It was argued that the Liberal principles of private ownership of nature, individualism and self-interested pursuit of profit have provided a fertile ground for the development of the capitalist economic system, which over time has been extremely destructive ecologically.

Liberalism equates liberty with the ability to acquire, use, and dispose of private property free of government intrusion. Capitalism, based on the individual pursuit of wealth, undermines collective rights, and as an economic system, is largely inconsistent with the collective good of maintaining environmental quality. Private property together with market mechanisms of wealth distribution create inequality, which in Liberal society is addressed by the doctrine of continuous economic growth. Unlimited economic growth

⁷¹ Clapp, Jennifer. "The Global Economy and Environmental Change in Africa". Political Economy and the Changing Global Order. Eds. Stabbs, Richard and G. Underhill. Toronto: Oxford University Press, 2000. p.212.

within the finite ecosphere initiated environmental degradation on a large scale: soil and plant erosion, water shortages, atmospheric pollution and climate change. Thus there are theoretical reasons for the inability of capitalism to cope with ecological problems. First, Liberalism gives preference to individual economic freedom over equality. Individuals in Liberal society are free to own parts of nature, as it is assumed that a sum of happy owners equals a good society. Unfortunately, in the capitalist context a sum of economically satisfied individuals equals wide-spread economic damage due to the fact that inequality in Liberal society is addressed through unlimited economic growth achieved mainly through intense resource exploitation. Second, through the lens of capitalist economies, nature is seen not as a self-contained finite ecosystem, but as a sum of parts of an ecosystem. The parts of non-human nature can be transformed into commodities and be used as sewers, fertilisers or raw materials to be processed and refined. The value of parts of nature is determined by prices that are, in turn, determined by markets. Nature as a network of biotic communities disappears when viewed from the perspective of a market economy, and becomes visible only as bits and pieces of it are brought to the marketplace for sale. Third, the inability to view nature as a self-contained, finite ecosystem leads to economic models that are linear when in reality everything in nature resembles a closed circle system which produces little waste. Linear thinking in turn perpetuates the institution of continuing growth, for-profit production and large-scale industrialisation and globalisation of capitalist production. As a result, the world is now faced with large-scale environmental problems that threaten life on this planet.

From the Green perspective, the reason we are experiencing environmental degradation is because we have wittingly and systematically ignored the laws of nature.

We have assumed that the human species is somehow not bound by them: out of sight out of mind; dilute and disperse; mine it, make it, chuck it; bury or burn: these have been the literal watchwords of a wealth creating machine that to this day has never paid the real cost for its use of the Earth's resources.

CHAPTER III

Sustainable development vs Sustainability – business as usual or a new way of living?

For most of human history, nature has been too large and overwhelming for people to worry about sustaining it. Before, God or Providence generally was regarded as the sustainers of both humans and nature. The spread of capitalist economies changed our attitudes and allowed for large-scale human manipulation of nature. The results of this manipulation became vividly apparent in the late twentieth century when human actions threatened the integrity of the life-support system of the planet. As a result, the issue of sustainability was put on the political agenda; however, in the context of Liberalism, the task of sustaining nature was relegated to the status of a separate, minor field of government activity.

In the Green analysis, the ideal of sustainability differs from the Liberal concept of sustainable development. The idea of sustainable development is a product of the Liberal conception of the relationship between humanity and nature, which simultaneously attempts to protect nature while exploiting it. As such, sustainable development is an attempt to continue, with minor modifications, our economically and socially unsustainable ways while adopting the Green rhetoric of “sustainability”.

Sustainability, according to the Green approach, not only concerns environmental degradation, but also should give rise to a new answer to the old existential question “how should we live?”. This chapter addresses the question of whether nature can form the basis

for social change within industrial societies and which principles should be the basis for this change.

The Brundtland Report and the politicisation of sustainable development

At a first glance, a redefinition of our environmentally damaging lifestyle began when the concept of sustainable development attained broad acceptance. The idea of a sustainable society was hailed as the path to an environmentally cleaner future, and, as such, the concept of “sustainable development” was adopted not only by academics, but politicians and other professionals as well. So widespread is the acceptance of this phrase that governments now have departments dedicated to promoting sustainable development and even multinational corporations have joined forces to promote it. Indeed, sustainable development became one of the key phrases in public policy making in the 1990s.

The term “sustainable development” was popularised and politicised by the publication in 1987 of the United Nations Commission on Environment and Development Report *Our Common Future*. (This document is also known as the Brundtland Report, named after its chair, Norwegian Prime Minister Mrs. Gro Harlem Brundtland.) For the purpose of comparing the Green and Liberal concepts of sustainability, it is necessary to examine the concept of sustainable development as defined by the Brundtland Commission because the Commission’s formula has been accepted by many governments and institutions as “the” approach to environmental problems.

The Report’s definition of environmental problems and its proposed solutions were significant for several reasons. The starting point for the justification of the concept of

sustainable development was the acknowledgement of human dependence on nature: “The Earth is one but the world is not. We all depend on one biosphere for sustaining our lives.”⁷² The Report was the first mainstream international political document that condemned over-consumption and reckless exploitation of the Earth’s resources. “Even though we depend on our environment”, argued the Report, “each community, each country strives for survival and prosperity with little regard for its impact on others. Some consume the Earth’s resources at a rate that would leave little for future generations. Others, many more in number, consume far too little and live with the prospects of hunger, squalor, disease, and early death.”⁷³ For the first time, environment and economic equality were linked as important factors in the formulation and design of an effective solution to environmental problems.

More importantly, it was the Report’s explicit linking of the environment and economy into one concept that initially won the support of many environmentalists. By fusing “environment” and “development” into one concept, environmental quality and economic development came to be seen as interdependent and mutually reinforcing. After all, our economic activity is dependent on the biosphere for raw materials and energy, for the absorption of waste products and for its ability to sustain life on this planet. In this respect, the Commission went against the official discourse and the prevailing economic practices that do not acknowledge this intimate interdependency.

The Brundtland Report also argued that the economic policy practised by the industrialised world in the post-war period was not sustainable. If economic development

⁷² The World Commission on Environment and Development (WCED), Our Common Future (Oxford: New York : Oxford University Press, 1987) 27.

⁷³ Ibid.p.3

continues at the present rate and form, argued the Commission, it will result in environmental catastrophe and will not permit future generations to meet their needs. Brundtland's concept of sustainable development thus implied an economic policy change – in itself a radical political and social statement.

The Brundtland Report was not limited to a discussion of environmental degradation. Significantly, it included in its calculations the negative impact of Third World poverty on the rates of environmental exploitation. Brundtland's vision of sustainable development linked the improvement of environmental practices to improvement in the material quality of life of the world's poor. The Report argued that in order to reverse the high rates of environmental destruction in the developing nations, the developed countries needed to limit their own material and energy use, and their demand for Third World natural resources. In this sense, Brundtland's concept of sustainable development was a radical departure from the conventional objectives of linear economic policy.

Sustainable development – what's in a name?

Despite the fact that Brundtland's formulation and definition of sustainable development won the support of many environmental groups, from the Green ideological perspective, the Brundtland Report was not really radical by any standard. In fact, its formulation continued the old anthropocentric tradition of defining human needs and interests as paramount to the needs of other species and ecosystems. Although the Report addressed many concerns raised by environmentalists, the Commission chose to word its

concepts in anthropocentric language that upheld the industrial worldview of the nature/humanity relationship.

Essential to the critical analysis of the concept of sustainable development is the choice of language, and the explicit and implicit assumptions built into the understanding of sustainable development. Sustainable development, according to the Report, is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.⁷⁴

From the Green perspective, this particular definition of sustainable development continues the Liberal tradition of viewing humanity as apart from nature. According to Liberalism, humans are “outside” of nature and do not belong to or participate in the natural world; therefore, self-interest is the only logical way to approach nature.⁷⁵ Thus the Liberal political tradition frames the question of sustainability in terms of the satisfaction of human needs, even though the humans exist within the interconnected and interdependent system that supports not only humanity but other living and non-living forms of life. Sustainable development implies that the protection of non-human nature is a secondary task which should be undertaken not because nature is valuable in itself, but because it has economic value to humans. This definition of sustainable development also implies that human needs supersede non-human needs.

In the Green analysis, non-human nature has value in itself, regardless of its utility function because Green thought views nature as a living, self-regulating biosystem. Non-human nature is an integral part of the total system and thus is valuable for the function it

⁷⁴ S. Baker, et al, ed. The Politics of Sustainable Development; Theory, Policy and Practice Within the European Union (London: Routledge, 1997) 2.

⁷⁵ Freya Mathews. The Ecological Self (London: Routledge, 1999) 13.

performs in sustaining the biosphere. Thus the linear concept of sustainable development opposes the Green concept of interrelatedness because it focuses only on one function of nature – providing for human needs. Moreover, as everything is interdependent in nature, human needs should not be the starting point for building a sustainable society. Just as humanity is only one part of nature, so human needs should only be one part of sustainable society, and not its starting point. The Green concept of sustainability implies equality of human needs with the needs of other living creatures and the needs of the biosystem.

Furthermore, the Greens object to the idea of intergenerational equality as a guiding principle for building a sustainable society. Intergenerational rights are an extension of the Liberal notion of economic freedom. It implies that we should be concerned about the environment not because we want to preserve the richness of biodiversity, clean air, and tropical forests for their own sake and for the sake of our children, but because the future generation's capacity to consume at the same level as we do is jeopardised. Future generations, according to such a formulation of sustainable development, have a right to the same amount of natural resources as the present generation. After all, availability of plentiful natural resources is the key to economic freedom.

In the Green analysis, sustainable development for the sake of future generations perpetuates the anthropocentric attitudes that reduce nature to a commodity to be exploited at sustainable levels. Overexploitation of natural resources will deprive future generations of the consumptive possibilities we enjoy today. In blunt terms, the atmosphere must be kept fit for breathing, not because it benefits everyone in our society,

rich and poor, but because the future generation will suffer a loss of utility.⁷⁶ Thus the goal of sustainable development is to find an optimal rate of consumption that will satisfy our present needs and the needs of future generations, whatever that may be. By defining sustainable development as a problem of rights of future generations, the definition avoids addressing the most pressing problem of achieving sustainability – an acknowledgment that continuous economic growth is incompatible with the finite limits of this planet.

From the Green perspective, building a sustainable society should be based on the principle of interdependence as everything in nature is interrelated, and all species and processes must fit into their respective patterns of interdependence. Starting from the principle of interdependence means recognition of the fact that future generations depend on present day policies. In other words, a sustainable society would incorporate the principle of interdependence across time. Sustainable development is a concept that operates in disconnected time and space. Capitalism as a mode of production introduces “the tyranny of the immediate”.⁷⁷ Goods available immediately are valued more than the same goods available at a later date. Likewise, problems that affect us today receive immediate attention. In the capitalist economy, profit that can be obtained today is more desirable than profit that might be earned next year. In the market society, environmental damage that might happen tomorrow and whose outcome and impact on business is uncertain is unlikely to receive immediate attention and adequate action. Discounting the future is thus economically rational. For this reason, it makes good economic sense to discount future gains that might be reaped from a clean environment if polluting the

⁷⁶ Daniel W. Bromley. “Searching for Sustainability: The Poverty of Spontaneous Order”. Ecological Economics 24 (1998): 231-240.

environment brings immediate profit. The consequence of focusing on sustainable development policies rather than on sustainability across time is that, logically, it does not require substantial changes to our present lifestyle.

In the Green analysis, good market economics translates into bad ecology. Living in an economic system that imposes the tyranny of the immediate disconnects us from our past and our future. Sustainability would involve “reconnecting” us with our past and future. Just as we are dependent on the state of the environment that was passed on to us by our ancestors, the generations that will come after us will depend on the outcome of our practices. These are the rights and duties we receive from ancestors and pass on to our progeny: the legacy of a biologically rich, life-supporting planet.⁷⁸ The interdependency of past and future generations, not only present human needs, should be the starting point of a sustainable society and a sustainable economy.

In the Green critique, the main goal of sustainable development, which does not address the inappropriateness of large-scale exploitation of nature, is nothing other than a way to “sustain” capitalism. This implication runs through the entire discourse of sustainable development because neither the Brundtland Commission nor the *United Nations Conference on Environment and Development* addressed the fundamental question of the sustainability of capitalism. As argued in Chapter II, capitalism is an economic system which works against the main ecological principles of interconnectedness and interdependence. Capitalism, armed with industrial technology, perpetuates the notion of the “separateness” of humanity and nature by diverting our attention from the

⁷⁷ Leslie Paul Theile. *Environmentalism for a New Millennium: The Challenge of Coevolution* (Oxford: Oxford University Press, 1999) 87.

⁷⁸ *Ibid.*

ecological consequences of our economic activity. Thus, from the Green perspective, the word “sustain” in the context of the capitalist economic system becomes problematic. The earliest meaning of *sustain* is “support”, “uphold the course of”, or “keep into being”. Yet another is to “endure without giving way or yielding”.⁷⁹ The question that should be asked then is whether sustainable development intends to sustain capitalism without addressing the issue of the sustainability of capitalism?

Sustainable growth and development as Liberal values

A systematic answer to the question “Is an ecologically sustainable capitalism possible” is “not unless capitalism can do away with its growth imperative”. The concept of sustainable development, in the Green analysis, has a strong association with growth. The word “development”, according to the Shorter Oxford English Dictionary, has four main meanings: a gradual unfolding, in the sense of a fuller working out of details; evolution, in the sense of a production of a new form or matter; growth, from what is in the germ; and growth, from within.⁸⁰ All four definitions entail some kind of expansion, and in the first three definitions the growth implied is primarily physical. Only the fourth definition – growth from within – allows for purely non-physical qualitative growth.

As discussed in Chapter II, capitalism as an economic system creates economic inequality and addresses its excesses by applying the doctrine of unlimited growth based

⁷⁹ James O’Connor. “Is Sustainable Capitalism Possible?” Is Capitalism Sustainable? ed. Martin O’Connor (New York: The Guilford Press, 1994) 152.

⁸⁰ Dave Richardson. “The Politics of Sustainable Development,” The Politics of Sustainable Development: Theory, Policy and Practice Within The European Union, eds. S. Baker, et al. (London: Routledge, 1997) 48.

on the large-scale exploitation of nature. Is it then possible for capitalism as an economic system to function with zero-growth? Zero-growth implies that from an economic point of view, sustainable capitalism would stop expanding. However, the defining feature of the capitalist mode of production is the necessity to generate surplus to be invested for profit. In other words, to sustain itself, capitalism must produce a constant surplus. Expansion is necessary for the maintenance and expansion of future profits. Profit functions as an incentive for further expansion. Profit and growth are thus a means and an end to one another, content and context.⁸¹ The question then should not be whether sustainable capitalism is possible, because this is what we have right now – capitalism that sustains itself through the creation of profit and growth based on further use of natural resources - but whether *ecologically sustainable* capitalism is possible.

Judging by the choice of wording, the Brundtland Commission thought so – ecologically sustainable capitalism is possible. By choosing words “sustainable” and “development” and noting that the word development is used in “its broadest sense”, the Commission, in a single stroke of a pen, reconciled the Green objection to unlimited industrial growth with industrial capitalism’s need for sustained economic expansion.⁸² The discourse of sustainable development includes phrases such as “sustainable growth”; this concept is not explained, allowing this ambiguity and free associations to blur the differences between the concepts of “sustainable” and “sustained” and “development” and “growth”. Through their interchangeable use, “sustainable” is equated with “sustained” and “development” is perceived as growth. Not only does this confusion promote the view

⁸¹ James O’Connor. “Is Sustainable Capitalism Possible?” Is Capitalism Sustainable? ed. Martin O’Connor (New York: The Guilford Press, 1994) 159.

that it is desirable, from the Green perspective, to have continuous economic expansion, it implies that sustainable development could be achieved by simply reforming capitalism to be more sensitive to ecological processes. In particular, this can be achieved through an emphasis on the sensible use of non-renewable resources.

In the Green critique, the language of sustainable development not only reinforces the industrial world-view, it also makes it possible to talk about the “greening” of business and disguise it as serious environmental policy.

Sustainability – the Green realization that the Earth’s resources are finite - is replaced with sustainable development, the concept rooted in the implicit assumption that the Earth’s resources are infinite, because new resources or alternative materials can always be found to replace the exhausted resources. Sustainable development thus neither poses nor answers the question of what happens when (not if) key non-renewable resources are exhausted. Even though the Brundtland Commission accepted the fact that the Earth has finite limits, it did not follow through with the logical conclusion that if we continue ecological exploitation at the present rate, there will be a point when the planet’s resources will be exhausted, and thus industrial society, based on economic growth will also have reached its limits and begin to decline. The Brundtland Report skirted the issue that linear development in a system where most processes are circular is a theoretical and practical impossibility. To accept this line of thinking would mean the adoption of policies that could seriously disrupt the existing social, political, and economic status quo. The Brundland Commission opted for a compromise by allowing the Liberal principle of economic growth to remain an acceptable objective of human society.

⁸² Douglas Torgerson. The Promise of Green Politics: Environmentalism and the Public Sphere (London:

In contrast, the Green understanding of sustainability is based on the fact that the Earth is finite and that consumption, based on economic growth, cannot go on forever. Otherwise, sooner or later, the earth will reach the limits of its carrying capacity. It is thus necessary to re-define the purpose and mode of our economic activity.

From the Green perspective, the sustainable development discourse is that, like any other concept, it directs our attention towards some concerns and away from others. The concept of sustainable development re-directed our attention away the fact that a society whose economic system is based on exploitation, will most likely produce a society based on exploitation of humans by humans. As mentioned before, capitalism is able to flourish through a system of invisible subsidies. The undervalued resources of nature, the value of which is reduced simply to the cost of their processing, is a telling example. Even more invisible are the complex services nature provides through the provision of water, air, and soil by acting as a sink for the absorption of humanity's wastes, and more generally through the complex self-regulation of the ecological balance that makes life possible. Similarly, in a society that accepts the philosophical view that the best relationship between humanity and nature is that of exploitation and domination of nature by humans, produces a society that is built upon domination of humans by other humans. The Liberal vision of nature was heavily influenced by Francis Bacon, who believed that a prosperous and enlightened society could be built upon "victory over nature". Nature, Bacon believed, had to be "hounded in her wanderings", "bound into service" and made a "slave".⁸³

Duke University Press, 1999) 54.

⁸³ Fritjof Capra. The Turning Point: Science, Society and the Rising Culture (New York: Simon and Schuster, 1982) 56.

Nature was to be conquered and put to use for human needs.⁸⁴ However, capitalism produced not only an intense exploitation of nature's wealth, but also that of human societies.⁸⁵ In ecological terms, capitalism appropriated nature as a resource for growth and a sink for economic waste. In social terms, human nature is also appropriated, as domination is exercised over human labour, communal work and human reproduction. Under capitalism, human work, leisure, and creativity must be adapted to the needs of capital. This is achieved through capitalist organization of work processes and technological innovations.⁸⁶

The domination of capitalism over human nature is particularly evident in the case of women. Under capitalism, women, who constitute half of humanity, find themselves defined variously as "a natural source" or as "conditions of production". In capitalism, most productive (i.e. paid work) has been moved away from the home to "outside home" – the public sphere. In the capitalist-patriarchal structure women are expected to stay home where most "unproductive" i.e. unpaid, work takes place. By undervaluing women's work, capitalism receives another subsidy – women's reproductive, community and interpersonal functions are considered "free" services. While capitalism has brought obvious benefits to some, women experienced only a worsening of their conditions.⁸⁷ Although recently there have been some important improvements in the status of women, their reproductive capabilities and household maintenance is still "unpaid labour".

⁸⁴ William Leiss. The Domination of Nature (New York: George Braziller, 1972) 60.

⁸⁵ Martin O'Connor. "Introduction: Liberate, Accumulate – and Bust?" Is Capitalism Sustainable? ed. Martin O'Connor (New York: The Guilford Press, 1994) 21.

⁸⁶ The impact of technology on work organisation will be discussed in more detail in Chapter IV.

⁸⁷ Ariel Salleh. "Nature, Women, Labour, Capital: living the deepest contradiction," Is Capitalism Sustainable? ed. Martin O'Connor New York: The Guilford Press, 1994) 106-125.

Yet another subsidy for the needs of the ever-expanding capitalist economic system is the Third World. Sustainable development has been widely recognized as a solution to Third World poverty and technological “underdevelopment”. Discussion on sustainable development in the Third World, however, does not address the question of the domination of nature, the exploitation of certain classes in society and the invisible subsidies that are embedded in Western-style development. Since the concept of sustainable development did not challenge the understanding of development as economic growth, Third World countries that accept the proposition that development is a solution to their “underdevelopment” will be integrated into the existing unequal and exploitive structures of Liberal understanding of development.

Imposing sustainable development which in its definition and wording does not challenge the incompatibility of limitless growth in a limited world, often results in widespread environmental degradation in Third World countries. At the same time, environmental problems are considered the product of insufficient development. In order to protect their environments, Third World countries must grow their economies. The assumption here is that an increase in production contributes to economic growth and growth can assist these countries in their social, as well as economic development. In other words, with the present definition of sustainable development, it is assumed that production growth contributes to welfare growth, and welfare growth, in turn, leads to environmental protection when in reality, increased production most often adversely affects both environmental growth and the growth of welfare.⁸⁸

⁸⁸ Thijs De la Court. Beyond Brundtland: Green Development in the 1990s (New York: New Horizons Press, 1990) 133.

Free trade advocates, however, insist that economic development and the protection of the environment are perfectly compatible goals. According to this line of argument, international trade provides developing countries with funds for social services and environmental protection. Free international trade enables developing countries to obtain much needed capital. Increased capital, free trade advocates contend, can be spent on environmental protection. In reality, however, the increased income is not always channelled to environmental protection. Most often environmental protection is compromised because of the fear of losing a country's main source of foreign exchange.

More importantly, as mentioned before, the incorporation of developing economies into the capitalist system, subjects them to exploitation, which is inherent in the system. Participation in free international trade turns these countries into primary commodity exporters and importers of the North's hazardous waste – the processes that contribute to an environmental crisis of severe proportions. For instance, currently Africa's exports are mainly primary products. It is partly due to the practice of developed countries charging higher tariffs on manufactured goods than they do for raw products.⁸⁹ Thus, the developing countries attempt to maximize their income through the exploitation of the natural resources at their disposal – minerals, timber, gems. Mining and oil drilling operations in Africa, however, have been the sources of massive environmental destruction. In Nigeria, oil drilling contaminated soil in the Ogoniland region, resulting in the further impoverishment of local farmers.⁹⁰ At the same time, Africa's environment was greatly compromised by imports of hazardous waste from developed countries.

⁸⁹ Jennifer Clapp. "The Global Economy and Environmental Change," Political Economy and the Changing Global Order, eds. R. Stubbs and G. Underhill (New York: Oxford Press, 2000) 212.

⁹⁰ Ibid.

In the countries of Latin America and Africa, the shift to export oriented agriculture had devastating environmental and social effects. Intensive export-oriented agriculture requires the conversion from subsistence crops (corn, vegetables, beans) to cash crops (cotton, coffee, coca). This process undermines the self-sufficiency of the local population and its ability to withstand droughts and other natural disasters. Not surprisingly, incorporation into the global economy has resulted in frequent famines, and wide-spread malnutrition. When international prices fall, coffee and cotton crops are unsuitable for nutrition.⁹¹ Brazil, for instance, is a major food exporter, yet between 25 and 30 per cent of its population suffers from malnutrition.⁹²

At the same time, the shift to export oriented agriculture is often accompanied by heavy use of pesticides, fertilisers, and unsustainable agricultural techniques; practices that further endanger the health of the local population and threaten native bio-diversity. Brazil and Zaire, both large agricultural exporters, were sites of major forest loss in the 1980s.⁹³ Deforestation on a massive scale, in turn, provokes soil erosion, reduces species diversity, and leads to long-term climate change.

The assumption that an increase in production contributes to the growth of environmental welfare is thus inaccurate. The incorporation of a country into the global trading pattern does not lead to better environmental protection, but, in fact, often has the opposite impact: more ecological destruction and less social and environmental protection. Entering the international trading system as a primary exporter brings neither prosperity nor environmental protection.

⁹¹ Paul A. Cammack, et al. "Chapter 8: The Third World in Global Economy," Third World Politics: A Comparative Introduction, (Baltimore: Johns Hopkins University Press, 1993) 290.

⁹² Ibid.

Sustainable development as a solution to third world “underdevelopment” integrates these countries into a structure that is euro-centric and andro-centric. It is euro-centric because it is based on the type of economy and the pattern of development that was influenced by historical peculiarities of European societies and the cultural legacy of Liberal thought. It is andro-centric because it reflects the patriarchal structure of European societies. Thus the integration of the Third World into the Western pattern of development in reality has meant becoming yet another invisible subsidy for capitalist expansion.

From the Green perspective, the sustainable development discourse directed our attention towards the goal of achieving more growth and away from the question of whether sustainable growth can be achieved without achieving a sustainable society first. The Green concept of sustainability rejects a social model based on domination. We cannot survive by maintaining our relationship with nature that is one of domination and exploitation. According to the Greens, we should participate in nature, not dominate it. The key to a sustainable society, according to the Greens, is the realization that in a sustainable society there cannot be invisible subsidies through exploitation of other societies.

According to the Greens, sustainable society will have to be built around the second principle of interdependence - interdependence across space. Interdependence with future generations, logically speaking, cannot be separated from the environmental rights of those who inhabit other nations or other classes. The rationale for this task is grounded in the interdependence with nature of local sub-systems and the larger bio-sphere.

⁹³ Ibid.

Capitalism creates a situation where some people inevitably profit from environmental destruction while the rest pay the cost for living in the disrupted ecosystem. The welfare of one part depends on the welfare of adjoining parts and the environmental health of the whole. Thus if the Chinese were to manufacture large amounts of CFCs (chlorofluorocarbons) to supply their growing economic development, the inevitable release of great quantities of these ozone-destroying chemicals would threaten the health and welfare of the Swedes, who would suffer increased cases of skin cancer and cataracts.⁹⁴ Similarly, if developed nations shift their environmentally hazardous production to other parts of the world, they only escape the immediate consequences of environmental destruction, but ultimately, they too will have to share in the costs of this destruction because damaging parts of an ecosystem will inevitably damage the whole ecosystem. For instance, there is growing evidence that extensive damage to the Brazilian rainforest results in weather pattern disruption that affects countries as far removed as Indonesia and Finland.

In the Green analysis, the non-localised nature of environmental problems has effectively expanded our moral universe. Interdependence across geographical space is the realisation that we share both the benefits and costs of environmental destruction. Thus we have a duty to share equitably with our cultures the benefits of a biologically rich, life-supporting planet. The affirmation of social interdependence is oriented towards a society that can be environmentally sustained across social and geographical space.

The Green principle of interconnectedness across space has produced a distinct perspective on globalisation. The Green concern for the “disconnecting” tendencies of

⁹⁴ Leslie Paul Theile, Environmentalism for a New Millennium: The Challenge of Coevolution (Oxford:

capitalism was reflected in the Green slogan “think globally, act locally”. The meaning of the first part of the slogan calls attention to fact that globalisation exacerbates the unsustainable extraction of natural resources and the production of waste and pollution around the planet. By “separating” producers and consumers through the increase of the spatial extension of production processes, consumers in rich countries are unaware of the environmental consequences of their consumption patterns. In order to re-connect consumers and producers, the Greens advise to “act locally”. The meaning of the second part of the “think globally, act locally” slogan is that production for subsistence should be de-linked from the global economy. The Greens are keen to promote economic activities that draw on local factors of production and cultivate self-reliant economic production.⁹⁵ The Green principle of interconnectedness across space implies that sustainability cannot be achieved within the current framework of sustainable development, because the latter does not address the “disconnecting” tendencies of global capitalism.

The domination of nature has been justified in terms of providing for society’s needs. Extensive use of natural resources is said to be for the satisfaction of human needs. However, as discussed in Chapter II, in a capitalist economy our needs are deliberately blurred with our wants in order to promote private profit. From the Green point of view it is imperative to make a clear distinction between needs and wants. Brundtland’s definition and discussion of needs was concerned solely with the material side of human needs, while the green approach involves the fulfilment of spiritual needs. In the Brundtland Report,

Oxford University Press, 1999) 115.

⁹⁵ Eric Helleiner. “New voices in the Globalisation Debate: Green Perspectives on the World Economy,” Political Economy and the Changing Global Order, eds. R. Stubbs and G. Underhill (New York: Oxford Press, 2000) 60-69.

needs are identified in quantitative economic terms and are assessed through GNP or GNP per capita, thus affirming the individualist view of well-being.

At the same time, the Brundtland definition of needs did not distinguish between the perceived needs of people in the industrial North, with their often extremely high standard of living, and those of the underdeveloped South, where standards of living are much lower. What is a “need” in the North might be considered an extreme luxury in the South. Following this logic, it is most likely that in order to achieve sustainability, the rich in the developed world would have to curb their consumption and provide comprehensive aid, technology and training to the people of the South. This approach to needs, however, is not discussed, as this course of action was deemed “politically impossible” by the Brundtland’s commissioners who seemed bent on winning wide-ranging support for their plan of action.

From the same point of view, humans do not need wilderness for physical survival. Human survival will not be affected by the extinction of lions and wolves. Large areas of wilderness could no doubt be converted to farmland, pastures, mines, cities or parks without endangering the human species. Potentially useful plants and animals might be kept in botanical gardens, laboratories and zoos.⁹⁶

The question of needs is important because our perception of needs influences our concepts of individual and communal well-being. In a sustainable society, the Liberal notion of well-being must be replaced with a Green understanding of well-being. The Liberal notion of well-being emphasises the maximising of happiness, freedom and preference satisfaction as the basis of well-being. In the context of market economies,

individual well-being has come to be equated with material comfort and economic freedom. Thus we define our needs in terms of material possessions. Well-being is characterised in terms of the satisfaction of wants or preferences – the stronger the preferences are satisfied, the greater the well-being. The strength of a preference is captured in terms of the price a person would pay at the margin for its satisfaction. For Liberal thought, the best institutional framework for the realisation of well-being is the market. The ideal market is an efficient mechanism for satisfying preferences. Green thought opposes this argument.

If sustainability is the goal of human activity, well-being must be re-thought. The measurement of well being can no longer be in quantitative terms measuring material possessions. The Green view of human well-being equates human well-being together with environmental well-being. As argued by John O’Neil, it involves the flourishing of human capabilities without harming nature. Moreover, the flourishing of human life is not only dependent on the development of human capacities, it is also dependent on the flourishing of other individual living things and biological collectives as an end in itself, simply because the flourishing of non-human nature is constitutive of human flourishing.⁹⁷

The Green concept of well-being will strengthen the sustainable society which, according to the Greens, must operate according to the notion of interdependence across species – i.e. interdependence with nature. Interdependence with nature is the realisation that we share mutual risks and benefits with other living forms on this planet. As mentioned before, the Greens believe that everything in nature has an intrinsic worth

⁹⁶ Janna L. Thompson. “Preservation of Wilderness and the Good Life,” Environmental Philosophy, eds. Robert Elliot and A. Gare (St. Lucia, Queensland: University of Queensland Press, 1983) 96.

regardless of its instrumental activity for humanity. As part of nature, humans must live in harmony with the larger eco-systems.

Sustainable development as defined by the Brundtland Commission and employed by its followers, is primarily an industrial and anthropocentric notion. Even though it acknowledges the dependence of humanity on nature and condemns over-consumption and reckless exploitation of the Earth's resources, its definition of sustainable development does not challenge the growth-is-good-for-the-environment Liberal attitude. As such, sustainable development policies do not challenge current economic structures that are built upon principles of the domination of nature. Not surprisingly, the acceptance of the sustainable development discourse did not result in a value reorientation required for a new relationship between humans as well as between humans and the rest of nature.

The political implications of the sustainable development discourse

In essence, the Brundtland Commission framed its understanding of the environmental crisis in anthropocentric language that did not challenge the underlying causes of the harmful economic and social practices that degrade the environment. Given the inherent anthropocentricity and support of the industrial world view, it is hardly surprising that the Brundtland principles have been endorsed, indeed welcomed, by governments at all levels. Brundtland's sustainable development is the basis of the European Union's Fifth Environmental Action Programme. It is also written into the Maastricht Treaty, which aspires to "sustainable and non-inflationary growth respecting

⁹⁷ Julie Davidson. "Sustainable Development: Business as Usual or a New Way of Living?"

the environment”.⁹⁸ The principles of sustainable development are also reflected in the agreements reached at the Earth Summit in Rio in June 1992: the Rio Declaration, the Convention on Biodiversity; the Statement of Forests Principles, and the Framework Convention on Climate Change.⁹⁹

The importance of the current acceptance of Brundtland’s sustainable development terminology lies not in what it accomplished (which is very little) but what it symbolizes.¹⁰⁰

On a philosophic level, the Brundtland Report symbolizes a grudging acceptance of the green critique as real and one that is difficult to dismiss with the usual optimism in technological fixes and economic tinkering. The enthusiastic acceptance of Brundtland’s definition of sustainable development points to the fact that it is easy to accept that – at least theoretically – we live on a finite planet, and its resources should be conserved and, where possible, replenished. However, at the public policy level, no substantial shift took place – it is evident now that a purely rhetorical commitment to sustainability will not produce changes that are needed to ensure survival in the long term.

The key to assessing the Brundtland approach to the natural world is that it disguised anthropocentric programmes and the industrial world-view as a Green ideal of sustainability. The Brundtland definition of sustainable development united the supporters

Environmental Ethics 22 (Spring 2000): 25-42.

⁹⁸ Dave Richardson. “The Politics of Sustainable Development”. The Politics of Sustainable Development; Theory, Policy and Practice Within The European Union. Eds. S. Baker, at al. London: Routledge, 1997.p. 47.

⁹⁹ Ibid.

¹⁰⁰ Dave Richardson. “The Politics of Sustainable Development”, The Politics of Sustainable Development; Theory, Policy and Practice Within The European Union, eds. S. Baker, at al. (London: Routledge, 1997) 53.

of zero growth with those who believe that the effects of continuing industrial growth could be mitigated through either a market-reliant environmental policy or an environmentally regulated market. At the terminological level, the Brundtland Commission has damaged the environmental cause by its growth-dependent interpretation of the Green ideal of sustainable development. The concept of sustainable development has become a menace as it has been co-opted by the mainstream political world-view to perpetuate many of the worst aspects of the expansionist industrial model. Environmentalists condemn the use of the term of “sustainable development” as dangerous words now being used to mask the same old economic thinking that preaches unlimited consumption.¹⁰¹

The high-jacking of essentially Green ideals by the political and economic establishment has led to calls for new green terminology. The language that is used to describe environmental problems and to frame solutions to the crisis is a problem in itself. Our language is shaped by industrial reality, which is in turn reflected in our choice of words. It is necessary to develop an ecological vocabulary that would reflect an earth-centred approach to reality and help us devise solutions that are needed for a comprehensive restructuring of our social and economic practices.

¹⁰¹ M. Wackernagel, and W. Rees. Our Ecological Footprint: Reducing Human Impact on Earth (Gabriola Island, B.C.: New Society Publishers, 1996) 40.

The political significance of the Green discourse of sustainability

The analysis of the Brundtland conceptualisation of sustainable development has shown that despite the shift in rhetoric about environmental issues, the ecologically friendly vocabulary did not initiate substantial political and economic changes in the way we live and do business. The official response to the challenges of pollution and environmental destruction has been along the well-established lines of the dominant ideology - it is believed that the capitalist mechanisms of economic growth and development alone are capable of shaping an environmentally sound economy. As a result, there is no genuine striving toward an alternative perspective on development; sustainable development policies have only been focused on modifying the outcomes of harmful practices rather than eliminating these practices altogether.

The Green response to sustainable development is the concept of sustainability based on the principles of interconnectedness and interdependency. It argues that nature and nature derived principles are the basis for social change and that change should be founded on the principles of interconnectedness and interdependency in order to foster a sustainable society, a society that will be sustainable across generations, geographical space and across species.

CHAPTER IV

Industrial technology vs Green technology

The conceptualisation of ecological problems as technical in nature and thus solvable by improved technology is at the root of the Liberal approach to the environment. Liberal theory's attempt to address environmental issues with the development of new technology or the modification of existing technologies is called a "technological fix".¹⁰²

A central feature in the development of Liberal capitalist societies has been an ever-increasing reliance on technology in manufacturing services, information processing, communication, health care, and public administration. This reliance was anticipated and enthusiastically embraced by the founders of modern science, especially Bacon and Descartes.¹⁰³ Increasing technological power proved an especially valuable asset in Liberal societies. The surplus wealth made possible by this power appeared to allow for a prosperous society, even though inequalities persisted. Moreover, given proper management, such an arrangement strengthened the belief in the soundness of a system based on the domination of nature.

From the Green perspective, the environmental destruction we face now is a direct result of our attempts to control nature for human benefit alone. Liberalism is the worldview that made possible the domination and exploitation of nature, and capitalism made the industrial-scale exploitation of nature necessary. Modern industrial technology

¹⁰² Alan R. Dreganson. "The Sacred and the Limits of the Technological Fix," *Zygon* 19.3 (1984): 259-74.

thus cannot be understood without examining the economic and social structures within which it is embedded. This chapter will not, therefore, focus solely on an examination of industrial technology, but will analyse the beliefs and social conditions, which according to Green approach, are at the basis of the development of environmentally damaging tools and techniques in the name of social progress.

The Nature of Technology

Liberalism, as we saw in Chapter I, was strongly influenced by the principles of early modern science. As a consequence, Liberal theory, similar to the modern scientific method, tends to reduce complex economic and social phenomena to smaller, more “manageable” issues and address them in isolation from other phenomena. From this “isolated” perspective, technology is considered a natural development. It is natural for humans to develop tools that aid and simplify day-to-day existence. Tools are simply a means to extend the potentials of the human mind and body. A hammer, for example, extends the human fist, a pair of pliers, the opposable thumb and index finger. Technology is thus viewed as a natural outgrowth of the development of the human anatomy.¹⁰⁴

The Green approach, in contrast to the Liberal approach, tends to concentrate on the relationships among various phenomena, rather than on the constituent parts of a

¹⁰³ Robert B. Pippin. “On the Notion of Technology as Ideology: Prospects,” Technology, Pessimism, and Postmodernism, eds. Yaron Ezrahi, E. Mendelsohn, and H. Segal. Dordrecht (The Netherlands: Kluwer Academic Publishers, 1993) 93-115.

¹⁰⁴ Alan Drengson. The Practice of Technology: Exploring technology, ecophilosophy, and spiritual disciplines for vital links (Albany: State University of New York Press, 1995) 40.

single issue. To the Greens, technology is not a single “disconnected” issue; technology is influenced by social, cultural and economic factors. Technological developments, in turn, also have the power to shape the direction of social and economic development. Adopting a new technology on a large scale, for instance, constrains society to adopt certain practices that are connected with the use of new technology. The introduction of rail travel, for instance, had immense social implications. Railroads required scheduled travel. Once it was introduced, people who could formerly live with rather approximate notions of time – the day marked out by sun and church bells – needed watches. The social consequence of the new technology of rail travel was a new organisation of social time.¹⁰⁵

Similarly, the large-scale application of the steam engine had a profound impact on eighteenth-century western society. An economic application of the steam engine led to the proliferation of cotton mills, the operation of which required a plentiful supply of cheap labour and new techniques of work organisation. Social changes that were initiated by the large-scale application of industrial machines led not only to new divisions of labour, but also produced new social classes within industrialised societies.

In light of these examples the Greens argue that technological change is not purely quantitative (the same society + new technology), but qualitative as well, because new technology stimulates changes in social structures that often produce a qualitatively different society. Implementation of a new technology can be regarded in the same light as an introduction of a foreign organism into an established ecosystem. For instance, if a species of caterpillar is placed in a given habitat, we are not left with the same ecosystem

¹⁰⁵ Andrew Freenberg. Questioning Technology (New York: Routledge, 1999) 57.

plus a new caterpillar: the result is a new environment, with a different food chain and new conditions of survival.

Similarly, if we remove an established technology from its typical widespread use, social structures that developed to support that particular technology would be affected. To remove every television set from every home in North America, for example, would mean the re-organisation of North American societies along much different lines. The sudden absence of television would dramatically alter the nature of politics and society both in Canada and the United States. New technological inventions, therefore, do not simply add or subtract a new machine from society, leaving its structures unaltered. Technological change is qualitative – in the sense that it creates new material conditions and structures, and in effect, a new society.¹⁰⁶ Unfortunately, the popular view of technology as a natural human occurrence prevents a thorough discussion of the possible impact, consequences and social costs of new technologies either before or after their implementation.

From the Green perspective, the view of technology as a neutral force ignores the deeply political nature of industrial technology. Although Liberal political thought has promoted a view of technology as contributing to wealth creation and thus benefiting everyone in society, the direction of technological development has regularly benefited only a few. Modern technological development has reflected and legitimised the dominant modes of instrumental and productive activity in society. In industrial capitalist production, the prime intention of technological innovation is to increase the quantity of that production.

As argued by one of the founding Liberal thinkers, Adam Smith, the basic means of increasing production is the division of labour. From the prevailing scientific idea of “reducing” complex processes to their constituent parts, Smith proposed to divide the work process into segments, an idea that sped up the production process with the help of machines. The division of the work process into segments increases efficiency of production – i.e. more can be produced in less time. Efficiency, in turn, maximises the production of surplus value, and hence, profits. In order to achieve maximum efficiency, the production process, which used to be the domain of the skilled worker, is broken up into separate tasks. Segmented tasks can be performed by unskilled labourers, which are cheaper and easily available. Moreover, whereas before the unbroken production process required highly skilled and thus expensive workers, new mechanised and segmented production is cost-efficient and requires less educated labour. Technical innovations designed to improve efficiency not only reduce the cost of industrial operations, but also serve a political purpose. The consequences of technological innovations are two-fold. Sophisticated machines speed up production processes and produce higher profits because mechanised production requires fewer skilled workers. At the same time, technological development reduces the number of jobs available for unskilled workers. By maintaining a large pool of unemployed workers in the system where the only way to obtain income is to sell one’s labour, it is easier to direct the public discussion away from the *social need* for efficient machines and to focus on the need for jobs and employment.

Technical innovations, therefore, are not the politically neutral invention of tools; they are a reflection of the hierarchical structure of modern western society. In the present

¹⁰⁶ Neil Postman, Neil. Technopoly: The Surrender of Culture to Technology (New York: Vintage Books,

system, technological inventions are directed not by society as a whole but by a small group that stands to profit the most from an increasingly efficient technology. Industrial ideology obstructs a clear view of the technology-society relationship by insisting that the drive for efficiency is not part of the Liberal imperative to dominate nature, but only a practical way of achieving higher productivity and increasing profit – which are assumed to mean social progress.¹⁰⁷

In the Green analysis, industrial technologies designed to dominate nature have contributed to one of the worst social evils – unemployment. The Greens recognise that there are no easy solutions to the problem of unemployment in a capitalist society; however, they reject the Liberal attempt to cure unemployment by means of growth, because in the context of capitalist economies quantitative growth has always translated into the large-scale exploitation of natural resources. Green theory views unemployment not only as an economic problem, but also as a social one. In their analysis, society would need to have stronger controls over the direction of technological development. Technologies would have to be assessed for their impact on unemployment and the production process.

In other words, the social costs of technological innovation would have to be considered before new technologies are developed and applied. In the Green analysis, the conceptualisation of technological innovation as natural and apolitical imbues technological progress with objectivity and gives legitimacy to policies that promote industrialisation regardless of social cost. According to the view of technology as

1993) 19.

¹⁰⁷ David Dickson. Alternative Technology and the Politics of Technical Change (Glasgow: William Collins Sons & Co Ltd, 1974) 17.

apolitical, the social squalor experienced during the Industrial Revolution, or the rising rates of cancer in the 20th century, are justified as the “price” to be paid for human progress.¹⁰⁸

Similarly, the environmental dimension of new technologies has to be taken into consideration. Contemporary technology has been developed on the basis of maximum exploitation of the natural environment, where environmental costs do not factor into the costs of production. If the total cost of production is comprised of internal and external costs (internal costs are those paid by the producer, external costs paid by the public), then the success of industrial production depends on its ability to minimise internal costs and maximise the external costs of production. Because the choice of environmentally damaging machines is not a political but a practical way of achieving social progress, pollution and despoliation are conceptualised as external costs of production, the costs that everyone must bear in return for technological benefits. The ecological destruction that results from the application of intensive industrial technology thus has to be shared by the community as a whole, and not by the principal polluters. To undermine the polluting industry with ecological taxes would mean curtailing industrial production – i.e. social progress.

In short, the Greens argue that the Liberal tendency to view humans, human economy, and society as separate entities has allowed it to define technology as a natural force that is not influenced by social values and beliefs. In reality, technology is not autonomous from society; it is imbedded in social beliefs and practices that condition the direction of technological innovation. Green theory has attempted to unveil the industrial

¹⁰⁸ David Dickson. Alternative Technology and the Politics of Technical Change (Glasgow: William

myths about the neutrality and the “separateness” of technology by showing how the underpinnings of Liberal ideology promote the creation of environmentally harmful technologies. Environmentally damaging technology is not a technical flaw that can be corrected with a “technological fix” through better management and better applied technology. The problem, according to the Greens, lies not only in the design of modern technologies but in the system of values that guides their creation and application. Polluting technologies are the result of a dominant Liberal political view that regards nature as a source of raw materials to satisfy human needs and wants. Thus development of ecological technologies requires a re-examination of our social perceptions and cultural values about the nature of technology and its social and environmental values.

It is important, from the Green perspective, to see modern technology for what it is – the product of specific historic, social and economic forces, which conforms to a social logic – in order to recognise the real choices available. One of these choices is the rejection of the present conceptualisation of the relationship between technology and the environment in which ecological concerns undermine progress, and instead establish a more realistic concept of technology in which technology stimulates social progress and works in harmony with an ecological cycle.

Collins Sons & Co Ltd, 1974) 42.

Technological Progress

From the Green perspective, technological power over nature has brought less security and happiness to human life. The threat from modern technologies is now so great that they could completely destroy the bio-sphere, and yet these technologies, it is argued, are necessary for our survival. In order to de-construct this paradox, we need to re-assess the Liberal concept of progress.

In Liberal thought, progress is closely identified with technological innovation and material power over nature. Technology is simply a practical application of scientific discoveries. Since scientific developments are viewed as progressing from genius to genius, from breakthrough to discovery after discovery, the popular vision of technology is also that of continuous development from simple tools to sophisticated machines. Technological progress thus develops along a logical, well-defined direction towards a fixed, although distant, goal.¹⁰⁹ It is believed in the Liberal society that technology develops due to an internal logic that naturally moves machines from a lower to a higher state of automation. Each stage of technological development enables the next, and there are no branches off the main line. Societies may advance quickly or slowly but the direction of progress is not in question. Technological progress, thus, is an inevitable course of events.

The Greens have long been calling attention to this rather linear and deterministic perception of technological development in the West. If technology, as claimed by the Liberals, helps to provide for human needs and desires, why is our technology evolved to

¹⁰⁹ Ernest Braun. Futile Progress: Technology's Empty Promise (London: Earthscan Publications, 1995) 74.

dominate nature in such proportions that it now is threatening human life itself? Humans, after all, are a part of nature and must fit into its patterns, and disrupting these patterns means removing the human support system.¹¹⁰

According to the Green perspective, technology does not develop in a linear deterministic manner, because such an explanation implies that technological innovations are only influenced by one (or at least very few) factors that always produce the same effect. In the Green view, no complex phenomenon (and technological innovation is a complex cultural, social and economic phenomenon) develops in isolation. Everything in nature is a result of complex interactions. Similarly, technological innovations do not develop outside of social, cultural and economic influences, but are a product of complex interactions between these forces.

In the Green analysis, the belief in the inevitability of the development of environmentally damaging machines is not supported by the history of technological inventions. Revolutionary changes in tools and technical knowledge *can* lead to new possibilities and new forms of production, but there is no necessity in this process. The history of technology contains multiple examples of inventions that have been ignored or even suppressed by the society in which they were first produced, some to be re-discovered or re-invented many centuries later under different social and economic conditions. For instance, ancient Incas were familiar with the concept of the wheel, but never applied this principle to the development of transportation.

Similarly, the use of steam to drive elementary machinery was known to ancient Greeks, and the library at Alexandria contained a working model of a steam engine. The

¹¹⁰ Alan R. Dreganson. "The Sacred and the Limits of the Technological Fix," *Zygon* 19.3 (1984): 259-74.

Greeks, however, did not attempt to make practical use of the steam engine and the scientific knowledge of harnessing the energy of steam was not applied economically.¹¹¹ Though it is true that Greek society lacked the necessary technical knowledge required to exploit steam power on a large scale, more importantly, the ancient Greek society had little need for major power-producing or even small scale labour-saving devices. A plentiful supply of slave labour meant that the production of automated power presented few problems.¹¹² There was also no social or economic structure that would support the implementation of the steam engine. The economic application of steam technology had to be put on hold until the Industrial Revolution created a social and economic need for the application of this particular knowledge. Without the favourable social and economic conditions, the implementation of steam engines and their further perfection may not have happened. In light of such examples, it is no longer possible to justify a simplistic linear model of technological progress and ignore social and cultural forces that shape and direct technological progress.

Technological invention, therefore, is not guided by the “invisible hand” of technological progress; technology, like the capitalist economy, is a social construct. New technology may be regarded in the same light as the spontaneous mutation of a given species. Technological inventions become successful innovations only if society selects them, much in the same way as mutations lead to the development of new species through natural selection. With technological innovation, successful artefacts of technology are chosen by a social environment, whereas the success of living organisms is determined by

¹¹¹ Alan Drenghon. The Practice of Technology: Exploring technology, ecophilosophy, and spiritual disciplines for vital links (Albany: State University of New York Press, 1995) 37.

a biological environment. The analogy breaks down in so far as technological innovations do not appear spontaneously, but are an outcome of the social direction of inventive effort.¹¹³

From the Green perspective, technological progress is only partly determined by its internal logic; the biggest determinant of its direction is the system of social values that conditions the selection and development of new technologies. The history of the development and advancement of gasoline-operated cars helps illustrate the crucial role of the social environment in the development of today's dominant mode of transportation – the gasoline powered automobile.

At the turn of the 20th century, cars were available in steam, electric and gasoline versions. In the years between 1899 and 1920, the electric car outsold all other types of cars.¹¹⁴ Electric vehicles had many advantages over their competitors. They did not have the vibration, smell, and noise associated with gasoline cars. The electric vehicles did not require gear changes, while changing gears on gasoline cars was the most difficult part of driving. Although steam-powered cars also had no gear shifting, they suffered from long start-up times of up to 45 minutes on cold mornings. Steam cars had less range before needing water than an electric automobile's range on a single charge. The only good roads of the period were in towns, causing most travel to be local commuting, a perfect situation for electric vehicles, since their range was limited. The electric vehicle thus was the

¹¹² David Dickson. Alternative Technology and the Politics of Technical Change (Glasgow: William Collins Sons & Co Ltd, 1974) 47.

¹¹³ Ernest Braun. Futile Progress: Technology's Empty Promise (London: Earthscan Publications, 1995) 75.

¹¹⁴ "The History of Electric Vehicles", Inventors Website, 16 March 2003
<<http://virtualsoociety.sbs.ox.ac.uk/reports/paperless.htm>>

preferred choice of many because it did not require manual effort to start, as with the hand crank on gasoline vehicles, and there was no wrestling with a gear shifter.

By the 1920s, however, the electric car began to lose its dominance on American roads.

The discovery of Texas crude oil reduced the price of gasoline so that it became affordable to the average consumer. The system of roads connecting cities was expanded and improved, bringing with it the need for longer-range, faster vehicles. In this environment, the gasoline car quickly became the preferred design.

Moreover, mass production of internal combustion engine vehicles by Henry Ford made the automobile widely available and affordable in the \$500 to \$1,000 price range. By contrast, the price of the less efficiently produced electric vehicles continued to rise. In 1912, an electric roadster sold for \$1,750, while a gasoline car sold for \$650.¹¹⁵

The history of automotive design shows that external factors rather than the inner logic of technological development was the prime force behind the particular direction in which the automobile developed. Its development was stimulated by the availability of an inexpensive resource and social preference for speed, cost-efficiency and distance travelled. Today, as we learn more about the polluting nature of gasoline-run automobiles, it becomes clear that the selection of the ecologically harmful design was not so much a case of technological failure as it was a case of social failure.

The history of automotive design does not provide empirical evidence to support the inevitability of progress. From the Green perspective, the present stage of technological progress is a result of many factors, conscious choice on the part of the

¹¹⁵ "The History of Electric Vehicles", Inventors Website, 16 March 2003
<<http://virtualsociety.sbs.ox.ac.uk/reports/paperless.htm> >

social elite is one of them. Thus the Liberal notion that industrial technology logically evolved into its present forms without social interferences is incorrect. Western technology, in its present environmentally unfriendly form, embodies the anti-ecological tendencies of the political system in which this technology has been developed. As the example of the gasoline car demonstrates, technology does not have to be an extremely polluting tool to meet one's needs. There were, and still are, alternatives to modern technology's environmentally unsafe direction. Thus if technology is amenable to social choice, logically then, society can be directed towards development that could aid in the ecologically harmonious provision for human needs.

The question, however, is why do most western societies as well as most political classes in these societies continue to view technological progress in its present environmentally damaging direction as desirable.

Efficiency = Technological progress = Social Progress?

Efficiency is a goal of modern society. Being efficient means accomplishing a lot while wasting little. However, in the context of capitalist economy, to achieve efficiency means to increase productivity and reduce production costs. Efficient machines maximise the production of surplus value and, hence, profit. Developing machines that increase efficiency then becomes the primary goal of technological innovation.

In the Green analysis, efficiency-oriented innovation disregards the social and environmental costs. If we look at modern agriculture, the introduction of powerful machines and new farming techniques has greatly increased production. Introducing

efficient machines into farms turned agriculture from a way of life into a technology based industry. Modern agriculture uses massive amounts of artificial fertilisers to promote the growth of crops; it employs factory-farming methods of raising animals in totally artificial conditions; and it is totally dependent on single crops – monocultures. This efficiency-focused modern agriculture has been accompanied by serious environmental destruction. Higher yields of crops are not achieved through ecologically sound farming practices but through an increase in pesticide and chemical fertiliser use.

Similarly, efficiency-oriented machines tend to intensify environmental exploitation in sectors that appear not to have an immediate “environmental connection”. The personal computer, introduced almost 20 years ago, is unquestionably embraced as a more effective office tool than, for instance, the old-fashioned typewriter. Computers held the promise of more efficient machines. However, research shows that the environmental impact of personal computers is staggering: on average, the “computerised” office increases the use of paper by up to 30 per cent.¹¹⁶

In the Green interpretation, efficiency is the best possible use of scarce resources to achieve a sustainable existence. Efficiency thus must always be part of the discourse when resources are finite. Yet in the context of the capitalist economy, efficiency became a goal in itself, rather than an instrument for achieving other goals. It is valued in its own right, because as the overriding economic goal, it becomes a cult. The cult of efficiency, like other cults, advances political purposes and agendas.¹¹⁷

¹¹⁶ Steve Woolgar. “Where Is the Paperless Office?” THES 23 October 2000, 11 March 2003 <<http://virtualsociety.sbs.ox.ac.uk/reports/paperless.htm>>

¹¹⁷ Janice Stein. The Cult of Efficiency (Toronto: House of Anansi Press Limited., 2001) 6.

As argued in Chapter III, a society based on the domination of nature will eventually develop into a society which attempts to dominate human nature. In the capitalist system, efficiency oriented production undermined creative work and job satisfaction. As discussed before, achieving large-scale efficiency requires the fragmentation and specialisation of work in order to achieve maximum output. A consequence of efficient production is the problem of boredom and alienation caused by the routine and fragmented character of assembly line work and the problem of social network disruptions due to geographic mobility and skills obsolescence.¹¹⁸

The quest for efficiency creates a tendency to greater centralisation, specialisation and bureaucratisation of a technologically oriented society. The large scale of many industries requires centralisation of planning and control. Furthermore, as the division of labour becomes extremely segmented, production tasks and machines become dependent on specialised knowledge and expertise. Technological change for efficiency's sake has created several discomfiting paradoxes. While technology has created new higher-level jobs, requirements for specialised skills have blocked occupational mobility for many people. While educational changes have led to higher employment expectations, many monotonous jobs require submissive and dependent behaviour. The specialisation that follows from efficiency-oriented development tends to foster rigid hierarchical arrangements calling for patterns of coordination in industry that are implemented through tight supervision. Such organisational features have converged with the rigors of the

¹¹⁸ Steve Woolgar. "Where Is the Paperless Office?" THES 23 October 2000, 11 March 2003
<<http://virtualsociety.sbs.ox.ac.uk/reports/paperless.htm>>

assembly line to alienate the industrial worker, and these have resulted in industrial protest, absenteeism and general dissatisfaction with work.¹¹⁹

Politically, the Greens argue that efficiency-oriented technological change undermines the democratic principles governing Liberal societies. Ever-increasing technical sophistication, in turn, increases the power of those controlling technical information. Consequently, wider and wider areas of public policy are transferred from the domain of politics to the domain of scientific/bureaucratic expertise. This process frames problems of political choice as debates among experts over highly technical alternatives. Expertise, if accessible, can be a useful resource – a source of informed choice that can create many possibilities for increased democratisation. But it may often serve as a weapon of social manipulation in the name of rationality. As the power of political representatives shifts to technocrats who are not directly accountable to the public, technology becomes an instrument that reinforces the status quo.¹²⁰ The increasing requirements for technical expertise as a basis for public decisions also creates a sense of political alienation – a loss of personal efficacy.

On an individual level, efficiency-driven technological innovation has translated into a need to adapt to new machines and patterns of work. The most important characteristic of our present society may well be the incredible speed with which it changes. Overlooking whether things evolve in a positive or in a negative way, sometimes change itself constitutes a problem. Technological innovations are taking place at such a breath-taking pace that no one can really keep up with all of them. Yesterday's

¹¹⁹ D. Nelkin. "Technology and Public Policy," Science, Technology and Society: A Cross-Disciplinary Perspective, eds. Spiegel-Rosing, Ina, and D. de Solla Price (London: SAGE Publications, 1977) 393-443.

¹²⁰ Ibid.

revolutionary new product has become common-place today, and will be outdated tomorrow. As a result, efficiency-oriented technical change creates a constantly changing environment, the adjustment to which many people find difficult and stressful.¹²¹

Moreover, new technology often does not replace the old technology, but works as an add-on. The Internet did not replace existing modes of communication, but is used alongside older technologies such as fax, phone and mail.¹²² Thus the need to respond to e-mail does not eliminate the need to answer phone calls or faxes. The result of e-mail in the office environment is a greater amount of work and less time. Time, incidentally, is the only feature of human existence that has not been amplified by technology. With human affairs sped up by technology, including change itself, technology offers more choices, but less time to choose. With that situation comes stress, stress from the tyranny of the clock, stress from anxiety over the unexplored consequences of a hasty decision, and stress from fears that technology is out of control.¹²³

Efficiency, therefore, is not about freedom, democracy or a better life: quite the reverse. Efficiency implies an increase in centralization and the bureaucratisation of our lives, a more stressful living and working environment. The question then arises, why do we assume that technological inventions, especially those that increase efficiency, automatically guarantee social progress. The link between technological progress, efficiency and social progress appears to be based on the belief that efficiency-driven technological progress automatically yields higher productivity, and productivity, in turn,

¹²¹ Francis Heylighen. "Change and Information Overload," Pincipia Cybernetica April 14, 2003
<<http://pespmc1.vub.ac.be/CHINNEG.html>>

¹²² Steve Woolgar. "Where Is the Paperless Office?" THES 23 October 2000, 11 March 2003
<<http://virtualsociety.sbs.ox.ac.uk/reports/paperless.htm>>

lowers costs and prices. Lower consumer prices are believed to stimulate economic growth, job creation, and result in cheap and plentiful commodities for the majority of the population. In short, efficiency and higher productivity create material prosperity. This causal link between efficiency and prosperity fits nicely into the Liberal understanding of progress as a process by which new and better machines help to meet human wants and needs.

However, the causal link between innovation and productivity is not clear and is difficult to assess. In the case of the automation of production the evidence appears to be ambiguous at best, with no solid evidence to support the claim that improved efficiency always increases productivity.¹²⁴ In the case of modern agriculture, the benefits of increased productivity are offset by environmental damage, the reduced quality of chemically stimulated crops, and an increased cancer risk.¹²⁵ In the case of computers, innovation replaced an efficient, albeit user-unfriendly DOS (disk operating system) with a user-friendly GUI (graphical user interface). The most popular GUI, Windows 95, however, proved to be very unreliable: it often crashed (i.e. froze up) and was not compatible with many other software applications. In the case of personal computers, the productivity-efficiency link is, at best, questionable to anyone who ever struggled with a recalcitrant machine.

Furthermore, there is no evidence that increased productivity, which results in higher profits, will be translated into cheaper goods for society. In the present globally

¹²³ Edward J. Wenk. Tradeoffs: Imperatives of Choice in a High-Tech World 9Baltimore, Maryland: The John Hopkins University Press, 1986) 13.

¹²⁴ David F. Noble. "Automation Madness, or the Unautomatic History of Automation," Science, Technology and Social Progress, Ed. S.L. Goldman (Toronto: Associated University Press, 1989) 66.

competitive economy, more often than not, technological innovation is used only to increase profits without necessarily decreasing prices.¹²⁶

To summarise the above discussion, the causal link between efficiency-driven technical progress and social progress is questionable. Although efficiency does in some cases increase productivity (as it is the case with modern agriculture), there is no evidence that it always translates into social progress. There is, however, a growing body of evidence about the extensive social and environmental costs of efficiency-driven technological progress.

The adherents of Liberalism propose the view that control of nature equals progress. In other words, within Liberal capitalist society, progress is construed as the expansion of human domination over nature. This is supposed to lead to social progress. Viewing control as progress stimulates a progressive development of increasingly powerful and environmentally threatening technologies.

Why the technological fix will not solve environmental problems

The belief in the possibility of a technological fix to all environmental problems is based on the Liberal assumption that environmental problems are technical in nature and as such can be solved with better (i.e. cleaner) technology. This belief has been widely

¹²⁵ Andrew Kimbrell. Fatal Harvest: The Tragedy of Industrial Agriculture (Washington: Island Press, 2002) 63.

¹²⁶ David F. Noble. "Automation Madness, or the Unautomatic History of Automation." Science, Technology and Social Progress. Ed. S.L. Goldman. Toronto: Associated University Press, 1989. p. 66.

adopted by governments as well as individuals because it does not imply the need to change the patterns of economic growth and consumption. Not surprisingly, so far most efforts to clean up the environment have tended to concentrate on “cleaning technologies” rather than “clean technologies”. Cleaning technologies are technologies that are added to the existing production processes to control and reduce pollution. The problem with “cleaning technologies” is that they do not address the cause of the problem. They are often called “end of the pipe” solutions because cleaning technologies evolved from the principle of how to make the existing production a little more environmentally friendly. Adding filters or implementing incinerators at the end of an ecologically damaging process will not make a difference in the final analysis.

According to the Green perspective, the problem lies in the dangerous assumption that defines ecological problems as technical in nature and thus solvable by new and improved technology when, in reality, ecological problems are social and not technological, and can only be solved through social transformation.¹²⁷

In order to develop environmentally suitable technologies, we need to re-examine the beliefs and social conditions that give incentives to the development of environmentally damaging tools and techniques in the name of social progress. Among them are our beliefs about nature as a resource, the nature of technological design, and its role in achieving social progress, and the costs of industrial technology to our health, social structures and environment. The phenomenon of modern technology needs to be brought up for

¹²⁷ G. Szell. “High Technology: Industrialization and problems of development,” Ecology, Society and the Quality of Social Life, eds. W. V. D’Antonio, M. Sasaki and Y. Yonebayashi (New Brunswick, New Jersey: Transaction Publishers, 1994) 156.

discussion to realise the active social forces behind its present environmentally unsafe design.

Once the political, social and economic nature of contemporary technology has been realised, it will be seen that a genuine alternative technology can be developed only within the framework of a Green society. The achievement of Green technology is a political task. The struggle for emancipation from an apparently oppressive and environmentally damaging technology coincides with the struggle for emancipation from oppressive political forces which accompany it. To argue that technological change is per se able to bring a more desirable form of society is technological determinism carried to utopian extremes.¹²⁸

¹²⁸ David Dickson. Alternative Technology and the Politics of Technical Change (Glasgow: William Collins Sons & Co Ltd, 1974) 13.

CONCLUSION

The last two centuries of Western history were highlighted by enormous improvements in the material well-being of most citizens in the advanced economies of the West. This unprecedented growth has been credited to the freedoms of the Liberal society and the expansion of the capitalist economy. The essence of the Green critique of Liberal socio-economic arrangement is that relief from poverty came at a very high price: environmental degradation that is now threatening to destroy the life-supporting system of the planet.

From the Green perspective, the roots of environmental destruction can be traced to changes in our intellectual relationship with the natural world. It is not accidental that material improvement in the well-being of most Western nations has coincided with the emergence of a new political perspective that advocated a radically new conceptualisation of human nature.

Our intellectual relationship with the world begins with the concept of human nature, which in political theory refers to the essential and immutable character of all human beings; it is a concept that profoundly shapes our understanding of how political and social life ought to be organised.

Liberal thought builds its world-view on the premise that humans are foremost individuals that are only loosely connected to their natural and social environment. The Green concept of human nature rests on the belief that humans are a part of nature and are closely connected to and strongly influenced by social and natural processes. As such, the Liberal and Green concepts of human nature are dramatically different. Starting from a

different conception of human nature, both Liberal and Green political thought produced diametrically opposed views on the role and function of the economy, society and technology.

As argued in Chapter I, the Liberal theory of nature and human nature drew largely on principles of early modern science. The latter produced an understanding of the universe as a machine whose functions could be understood by reducing the world to a collection of particles. This “scientific” explanation of the universe, once incorporated into a political ideology, led to a reductionist approach to nature, human nature, politics, and economics. Liberal thinking, instead of focusing on webs of relationships, focuses only on a few aspects of human nature and human social relations. By “disconnecting” humans from nature, Liberal political theory is incapable of seeing the connection between our economic activity and ecological degradation.

The Greens argue that the Liberal concept of human nature, as separate from nature, leads to wide-spread environmental degradation because Liberal theory deliberately downplays the fact that the human economy is only one part of, and ultimately dependent on, the biosphere. The biosphere is what the Greens call the “great economy” and it is what sustains all life, human and non-human, and for this reason the economy must fit into its cycles and patterns. However, the present economic arrangement is designed as if nature’s economy must follow the logic of the human economy. Because the Liberal view holds that nature is a composite of separate and replaceable parts, the connection between these parts is not always clear or important. The natural world is visualised as an open-ended system. It is possible, then, to have unlimited economic growth in such a system; open-ended economic activity moves along a linear

developmental direction, without concern for the interactions of its parts. The Greens see nature as a closed, self-contained system, in which unlimited growth is simply not possible. The difference in the understanding of nature and the place of humanity in nature is what separates the Greens and the Liberals in their solutions to the problem of environmental degradation. From the Liberal perspective, the capitalist economy can absorb some Green principles and become environmentally friendly. From the Green perspective, for capitalism to stop the unsustainable exploitation of nature, it must relinquish its drive for continuous growth. As discussed in Chapter II, 0-growth capitalism will cease to be capitalism, for capitalism must expand continuously in order to create surplus value. Our economic system therefore resembles a cancer that grows continuously until it consumes the organism entirely. In order to develop a sustainable economic system, our mode of production has to be re-oriented away from for-profit production towards socially necessary production. Sustainable development, according to the Greens, need not bring an end to our prosperity but it must limit and re-evaluate our consumption patterns. However, from the Liberal perspective, increased (or increasing) consumption not only drives the economic engine but also keeps together a social fabric rigged with social and economic inequalities. Changing this will require a shift in social values that Liberal society so far has not been able to initiate. Instead, the Liberal solution to the problem of unsustainability of the present patterns of growth and consumption has been the concept of sustainable development which is primarily based on the idea of limiting the negative impact of capitalist economy with new technologies and better management.

The Liberal conceptualisation of the human-nature relationship is also reflected in the social organisation of liberal societies. Since the dominant Liberal theory defined

humans as divorced from nature, it conceived social organization also as separate from nature. The result of this particular conceptualisation of the human-nature relationship is a social structure that promotes not only the exploitation of nature by humans but also the exploitation of humans by other humans. Our environmental crisis, in other words, is a reflection upon our social as well as economic organisation.

Green political thought presents an entirely different concept of human nature, and following from that, a different view of economy and society. Green thought is not the first attempt to view humanity as a part of nature, but it is the first to confront the anthropocentric continuum that has conditioned ideas of social design for over two millennia. The Greens believe in the intrinsic value of nature - nature should not be valued simply because it looks after us; rather it should be valued for its own sake, because nature has its own inherent value, dignity and beauty. The distinctiveness, though, lies not simply in the recognition of the fact that humans are natural beings, which is unlikely to be disputed by most modern theorists, but in the acceptance of the fact that being "natural beings" has descriptive and normative significance for political theory.

Our interconnectedness with nature is the starting point of the Green concept of human nature and human society. The recognition of our interconnectedness not only with nature but also with society and other humans leads, in the Green view, to a sustainable economy (because the Green economy will be modelled on the closed system of nature that it is natural and that produces no waste) and more equitable society (which, built on the principle of interdependency, will be less hierarchical and decentralised).

Moreover, adoption of the Green conviction that in diversity lies strength will halt the spread of the Liberal monoculture. Liberalism, according to the Green analysis, bases

most of its beliefs on a linear interpretation of the world that expansion knows no limits. It has expanded economically across the globe, imposing its unsustainable view of nature onto non-Western and developing countries. The result of this expansion is globalised environmental problems. It has undermined the diversity of cultural and the economic forms, and in this manner weakened the capacity of humans to bring about change. Strength, according to the Greens, is not found in sameness, but in diversity. Since everything in nature changes, the Liberal conception of nature institutionalised in our economic and social structures must also change.

WORKS CITED

- Aronowitz, Stanley. Science as Power: Discourse and Ideology in Modern Society. Minneapolis: University of Minnesota Press, 1988.
- Ball, Terence, and R. Dagger. Political Ideologies and the Democratic Ideal. 5th ed. New York: Pearson Education. Inc., 2003.
- Barbour, Ian, G. Technology, Environment, and Human Values. New York: Praeger Publishers, 1980.
- Barry, John. "Sustainability, political judgement and citizenship: Connecting Green politics and citizenship". Democracy and Green Political Thought. Eds. B. Doherty and M. de Geus. London: Routledge, 1996.
- Barry, John. Rethinking Green Politics. London: Sage Publication, 1999.
- Bender, Sharon. "The Role of Technology in Sustainable Development". Technology and Society 13.4 (1994): 14-19.
- Best, M., H. and W.E. Connolly. "Nature and Its Largest Parasite". The Capitalist System. Ed. Richard C. Edwards, M. Reich, T. Weisskopf. New Jersey: Prentice-Hall, 1986.pp. 349-357.
- Bramwell, Anna. The Fading of the Greens: The Decline of Environmental Politics in the West. London: Yale University Press, 1994.
- Braun, Ernest. Futile Progress: Technology's Empty Promise. London: Earthscan Publications, 1995.
- Bromley, Daniel, W. Searching for Sustainability: The Poverty of Spontaneous Order. Ecological Economics 24 (1998): 231-240.
- Cahn, Matthew, Alan. Environmental Deceptions: The Tension Between Liberalism and Environmental Policymaking in the United States. Albany, N.Y.: State University of New York Press, 1995.
- Cammack, P. et al. "Chapter 8: The Third World in Global Economy". Third World Politics: A Comparative Introduction. 2nd ed. Baltimore: Johns Hopkins University Press, 1993.
- Capra, Fritjof, and C. Spretnak. Green Politics. New York: E.P. Dutton, Inc. 1984.

Capra, Fritjof. The Turning Point: Science, Society and the Rising Culture. New York: Simon and Schuster, 1982.

Chandler, Alfred, D. Scale and Scope: The dynamics of Industrial Capitalism. Cambridge, Mass.: Belknap Press, 1990.

Clapp, Jennifer. "The Global Economy and Environmental Change in Africa". Political Economy and the Changing Global Order. Eds. Stabbs, Richard and G. Underhill. Toronto: Oxford University Press, 2000.

Commoner, Barry. The Closing Circle: Nature, Man and Technology. New York: Alfred A. Knopf, Inc., 1972.

Davidson, Julie. "Sustainable Development: Business as Usual or a New Way of Living?" Environmental Ethics. 22 (Spring 2000): 25-42.

De la Court, Thijs. Beyond Brundtland: Green Development in the 1990s. New York: New Horizons Press, 1990.

DeGregori, Thomas, R. A Theory of Technology. Iowa. Iowa State University Press, 1985.

Dickson, David. Alternative Technology and the Politics of Technical Change. Glasgow: William Collins Sons & Co Ltd, 1974.

Dobson, Andrew. Green Political Thought. London: Unwin Hyman, 1990.

Dreganson, A.R. Shifting Paradigms: From Technocrat to Planetary Person. Victoria, B.C. LightStar Press, 1983.

Dreganson, A.R. "The Sacred and the Limits of the Technological Fix." Zygon 19.3 (1984): 259-74.

Dreganson, A.R. Beyond Environmental Crisis: From Technocrat to Planetary Person. New York: Peter Lang, 1989.

Drengson, Alan. The Practice of Technology: Exploring technology, ecophilosophy, and spiritual disciplines for vital links. Albany: State University of New York Press, 1995.
Dryzek, John, S. Rational Ecology: Environment and Political Economy. New York: Basil Blackwell, 1987.

Eban Goodstien. "Malthus Redux? Globalization and the Environment". Globalisation and Progressive Economic Policy. Eds. Baker, Dean, G. Epstein, and R. Pollin. Cambridge: Cambridge University Press, 1998. p. 298-321.

- Eckersley, Robyn. "Politics". A Companion to Environmental Philosophy. Ed. D. Jamieson. Malden, Massachusetts: Blackwell Publishers Inc., 2001.
- Edwards, Richard, C. M.E. Reich, and T.E. Weisskopf. The Capitalist System. Englewood Cliffs, New Jersey: Prentice-Hall, 1986.
- Ekins, Paul. "Making Development Sustainable". Global Ecology. Ed., W. Sachs. Halifax, Nova Scotia: Fernwood Publishing, 1993.
- Electric car <http://inventors.about.com/library/weekly/aacarselectric2a.htm>
- Ellul, Jaques. The Technological Society. Trans. John Wilkinson. New York: Alfred A. Knopf, 1973.
- Engel, Ronald, J., and J.G. Engel, eds. Ethics of Environment and Development: Global Challenge, International Response. London: Belhaven Press, 1990.
- Evernden, Neil. The Natural Alien: Humankind and the Environment. 2nd edition. Toronto: University Press, 1993.
- David Fideler. "The Greek Idea of Cosmos and Its Contemporary Meaning". Alexandria 4, 5 August 2003 <<http://www.cosmopolis.com/df/what-is-a-cosmos.html>>.
- Freden, Michael. Green Ideology: Concepts and Structures. OCEES Research Paper No 4. November 1995.
- Freden, Michael. Ideologies and Political Theory: A Conceptual Approach. Oxford: Clarendon Press, 1996.
- Freenberg, Andrew. Questioning Technology. New York: Routledge, 1999.
- Goodin, Robert, E. Green Political Theory. Cambridge: Polity Press, 1992.
- Hall, Charles, A., S. "Sanctioning Resource Depletion: Economic Development and Neo-Classical Economics." The Ecologist 20.4 (1990): 99-104.
- Hayward, Tim, and John O'Neil., eds. Justice, Property and the Environment: Social and Legal Perspectives. Aldershot, England: Ashgate Publishing Inc., 1997.
- Hayward, Tim. Ecological Thought. An Introduction. Cambridge: Polity Press. 1995.
- Heilbroner, Robert, L. The Nature and Logic of Capitalism. New York: Norton, 1985.

Helleiner, Eric. "New Voices in the Globalization Debate: Green Perspectives on the World Economy." Political Economy and the Changing Global Order. Eds. Stubbs, Richard and Geoffrey R.D. Underhill. New York : Oxford University Press, 2000.

Heywood, Andrew. Key Concepts in Politics. New York: St. Martin's Press, 2000.

Hilhorst, Medard. "The Ethical Assessment of New Technologies: Some Methodological Considerations." Ecology, Technology, Culture. Eds. Zweers, Wim and Jan J. Boersema. Cambridge: The White Horse Press, 1994. 263-271.

Hill, Christopher. "Technology and International Competitiveness: Metaphor for Progress." Science, Technology and Social Progress. Ed. S.L. Goldman. Toronto: Associated University Press, 1989.

Hinchman, Lewis, P., and S. K. Hinchman. "Environmentalism and the Enlightenment." The Review of Politics 63 (2001): 663-692.

"The History of Electric Vehicles", Inventors Website, 16 March 2003
<<http://virtualsociety.sbs.ox.ac.uk/reports/paperless.htm>>

Humphrey, Mathew. "Reassessing Ecology and Political Theory". Environmental Politics 10 (2001): 2-5.

Heylighen, Francis. "Change and Information Overload," Pincipia Cybernetica April 14, 2003 <<http://pes.pmc1.vub.ac.be/CHINNEG.html>>

Jackson, Tim. Material Concerns: Pollution, Profit and Quality of Life. London: Routledge, 1996.

Jacques Ellul on Religion, Technology, and Politics. Trans. Joan Mendes France. Atlanta, Georgia: Scholars Press, 1998.

Jamieson, Dale. "Sustainability and Beyond." Ecological Economics 24 (1998): 183-192.

Jamison, Andrew. The Making of Green Knowledge: Environmental Politics and Cultural Transformation. Cambridge: Cambridge University Press, 2001.

Kassiola, Joel, J. The Death of Industrial Civilization: The Limits to Growth and the Repoliticization of Advanced Industrial Society. Albany: State University of New York Press, 1990.

Kassiola, Joel, Jay. The Death of Industrial Civilisation: The Limits to Growth and the Repoliticization of Advanced Industrial Society. Albany: New York Press, 1990.

Kateb, George. Political Theory: Its Nature and Uses. New York: St. Martin's Press, 1968.

Kimbell, Andrew. Fatal Harvest: The Tragedy of Industrial Agriculture. Washington: Island Press, 2002.

Kothari, Rajni. "Environment, technology, and ethics". Ethics of Environment and Development: Global Challenge, International Response. Eds. Engel, Ronald, J., and J.G. Engel. London: Belhaven Press, 1990.

Leiss, William. The Domination of Nature. New York: George Braziller, Inc., 1972.

Linder, Burenstam, S. The Harried Leisure Class. New York: Columbia University Press, 1970.

Macpherson, C.B. The Political Theory of Possessive Individualism: Hobbes to Locke. London: Oxford University Press, 1962.

Martell, Luke. Ecology and Society: An Introduction. Massachusetts: University of Massachusetts Press, 1994.

Mathews, Freya. The Ecological Self. London: Routledge, 1999.

McLaughlin, Andrew. Regarding Nature: Industrialism and Deep Ecology. Albany: State University of New York Press, 1993.

Meeker-Lowry, Susan. Economics as if the Earth Really Mattered: A Catalyst Guide to Socially Conscious Investing. Philadelphia, CA: New Society Publishers, 1988.

Milani, Brian. Designing the Green Economy: The Postindustrial Alternative to Corporate Globalisation. Boston: Rowman & Littlefield Publishers, Inc., 2000.

Naess, Arne. Ecology, Community and Lifestyle. Trans. David Rothenberg. Cambridge: Cambridge University Press, 1988.

Nelkin, D. "Technology and Public Policy". Science, Technology and Society: A Cross-Disciplinary Perspective. Eds. Spiegel-Rosing, Ina, and D. de Solla Price. London: SAGE Publications, 1977. 393-443.

Noble, David. F. "Automation Madness, or the Unautomatic History of Automation." Science, Technology and Social Progress. Ed. S.L. Goldman. Toronto: Associated University Press, 1989.

O'Briant, Walter, H. "Man, Nature and the History of Philosophy." Philosophy and Environmental Crisis. Ed. William T. Blackstone. Athens: University of Georgia Press, 1971.

O'Brien, Rory. "Law, Property, and the Environment: An Introduction." Thinking About the Environment. Eds. Cahn, M.A. and Rory O'Brien. New York: Sharpe, Inc., 1996.

O'Connor, James. "Is Sustainable Capitalism Possible?" Ed. Martin O'Connor. Is Capitalism Sustainable? New York: The Guilford Press, 1994.

Pacey, Arnold. The Culture of Technology. Cambridge: The MIT Press, 1983.

Paehlke, Robert, C. Environmentalism and the Future of Progressive Politics. London: Yale University Press, 1989.

Pippin, Robert, B. "On the Notion of Technology as Ideology: Prospects." Technology, Pessimism, and Postmodernism. Eds. Yaron Ezrahi, E. Mendelsohn, and H. Segal. Dordrecht, The Netherlands: Kluwer Academic Publishers, 1993. 93-115.

Porritt, Jonathon. Playing Safe: Science and the Environment. New York: Thames & Hudson Inc., 2000.

Postman, Neil. Technopoly: The Surrender of Culture to Technology. New York: Vintage Books, 1993.

Prigogine, Ilya. The End of Certainty: Time, Chaos, and the New Law of Nature. New York: The Free Press, 1997.

Redclift, Michael. Wasted: Counting the Costs of Global Consumption. London: Earthscan Publication Ltd., 1996.

Rees, William, E. "Reducing the Ecological Footprint of Consumption." The Business of Consumption. Eds. L. Westra and P. H. Werhane. New York: Rowman & Littlefield Publishers, Inc., 1998. 113 – 128.

Rescher, Nicholas. Complexity: A Philosophic Overview. New Jersey: Transaction Publishers, 1998.

Richardson, D. "The Politics of Sustainable Development". The Politics of Sustainable Development; Theory, Policy and Practice Within The European Union. Eds. S. Baker, et al. London: Routledge, 1997.

Sachs, Wolfgang, ed. Global Ecology. Halifax, Nova Scotia: Fernwood Publishing, 1993.

Seabrook, Jeremy. The Myth of the Market: Promises and Illusions. Bideford (England): Green Books, 1990.

Stein, Janice. The Cult of Efficiency. Toronto: House of Anansi Press Limited., 2001

Sterling, Stephen, R. "Towards an ecological world view." Eds. R. Engel, and J.G. Engel. Ethics of Environment and Development: Global Challenge, International Response. London: Belhaven Press, 1990.

Stine, Jeffrey, K., and Joel. A. Tarr. "At the Intersection of Histories: Technology and the Environment". Technology and Culture. 39.4 (1998) 601-640.

Stoneman, Colin. "The Unviability of Capitalism." Socialism and the Environment. Ed. Ken Coates. Nottingham: The Russell Press Ltd., 1972. pp. 59-104.

Strong, David. Crazy Mountains: Learning from Wilderness to Weigh Technology. Albany, N.Y.: State University of New York Press, 1995.

Sunderline, William, D. Ideology, Social Theory, and the Environment. Rowman & Littlefield Publishers, Inc., 2003.

Susser, Bernard. Political Ideology in the Modern World. Needham Heights, Massachusetts: A Simon and Schuster Company, 1995.

Szell, G. "High Technology: Industrialization and Problems of Development." Ecology, Society and the Quality of Social Life. Eds. W. V. D'Antonio, M. Sasaki and Y. Yonebayashi. New Brunswick, New Jersey: Transaction Publishers, 1994.

Taliaferro, Charles. "Early Modern Philosophy". A Companion to Environmental Philosophy. Ed. Dale Jamieson. Malden, Massachusetts: Blackwell Publishers, 2001.

Gayil Talshir. "A Green Ideology? The Concept, Misconceptions and a Reconceptualisation," Political Science Association 1998, 20 May 2003
<www.psa.ac.uk/cps/1998/talshir.pdf>.

Theile, Leslie, Paul. Environmentalism for a New Millennium: The Challenge of Coevolution. Oxford: Oxford University Press, 1999.

Thiele, Paul. Thinking Politics. Perspectives in Ancient, Modern and Postmodern Political Theory. Chatham, New Jersey: Chatham House Publishers, Inc., 1997.

Toke, Dave. "Green Radicalism – Side Show or a New Alternative?" Political Science Quarterly, (2000), 4, 443-450.

Torgerson, Douglas. The Promise of Green Politics: Environmentalism and the Public Sphere. London: Duke University Press, 1999.

Van Der Wal, Koo. "Technology and the Ecological Crisis." Ecology, Technology, Culture. Eds. Zweers, Wim and Jan J. Boersema. Cambridge: The White Horse Press, 1994. 215-243.

Wackernagel, M. and W. Rees. Our Ecological Footprint: Reducing Human Impact on Earth. Gabriola Island, B.C.: New Society Publishers, 1996.

Wenk, Edward, J. Tradeoffs: Imperatives of Choice in a High-Tech World. Baltimore, Maryland: The John Hopkins University Press, 1986.

Westra L. and P. H. Werhane. The Business of Consumption. New York: Rowman & Littlefield Publishers, Inc., 1998.

Steve Woolgar. "Where Is the Paperless Office?" THES 23 October 2000, 11 March 2003 <<http://virtualsociety.sbs.ox.ac.uk/reports/paperless.htm>>

Worster, Donald. Nature's Economy: A History of Ecological Ideas. New York: Cambridge University Press, 1994.

Zweers, Wim and Jan J. Boersema, eds. Ecology, Technology, Culture. Cambridge: The White Horse Press, 1994.