INTEGRATING SOCIAL THEORY AND SUSTAINABILITY

by

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(Under the Direction of R. Alfred Vick)

ABSTRACT

Though it generally has environmental connotations, sustainability is at its most basic a social concept. It is society that is of interest in being 'sustained;' the environment will remain with or without society. Thus the environment is important to sustainability in that it supports society. This thesis argues that sustainability as it is currently understood is incomplete in that it does not include social concepts with any depth, and integrating ideas from social theory into sustainability can move it forward in a meaningful way. I focus on two social theories, social constructionism and critical realism, and investigate how they might be used to provide insight into concepts of sustainability. Finally, I form a new conceptualization of sustainability for landscape architecture, termed 'dynamic sustainability,' that embraces four goals: social meaning, natural meaning, participation, and change.

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CHAPTER 1:

DEFINING/RETHINKING THE CONCEPT OF SUSTAINABILITY

Sustainability can mean many things. Most basically, it means the capacity of something or some practice to be sustained, or to be continued in its present form indefinitely into the future. In the recent political and social climate, however, it has come to refer to the capacity of mankind to continue its current social and economic practices in the face of anthropogenic environmental impact. But even within this context are many definitions and interpretations of definitions. The term is often coupled with other qualifying terms, as in the case of social sustainability, sustainable agriculture, or sustainable growth or yield in economics. However, the most common usages of the term are in **environmental sustainability** and **sustainable development**, different but related terms that attempt to describe a better way of interacting with the environment. Environmental sustainability and sustainable development are often used interchangeably, but this practice is misleading because they do have separate meanings. Environmental problems have been the central impetus for the rise of the concept of sustainability in current world issues, and environmental sustainability is a movement which seeks to reduce the impact of a human practice on environmental and ecological systems that support us. Sustainable development applies the ideas of environmental sustainability to economic growth and development, fitting ideas for change in human action for the benefit of environmental health into the economic growth paradigm promoted by capitalism. Sisay Asefa (2005) describes sustainable development as similar to traditional economic growth and development, only with the addition of natural resources as a form of natural capital. Natural capital provides goods and services just as manufactured capital, and its incorporation into the economic equation places value on natural resources and systems that is in turn included in

economic analyses. Monetary value can indeed be assigned to natural resources, a practice

common in sustainable economic analyses, but there remains much debate about how to

determine appropriate value as well as whether natural systems should even be appropriated to

the economic growth agenda of modern capitalism. Sustainable economics is a large field that is

mostly beyond the scope of this paper, but it will be addressed more later, as will the debate on

whether or not promotion of continuous economic growth is compatible with sustainable

practice. When used alone, 'sustainability' usually refers either to 'environmental sustainability'

or 'sustainable development,' though not necessarily either, and the proliferation of usage of the

term in the past 15 years by various entities with various goals and agendas has created a certain

ambiguity in its meaning. Hatt et al. (2005) point out this ambiguity, stating that 'sustainability'

can refer to ecological systems, communities, economic growth, technology, or any number of

other things. This ambiguity underlies many conflicts with the conceptualization and practice of

sustainability, and each person who writes about the subject offers a new definition. The

conflicts associated with the ambiguity of the term 'sustainability' and with the countless

definitions offered in the literature must be resolved if this virtuous concept is to retain any

meaning or impact on the continuing evolution of society.

Revising our conceptualization of Sustainability

Numerous definitions of sustainability in the literature offer numerous attempts to

encompass the concept into a few words, most notably in *Our Common Future*, the report of the

1987 United Nations World Council on Environment and Development, and there are far too

many to list or sift through here. A new definition will not be offered, as sustainability as a

whole is far too big for this paper, rather the purpose here is to address specific issues about

sustainability and point in the direction of the future of sustainability theory and practice.

However, there are a few definitions that capture key concepts and offer insight into the

continuing evolution of sustainability. Hatt et al. (2005) define it as

> an ever-evolving vision for humanity that prioritizes acknowledgement of
> and adjustment to ecological limits; supports a systems-level analysis of
> the dialectic relationships between the environment, economy, and
> society; includes a strong concern for equity, fairness, and participatory,
> democratic decision-making; and demands employment of the
> precautionary principle in our scientific and technological endeavours.

This definition captures three important points about sustainability: that it is centrally about

humanity rather than man's environment, that it must address environment, economy, and

society, and that it is a vision rather than an end-product. This 'ever-evolving vision' means that

sustainability is a process, just as nature is a process, and implies that, to be harmonious with its

supportive natural environment, society must also be considered an ever-evolving process in

which we all participate. The key point here is that society in its current state is object-oriented,

that it views nature and itself as constant objects, and thus views 'fixing' environmental

degradation as returning nature to some objective state, presumably a specific condition from the

past. Recognizing nature as process and society as process will be an important factor in

advancing the idea of sustainability. Another description is offered by Paul Eakins (2000), who

says

> A way of life is a complex bundle of values, objectives, institutions and
> activities, with ethical, environmental, economic and social dimensions.
> While current concern about unsustainability largely has an ecological
> basis, it is clear that human situations or ways of life can be unsustainable
> for social, economic and ethical reasons as well.

Eakins points out that the current dialogue about sustainability is largely ecologically based, but

that there are various other facets of society that might make human practices unsustainable.

Ecological crisis sparked the origins of sustainability as a concept, and environmental issues

remain the key indicators of a society's level of 'sustainability.' But through years of debate and

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discussion, it has become apparent that environmental issues do not encompass the whole problem: sustainability is at its most basic level a social concept. As Erika Cudworth puts it, "It is now acknowledged that a critical understanding of socio-economic, political, and cultural processes and structures is central in understanding environmental problems and establishing environmentally sustainable development" (2003). It is society that is of interest in being sustained, or the specific environment that supports society; environmental degradation merely inhibits the viability of a society. The 'environment' will remain, as it did for millions of years, with or without the presence of human society.

I will argue that environmental issues are *indicators* of the problem, but it is *social practice* that is the root of the problem. Thus fundamentally, our concept of sustainability must focus on social issues, and on treating the problem rather than the symptom. This change is not to say that any less emphasis or action should be directed toward environmental issues, certainly changes for the benefit of environmental sustainability would be considered social change, but that in our conceptualization of sustainability and debate as to the best ways to move forward, we must be cognizant of our norms of social practice.

Sustainability in Landscape Architecture

As in most of its manifestations in society, sustainability in landscape architecture usually means attention to ecological issues with solutions such as improving energy and resource efficiency, ameliorating impacts of stormwater runoff, native plantings, or ecological restoration. These and the many other sustainable solutions are important steps toward reconciling the sometimes opposing forces of human progress and environmental viability, but a broader concept of sustainability is needed if its implementation is to have lasting positive effects on the condition of humanity. Social issues must be inherent in the concept of sustainability and must

be addressed in every phase of design, from concept to construction, if the root of the sustainability problem is to be addressed. There are certainly movements within landscape architecture that focus on social issues, such as environmental justice, healing gardens, or defensible space, but these ideas must be combined with the ideas of environmental improvement to create a cohesive, complete picture of sustainability.

Few and specialized are the firms that practice sustainable design. But fundamentally, sustainability means nothing if it is not widespread; environmental impact is as widespread as the human race, and for sustainability to be effective it must cover the entire scope of human influence. Since its inception, sustainable development has been almost universally accepted conceptually, but the methods required to reach its goals and the degree to which those goals are necessary or desirable have been widely debated and continue to evolve. Much of the debate stems from the vagueness of the term itself, and widespread conceptual acceptance coupled with open-ended definition have led to exploitation of the term for the benefit of whatever entity is using it. The word has lost its power, become mired in the cliché and staleness of a 20-year old idea. But it remains a virtuous concept, at its root a long-term idea intended for the benefit of future generations. Benson and Roe (2000) have said that it has become clichéd to say that sustainability is clichéd, and indeed the journey of the term from concept to buzzword to overuse and misuse has become tiresome. The concept is at a critical place for its continued viability: passé for the progressive designer, who has moved on to fresher ideas, but not normal, widespread, or proven enough for the average builder. The current conceptualization of sustainability might be described as being in its 'adolescent' years, with the next decade being vital to its maturation and long-term integration into society. The remainder of this paper will take a new look at sustainability as it relates to human society, assessing its current situation and

providing some direction for the future by introducing some concepts of sociology as it deals with nature. I will argue that sustainability as it is currently understood is incomplete in that it does not include social concepts with any depth, and integrating ideas from social theory into sustainability can move it forward in a meaningful way.

CHAPTER 2:

A SHORT HISTORY OF SUSTAINABILITY

The idea of sustainability as we now perceive it is only about 20 or 30 years old, but concern over man's impact on his environment and his own society has been around for centuries. This historical look at the concept will briefly cover major sources and influences that have affected the evolution of the term, as well as describe issues prevalent in the current literature.

Malthus

Robert Malthus wrote in the early nineteenth century about the potential collapse of society due to unfettered population growth. His most well known work, *An Essay on the Principle of Population* (1992, orig. pub. 1803), addresses the ways in which nature poses absolute limits on the reproduction and survival of plants and animals. Humans are not exempt from this scarcity of resources, and Malthus predicted mass misery were the human population to reach the point of natural limitation. We have come a long way since Malthus, and his dire predictions obviously were not realized, at least in the time frame he suggested, but he represents a very early, if not the first, conceptualization of carrying capacity and human overextension of natural resources to the point of societal collapse. As such an early figure, his name remains prevalent in the discussion of sustainability, and 'Malthusian' has come to describe any doom-predicting social concept.

Club of Rome

The Club of Rome was a group of researchers started at MIT in the 1970s. They were centrally concerned with the fact that the modern economy is based on the exploitation of natural resources, and with the possibility that unbridled economic growth would eventually deplete

those natural resources, resulting in social collapse (Hatt et al. 2005). The group published their thesis *The Limits to Growth: A Report on the Club of Rome's Project on the Predicament of Mankind* in 1972, which presented various computer models that attempted to predict, according to global supply and rates of consumption and expansion, when certain vital resources would run out. *The Limits to Growth* set forth two important conclusions: that the world economy cannot expand indefinitely due to the finite nature of natural resources, and that if action were taken to modify economic trends, the world economy could transition to a state that would be sustainable (Common 1995). Sustainability to the Club of Rome means maintaining a constant level of total world output indefinitely into the future. If the earth is not capable of sustaining an economy expanding indefinitely, then there must be an end to the economic growth paradigm that characterizes modern capitalism. This change would certainly be dramatic, as growth and expansion is the central goal of most economists and economic policy.

Our Common Future

Fifteen years after *Limits to Growth*, sustainable development first gained wide recognition as a concept at the World Commission on Environment and Development (WCED) in 1987 (Drummond and Marsden 1999), though it had been introduced earlier in the Stockholm Intergovernal Conference on the Human Environment in 1972 and revisited at the WCED in 1980 (Thompson 2000). WCED (1987) produced the oft-cited report *Our Common Future*, commonly called the Brundtland report for the committee chair, Gro Harlem Brundtland. *Our Common Future* defined 'sustainable development' as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations 1987). The key point regarding this definition is that it shows the distinction between sustainability and sustainable development: sustainable development is the application of

sustainability to the capitalist economic growth model. In contrast to the Club of Rome's *Limits to Growth*, the WCED report embraces economic growth, stating that "it is not the case that the lesser the economic or consumption growth, the more sustainable the growth is. It is the content of growth that is critical" (1987). *Our Common Future* places great faith in the ability of new technology to change the content of growth, to replace old, environmentally destructive technology with new 'sustainable' technology within the economic growth paradigm. The story of sustainability is a story of competing ideas, forces, and agendas, and these two opposing views of economic growth represent one such competition that has been prevalent since the inception of the idea. Assimilating sustainable practices into existing economic structure would certainly be the easier option, and it is the most populated side of the argument, but then the purpose is not ease, it is addressing, as in the title of *Limits to Growth*, "the predicament of mankind." However, it is not the purpose of this paper to uphold or overthrow capitalism, rather to explore the social structure behind it. Economic issues are addressed only in their relevance to prevailing conceptualizations of sustainability and their relation to social process.

  Our Common Future also includes considerable commentary on social issues; its definition of sustainability is centered on human needs of the present and future. Specifically it focuses on the dichotomy between developed and developing countries, recognizing the vastly differing conditions in different locations and offering different recommendations for each. Developed and developing nations are often grouped together in the literature with the terms 'North' and 'South,' the North referring to the primarily affluent nations of the northern hemisphere and the South referring to the primarily un- or under-developed nations of the southern hemisphere. Although *Our Common Future* addressed issues of equity in depth, in the time since its publication, the focus on sustainability has been primarily on environmental issues

and on adjusting the prevailing economic model to account for environmental factors, largely

ignoring social issues that underlie the problem.

Current Climate

      The Limits to Growth and *Our Common Future* offer differing strategies for achieving the

goal of sustainability: the former sees economic growth as inherently unsustainable, and the

latter seeks to fit sustainable practice into the existing growth paradigm. The current dialogue

about sustainability draws heavily on these two sources and is divided along the lines of their

differing solutions. Common (1995) says that "reasonable people may reasonably differ" as to

which position is correct. However, applying the goals of sustainability to the economic growth

model, the position of the Brundtland report, which "did not link poverty and ecological

disruption to economic drivers; rather it redefined those problems as the unfortunate

consequences of factors such as poor management, lack of technology, and overpopulation, all of

which were presumed to be remediable through more economic development" (Hatt et al. 1995),

seems to currently be the prevailing tactic. Economic growth is widely seen as the best method

to overcoming poverty and social inequity (Hatt et al. 1995, Common 1995), which is vital to

sustainability in a social sense. The World Conservation Strategy Report of 1980, the resulting

document of the WCED of the same year, found that the environment and ecological principles

should set limits on man's activity.   By 1987, however, greater faith was placed on technology

and its ability to overcome detrimental environmental impact (Lafferty and Langhelle 1999).

Our Common Future describes this position, saying that growth "could be environmentally

sustainable if industrialised nations can continue the recent shifts in the content of their growth

towards less material- and energy-intensive activities and the improvement of their efficiency in

using materials and energy" (United Nations 1987). Likewise, the 1987 report recognizes the

vitality of social equity to sustainability, placing emphasis on both intra- and inter-generational equity. The most relevant positions of the Brundtland report regarding the evolution of sustainability were its acceptance of economic growth as a vehicle for change and its recognition of social equity as inherent to the concept. The publication of *Our Common Future* was a great turning point in the discussion of sustainability and has had immeasurable impact on the development and current conceptualization of the term. It did not provide specific solutions (it was much to broad a document for that), but it did provide direction and elicit vital issues that remain relevant. Chapter three will address specific issues facing sustainability and comment on how they might apply to a social interpretation of it.

CHAPTER 3:

SOME CURRENT ISSUES

Having established the meaning of the concept of sustainability, at least for discussion

here, I turn to specific issues important to the promotion of the idea, issues which elicit major

theoretical and practical *conflicts*. The four specific issues included here are understanding,

equity, energy/entropy, and scale/interconnectedness, each chosen for its importance to a

particular aspect of the sustainability problem. Understanding is the most vital issue regarding

the status and evolution of sustainability as a concept, equity is the most pressing social issue,

reduction in energy consumption is the most critical environmental issue, and concepts of scale

and interconnectedness connect the parts within the system. Description and discussion of these

conflicts is presented here; large-scale application of measures through policy or other

mechanisms to promote sustainability in society as a whole is beyond the scope of this paper.

After being discussed here, these issues will permeate subsequent chapters.

Understanding

Ignorance can be seen as a major impediment to sustainability: informed, effective

decisions cannot be made under conditions of ignorance of environmental process, social

process, political process, or the interconnections between processes. If this ignorance is a major

impediment to the promotion of a sustainable society, then education would be an important step

toward achieving that sustainable condition. But ignorance and education do not tell the entire

story, because they imply that someone has the knowledge, it just needs to be disseminated.

Understanding might be a better concept to describe the situation, because it allows a lack of

knowledge: that is, one cannot know everything, but one can make good decisions by

understanding what one does not know. The collective human body of knowledge does not fully

contain the vast complexity of natural or social systems and system interactions. Håland (1999) sees the negative consequences of economic growth ideology as partially a result of a lack of understanding of humans' place in a larger ecological context, and stresses interdependence and balance rather than domination as a better way forward.

Social theory provides insight into a society's perception, cognition, and understanding. All knowledge is a social construction (Dickens 1996), or a creation of society, and social theory describes the construction and reproduction of knowledge within a society. The study of understanding is integral to the promotion of sustainability because it drives social process and thus social interaction with nature. Two theories of sociology, social constructionism and critical realism, will be treated in more depth in chapter six.

Equity

If it is a lifestyle that is of interest in being 'sustained,' then what lifestyle is it, and are there lifestyles that should be improved before being 'sustained'? Different cultures and different people within a culture have vastly different standards of living, and social equity is perhaps the most important concept regarding the social aspect of sustainability. It is a key goal for sustainability as described in *Our Common Future*, which included in its definition of sustainability "the needs of the present" as well as "the ability of future generations to meet their own needs." These phrases are important in their recognition of both inter- and intra-generational equity: the futures of mankind and the environment are obviously the center of sustainability, but it is not exactly ethical to focus on the future if the needs of the present are not met. Providing for the needs of the present primarily means combating poverty and providing opportunity for a better life. Actions to this end can be local, national, or international, within or between societies. The literature on sustainability and ethics primarily deals with an international scale,

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as sustainability is a global issue, and focuses on the dichotomy between the affluent North and impoverished South. Substantial conflict over the terms of sustainability within this dichotomy exists on two levels: whether the focus should be on needs of future or present generations and who is to blame for environmental degradation.

The North and South have conflicting priorities regarding equity, where the North (including most proponents of sustainable development) is preoccupied with future generations while the South is trying to meet the needs of its current generations (Hatt et al. 2005). Common (1995) lists poverty and affluence as major issues of sustainability, and when industrial (generally democratic) nations remain tied to economic growth as best for their welfare, the question remains as to whether they can see it as in their and their descendents' best interests to combat poverty. He calls for a better understanding of the complex relationships between economic growth and individual welfare. A better understanding of the complex relationship between individuals, between nations, and between societies is also needed. Just as pollution in a river affects everything downstream, the actions of a society have direct and indirect impacts on other societies. Nature knows no political or social boundaries, therefore sustainability cannot either. The recommendation of *Our Common Future* regarding economic growth is a 50% reduction in energy consumption in industrial nations and a 30% expansion in developing nations over 50 years. This goal is aimed at both providing for the needs of current generations in impoverished areas while curbing overall global consumption in the interest of future generations. The argument of this report is not that everyone on Earth should have the same standard of living, rather they should have their needs met and have opportunity for improvement of their lives (Lafferty and Langhelle 1999). The promotion of economic growth and expanded consumption in developing nations leads to the question of how to best provide for

that growth. Modernization theory states that capitalist economic growth is the only way to meet the needs of the impoverished, as well as to provide funds to preserve the services of nature (Hatt et al. 2005). Related to that theory is ecological modernization, which calls for a transition of existing social systems to more sustainable societies by action within the economic growth model through internalization of environmental costs and through improvements in science and technology. Malcolm Gillis states that sustainability can be achieved within current economic systems by adjusting the markets to accurately reflect environmental importance in the costs of goods and services (2005). This approach fits with the recommendations of *Our Common Future*, as both hold that sustainability can be achieved within the economic growth model, and at the core of ecological modernization is confidence in capitalism's capacity to transform itself in the face of environmental crisis. The criticism of this approach is the question of how industrialization, the cause of environmental destruction, can also be the means of environmental renewal (Hatt et al. 2005), recalling the debate on growth between *Limits to Growth* and *Our Common Future*. But how do you provide for needs without economic growth? How do you provide housing without building homes? Perhaps at some level of affluence a steady-state economy is feasible, but it is clear that in extremely impoverished situations, economic growth is a necessity. All living things consume some amount of resources for their survival, thus it is not consumption but excessive consumption that causes adverse impacts. Additionally, as is shown in the second point of conflict between North and South, excessive consumption is not the only means of environmental destruction.

The other major point of contention between the North and South is who, or what practices, to blame for environmental degradation, and thus what should be done to remediate that degradation. To blame the North is to blame industrial pollution, greenhouse gas emissions,

and other factors related to overconsumption and intensive energy use. The idea of overconsumption contends that nations of the North consume far more than their fair share of natural resources (Hatt et al. 2005). To blame the South is to blame ecologically destructive practices such as deforestation from slash-and-burn agriculture and fuelwood harvesting that occur in impoverished areas with few environmental regulations and few other options (Gillis 2005). In the quest for growth and development, many nations also rely on older, cheaper technologies that may not be as ecologically friendly as newer options. While one side contends that the rich consume more than their share and sustainability will never be reached without drastically reduced consumption, another side says that the rich are rich because they have been able to develop technology to overcome environmental limitations (Gillis 2005). Neither side is solely to blame for environmental degradation; unsustainable practices occur across cultures in different manifestations. Social equity means providing equal opportunity for all, and implies providing goods, services, and the technology to achieve them to the underprivileged. The promotion of sustainability will have different forms depending on the social context to which it is applied: in the North, it means reduced consumption and energy use through temperance and new more efficient technology, and in the South it means establishing viable economies with the use of new technology, circumventing old, less efficient technology.

Promotion of social equity involves empowerment of the underprivileged: power allows a voice in the decision-making process and determines access to ecological goods (Hatt et al. 2005). Two concepts of promoting empowerment to establish greater equity are ecological democracy and environmental justice. Ecological democracy provides people with equal opportunities to participate in decision-making about the environment. Environmental justice refers to the equal distribution of both environmental resources and risks (Hatt et al. 2005). The

two concepts are related in their promotion of equity, but the difference is that ecological democracy implies action by the underprivileged while environmental justice implies providing for the underprivileged through actions by society as a whole. It seems that the latter must occur to facilitate the former: the underprivileged are too busy trying to meet their own needs in any way possible to be concerned with larger scale causal relationships.

Energy & Entropy

The thermodynamic school within the sustainability debate draws on the second law of thermodynamics, the entropy law, in considering energy use by mankind as a whole. This second law states that energy can be neither created nor destroyed, it can only be transformed from one form to another. Entropy is a measure of the usefulness of energy, and decreasing entropy is associated with the conversion of energy from non-usable to usable form. Photosynthesis is one of the few examples of an entropy-decreasing activity, and entropy in the universe is constantly increasing. Through photosynthesis, biotic systems of the earth are a complex web of decreasing entropy & maintaining it in usable form. Certain activities of man, such as burning fossil fuels, are entropy-increasing, and if such entropy-increasing activities outpace the rate of photosynthesis on the earth, as they currently do, then biotic systems of the earth will eventually run out of usable energy. In the example of burning fossil fuels, entropy was decreased millions of years ago by photosynthesis using sunlight to turn carbon dioxide into organic matter. That organic matter was stored in fossil fuels, but burning it to produce temporarily useful energy, such as moving an automobile, eventually turns it all into heat, which has greater entropy than organic matter.

The thermodynamic school of sociology contends that the economic process of production and consumption is entropy-creating (Lafferty and Langhelle 1999). Daly, a

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proponent of the thermodynamic school, states that humanity currently preempts 40 percent of

historical land photosynthetic production through development, leaving little room for the

exponential growth that has occurred in the past before there is nearly no land photosynthetic

production (1993). *Our Common Future* (*OCF*) contends that the ultimate limits to development

are determined by the availability of energy and the biosphere's capacity to absorb byproducts of

energy consumption (United Nations 1987). But while *OCF* calls for a change in the character

of growth, Daly says that sustainable development cannot be achieved by only changing the

content of growth (1993). Opponents of the thermodynamic school contend that technical

progress can reduce the materials and energy required in production, and that ultimately

thermodynamics reveal little (Lafferty and Langhelle 1999). But changing the content and

nature of energy consumption is the most pressing issue regarding sustainability, as altering the

energy balance of the Earth system is the most fundamental anthropogenic change to

environmental systems. Technology certainly has the capacity to improve resource and energy

efficiency, but whether it can do so to the extent that maintains ecological integrity is

questionable. There are ultimate limits to growth, as nature imposes limits on all species for the

benefit of the whole natural system, and from a sustainability standpoint, these limits must be the

starting point. There may or may not be limits to *economic* growth, but there are limits to

resource consumption, and for sustainability to be effective, these limits must be respected.

Scale: Time & Space

In many ways, sustainability represents the intersection of vastly different scales. On one

hand is the time scale—human lives operate on approximately a 70 year time scale; economic

theory and policy operates primarily on an even shorter scale; ecological & environmental

change operates on time scales of hundreds or thousands of years. Optimistically, the long time

scale of environmental change gives humans time to react and change detrimental practices. Pessimistically, the chain of impact may be set into action long before we realize that it is even occurring. On the other hand is spatial scale—human, community, society, nation, globe and organism, community, ecosystem, biome, earth. Action on any human scale can have impacts on any one or multiple ecological scales.

The key to understanding vastly different scales is to understand interconnectivity—that our perception tells us one thing but there are many other things operating simultaneously and relatively that we do not necessarily perceive. Although humans operate on a 70 or so year scale, and probably make most everyday personal decisions on an even shorter scale, they affect and are affected by larger processes, such as social, political, or ecological changes that operate on very different time scales. While individual decisions and actions may not seem to have effects on these larger processes, the sum of all human decisions and actions certainly has great effect, and the condition of human life is certainly affected by the course of these other processes. Common (1995) includes interconnectedness as a major theme of sustainability, stating that the sustainability problem lies at the nexus of economic activity and the natural environment.

Take the example of the piece of plastic used to hold soda cans together. Through dissemination of images and information, it became widely known that discarded six-pack holders killed birds by becoming trapped around their necks, so many people began cutting the loops in these pieces of plastic. This revelation was one step toward understanding interconnectivity: the action of discarding a piece of plastic could affect another process, the life of a bird. However, looking at the plastic six-pack holder in more depth reveals a host of other interconnections operating at a variety of scales. Plastic takes many years to degrade in the

environment, so the effects of a discarded piece could be manifested on a bird tomorrow or on a bird many years from when it was discarded, or both. Also there are implications of the life of the piece of plastic before it was purchased. What sorts of processes were used in its manufacturing? Where were they made? Who worked to manufacture them, and what were their working and living conditions? What is the ethical legacy of the manufacturing company? What are the environmental implications at every step of the process? Realizing the relationship between discarding a piece of plastic and its potential detrimental effect on a bird is one level of interconnectivity, but a deeper consideration of the issue reveals a system of causal forces and potential effects. The best solution may be to cut the plastic, or it may be to stop buying the plastic, or it may be to buy an alternative product, or it may be to buy more of the same product. Cutting the plastic solves the problem of one connection, but there are numerous other connections within the system, and understanding interconnectivity at a variety of scales is the key to making informed decisions and taking effective action.

Speaking in terms of landscapes, Paul Selman (2000) notes that approaches to sustainability are usually focused at the local level, while larger scale landscapes tend to be valued for scenic purposes. However, he continues, improved understanding of ecological processes and relationships suggests that it is necessary to approach landscape sustainability at a larger scale. Even a scenic landscape does not capture a scale that would encompass environmental and ecological processes. The vital point here is the concept of *connectivity*. Any undertaking that changes the landscape must be cognizant of the processes it contains, the processes which contain it, and the processes with which it is interconnected. An understanding of its ecological, temporal, spatial, and social context at a variety of scales is vital to achieving a sustainable solution.

CHAPTER 4:

(RE)DEFINING SUSTAINABILITY

Sustainability as it is currently known is still very young, and while its history has brought forth many good ideas into a valuable debate, these ideas must be synthesized into a cohesive whole if the concept is to mature into a practical mechanism for change. *Our Common Future* was an invaluable document that opened a dialogue on many issues vital to sustainability, and the academic discussion in the wake of its publication is ongoing. This discussion has in turn clarified and deepened our understanding of these issues, but sustainability is one particular idea that is inherently worthless if not practicable. (Re)defining Sustainability is intended to bring together the different facets of sustainability and formulate a new conceptualization that will be helpful in implementation of the goals of sustainability.

Ecology: The Symptom

The argument set forth in this paper is that while sustainability has an environmental connotation, and most sustainable practices are environmental 'fixes,' it is at its most basic a social concept, and specific social conditions have caused an unsustainable society. In a way, this does not describe the situation entirely: sustainability *is* about environment, but it is about the specific environment that supports humanity. There is no steady-state earth environment; it is a dynamic system that is constantly changing, with new species evolving and old species going extinct constantly. But natural ecological change is a process that occurs on an extremely long time scale in relation to human life, or even human history, and under natural conditions the environment is changing slowly enough to support human life for a very long time. It is this slowly changing environment that is to be sustained because it is the environment that provided for the development of humans and their society. Sustainability is really about sustaining this

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society, this human existence. It is about sustaining society's supporting environment.   It is about humans not being a part of the next mass extinction.

One way of looking at the species-environment relationship is through the concept of balance. A stable ecosystem, though never unchanging, is slowly changing because it contains a collection of species that are in balance with each other. An ecosystem that is out of balance is prone to rapid change: change in species composition and the environment itself and change which alters the environment affects the capacity of survival of each species within that environment. If human society is considered to contain the whole of the human species and its effects on its environment, then ecological 'degradation' is a symptom of a society that is out of balance with its environment. Common (1995) notes that, in analyzing systems, economists begin with human interests, defined as consumption, whereas ecologists begin with a system of which humans are a part. Eakins (2000) defines environmental sustainability as the maintenance of important ecological functions. Focusing on environmental sustainability, he elaborates, saying:

> The environmental sustainability of human ways of life refers to the
> ability of the environment to sustain those ways of life. The
> environmental sustainability of economic activity refers to the continuing
> ability of the environment to provide the necessary inputs to the economy
> to enable it to maintain economic welfare.

Looking at it as a whole, environmental sustainability is then the sustaining of the environment, or ecological function, that supports society, which encompasses Eakins' ways of life and economic activity. Eakins notes that maintaining *important* environmental functions does not mean maintaining *all* environmental functions, as far as sustainability is concerned (2000). This distinction goes back to the problem of understanding, as there is a lack of understanding of the complexity of ecological functions within the system, and the problem of determining which of

those functions are important. The complexity of the environmental system requires a deep understanding of function interaction, as the degradation of one function may affect many others, in order to decide which functions are vital to sustainability. A key aspect of ecological systems, Common points out, is resilience, and sustainability is the ability of the system to maintain productivity despite disturbance (1995). Resilience could be a good indicator of the health of an ecological system, as a degraded environment is indicative of an ecosystem that has been disturbed beyond its ability to remediate itself.

All organisms, according to Faber et al. (1995), are motivated by three goals: individual maintenance and fulfillment, reproduction, and a balanced mutual relationship with other living beings to maintain a vital ecological whole. As a society, humans have the first two conditions mastered. But the third, which comes naturally to other organisms, is more difficult for a species that has the ability to affect its environment to the extent that humans do in pursuit of the first two goals. In the process of natural selection in the non-human world, less fit individuals expire for the benefit of the species as a whole, maintaining a balance between that species and the environment in which it exists. In humans, however, each individual life is valued by the species, and the balance with environment does not come through survival of the fittest (ie. death of the unfit). This balance must therefore come from understanding of man's place in an ecological context, and organizing society in a manner that promotes balance with other living organisms while still valuing the individual human life. If a society is to be sustainable, then it must interact in a balance with its environment such that the resilience of that environment remains intact and active, maintaining the functions and interactions necessary to the continued vitality of that environment. The unsustainable condition of mankind has developed in pursuit of the first two goals with ignorance to the third; individual maintenance and fulfillment and

reproduction in humans comes in large part at the expense of other beings in nature, degrading the balance of the ecological whole. Sustainability in this sense requires sacrifice of the first two goals in the interest of the third. This sacrifice is involuntary in the natural world, but in human society, it must be a voluntary, cognitive sacrifice in the interest of intergenerational equity, promoting opportunity for the future through promotion of ecological balance at the sacrifice of opportunity of the present.

Economy: The Mechanism

Economy is the system of cooperation within society, the system of exchanging goods and services to fulfill needs. It is the trade of one person's excess goods or ability to provide service for other goods or services, or the means to acquire them, that the person is lacking. It is the social system through which humans pursue Faber's first two goals: individual maintenance and fulfillment and reproduction. In its traditional manifestation, however, it does not address the pursuit of the third goal, a balanced mutual relationship with the ecological whole. If ecological degradation is the symptom of a society that is out of balance with its environment, then economy is the mechanism of society that has eroded that balance.

In terms of sustainability, it is imperative to find an economic system that promotes a balanced mutual relationship with the environment, or at least is not antithetical to it. As described in the comparison of *Limits to Growth* and *Our Common Future*, one of the most common debates regarding economy and its relation to sustainability is over growth. Economic growth is currently the major objective of economic policy, but the question remains whether that growth is compatible with environmental sustainability. Eakins (2000) takes the position that they *are* compatible, and his analysis and studies suggest that this compatibility is

technologically and economically feasible, but is contingent on "determined, long-term policy commitment, and fundamental changes in consumer lifestyles and preferences."

If the two are compatible, then sustainability requires changes within the current economic paradigm. The central problem with most growth-based economic analyses of the environment is that the diversity and complexity of environmental contributions to the economy are not captured; economic models are very simple and involve restrictive assumptions (Eakins 2000). Within this problem is the problem of analysis scale: for economists, 30 years is a long time, but for ecologists and evolutionary biologists, it is an exceptionally short time (Heal 1998). In formulating a revised model that captures environmental contributions to the economy, Heal describes a sustainable approach as having three essential characteristics: "treatment of the present and the future that places a positive value on the very long run, recognition of all the ways in which environmental assets or natural capital contribute to economic well-being, and recognition of the constraints on economic activity implied by the dynamics of environmental assets" (1998). Eakins takes the approach that to rectify the economic model requires a more accurate representation of environmental contributions to the economy so that these contributions can be sustained (2000). Both recognize the value of free ecosystem services, but prevailing current economic models do not account for these vital contributions.

One key to formulating an economic model that accurately accounts for environmental contributions is the concept of substitution. An approach that sees welfare as not dependent on specific forms of capital sees that capital as substitutable; capital derived from environmental sources can, with few exceptions, be substituted with manufactured capital. Eakins calls this approach 'weak sustainability.' In a discussion of substitutability, Daly and Cobb (1994) give the example of two identical carrots, one grown hydroponically in a lab and one grown in a

fertile field. The 'weak sustainability' perspective would view the two carrots as equal and substitutable. The counter position sees environmental capital as unique and the ability of manufactured capital to replace it is very limited. This approach, called 'strong sustainability,' is a more robust model and more accurately represents environmental contributions to economic welfare (Eakins 2000). 'Strong sustainability' would not view Daly and Cobb's carrots as equal, because the hydroponic carrot required much more energy and material input in the form of laboratory and equipment than did the field-grown carrot. In his conceptualization, Eakins disputes the traditional approach of economics to sustainability, that the trade-off between sustainability and economic growth should be through optimization, or maximizing the value of consumption. This approach does not account for the complexity of environmental systems or the uncertainty associated with irreversible actions, and Eakins states that the question should be whether sustainability as a primary policy goal would exert substantial constraint on economic growth (2000).

Society: The Sustained

Ultimately the goal of sustainability is to 'sustain' society, to find a mode of human social existence that can be practiced indefinitely into the future. Environmental processes and ecology are the physical support system for society, and their integrity must be maintained in order for a society to physically exist. Economy, the trading of goods and services, is the mechanism within a society that ensures, or at least promotes, the well-being of each individual in that society. Current ideas of sustainability must be integrated with social issues at every level as sustainability matures as a concept and goal.

Common notes that humans are now unequally provided with sustenance, and many suffer deprivation. He takes the sustainability problem to be addressing issues of inequality and

poverty in ways that do not affect the environment so as to diminish the future prospects of humanity (1995). Eakins defines social sustainability as a society's ability to maintain the means to create wealth and reproduce itself, and to reproduce its sense of social purpose in fostering social integration and cohesion (2000). In western industrial societies, he continues, there is the perception that the most important contributor to human welfare is consumption, which drives economic growth, and likewise the primary economic policy objective is growth of GNP. This system facilitates environmental problems through over-consumption and social problems of reduced cohesion through its advocating consumptive individualism (Eakins 2000).

The problem of sustainability is a social problem, facilitated by the prevailing economic climate and manifested in environmental degradation, a problem of social structure, process, and values that have evolved through human history but which may now be the ironic detriment to the same society that created them. Awareness of environmental problems has arisen due to the efforts of ecology and other physical sciences. Economics has long studied production, trade, and consumption of societies. Sociology has studied the societies themselves and the forces of their formation, development, change, and destruction. Society itself has created all three of these fields, and sustainability calls on all of them to ensure the continued viability of society. A study of sociology can reveal valuable insights into the fields of environment and economy, as they are social creations, as well as into society itself. Chapters five, six, and seven will look at the contributions of sociology to the problem of sustainability.

PART II: THE SOCIAL ASPECT OF SUSTAINABILITY

CHAPTER 5:

ENVIRONMENTAL ISSUES IN SOCIOLOGY

Environmental issues have traditionally been ignored in sociology, which has defined environment as that which is not human. The physical sciences have handled study of the environment, but have largely ignored its relation to humanity. However, there has been some sociological treatment of environmental issues in recent times, and as far as sustainability is concerned, there must be a synthesis of ideas to solve a problem that does not respect academic disciplinary boundaries.

Marx and Capitalism

Marx's theories of capitalism as a social and economic system have waxed and waned in popularity over the years but remain relevant today. In his time, the rise of capitalist industrialism and collapse of feudalism marked an important economic turning point because capital became as important as land as a source of power and wealth (Cudworth 2003). In this new industrialism, Marx saw the working class as in inherent conflict with capitalists because exploitation of the workers is the mode by which capitalists realize profit—workers are not paid the full value of their services, the extra becoming profit (1936, orig. pub. 1894). With the continued rise of capitalism and the revelation of environmental problems that some attribute to capitalism, Marx's critiques remain valuable in assessing the current social and economic situation. Marx certainly included notions of nature and its relationship to society in his work, and Dickens (1992) considers Marx and his contemporary Engels as the premier theorists in providing understanding of current environmental issues, listing five key themes of Marx and Engels:

1. People are a species which, like all other living organisms, have needs like any other species and needs which are specific to human beings.

2. Nature is integral to people's bodies. There is therefore no logical way in which nature can be treated as separate from people.
3. Nature is socially constructed. It is always modified by people. And, in the process of changing nature, people change themselves.
4. Under capitalism, nature is privately owned and exploited. People therefore find themselves becoming alienated or estranged from the nature on which they work. They also become alienated from their own species.
5. The institutions and processes created through social relations and social processes can, however, come to have an apparent life or power of their own. They become fetishised or reified as things in their own right. As such, they become means by which people gain a sense of being in the world. They enable people to organize their lives and experience.

(1992)

These five themes can be used to understand the relationship between society and nature and to understand the conditions of that relationship in a society developed under capitalism. Capitalism is an important aspect of this social analysis because the nations of the world with wealth, and with power, are primarily industrial nations under economic systems based on capitalism. These nations with wealth are primarily the nations of the North, developed nations that are in position to make sacrifices for the benefit of future generations, and are therefore the nations that can lead change in the direction of sustainability. The cause of sustainability requires a better understanding of the relationship between people and nature on multiple levels, and this understanding is vital to assessing the current situation and providing direction for change.

The first two themes describe the natural conditions of people and the nature of which they are a part, focusing on the *physical* needs of humans. If the physical necessity of humans to have a relationship with nature is established, then there is a basis for analyzing that relationship as it exists in a society. The link between society and nature has traditionally been ignored in the field of sociology—societies and the natural world in which they operate have been treated as

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mutually exclusive.   Likewise, the physical sciences have ignored social forces, but a cross-disciplinary synthesis of ideas is necessary to promote a sustainable condition for humanity. Dickens calls for a break with this tradition of one science for people and a separate science for nature, thus dissolving the distinction between people and nature and allowing us to see people as a part of nature and nature as integral to humans (1992). This connection between people and nature can be understood by integrating discrete academic disciplines to promote better understanding of the complex interrelationships between and within humans and the natural world.

Conversely to the physical nature of the first two themes, Dickens' third theme focuses on the *construction* of nature by a society. The social construction of nature describes a society's conceptualization of nature, a society's perception of nature, which may or may not be related to a real nature. Social constructionism is a vital concept in better understanding people's relation to nature, because perception in a society is more powerful than reality in effecting change. Social constructionism will be addressed in more detail in Chapter 7.

The fourth theme of private ownership and exploitation of nature and alienation describes the establishment of the current state of the relationship between society and nature.   Particular manifestations of capitalist values have largely contributed to the environmental degradation that has given rise to the idea of sustainability. However, not everyone, as described previously under economics, agrees that capitalism itself is to blame—many see it as the savior. It is not capitalism itself that is entirely the issue: industrialism may be a better descriptor of the large-scale process of alienation and exploitation of nature. But capitalist values of individualism exacerbate this process, and our current situation has developed with the rise of industrialism within a capitalist framework. To Marx, it is capitalism that places highest value on profit at the

expense of the exploited. The rise of capitalist industrialism promoted a movement of people

from rural areas to urban and away from a connection with the land (Cudworth 2003).   In the

industrial society where capital is the prime means of wealth, people spend the majority of their

time in factories, offices, or other businesses and become alienated from nature, alienation that

replaces a connection with nature that theoretically existed when people spent their time on the

land. Likewise, the consumptive individualism promoted by a capitalist society alienates people

from each other. The alienation from nature by physical separation facilitates a lack of

understanding of the processes of nature within which humans are vitally connected. For Weber

(1985, orig. pub. 1904), the values of Protestantism are tied closely to capitalist ideals, placing

importance on hard work for individual betterment. Additionally, Weber saw the world as on a

path to secularization, and while Protestantism itself would fade, its world-affirming values of

individual fulfillment would remain. Individualist values of capitalism in combination with the

work ethic of individual betterment of dominant Protestantism have facilitated an industrialism

that focuses on the first two of Faber's goals described in Chapter 4, remaining ignorant of the

third goal of balance with other organisms to form a vital ecological whole. Capitalism itself is

not necessarily opposed to ecological integrity, provided there is adequate understanding of

environmental contribution to the economy.

Dickens' fifth theme of the seeming autonomy of social institutions exemplifies the

difficulty of social change. Firmly established institutions and processes often exist

independently of the forces that created them—and even though there may no longer be a reason

they exist, there must be good reason to change. This point also illustrates the importance of

social institutions to people—it is the frame within which their lives are structured. If there is to

be social change for the purpose of sustainability, it must have strong structure; it cannot simply

'pull the rug' from under institutions that are deemed environmentally detrimental, it must provide a strong alternative foundation upon which people can organize their new experiences.

Society-Environment interaction

There are a variety of approaches to the human-environment relationship within sociology, and a variety of theoretical dichotomies. An anthropocentric approach to society and environment is a human-centered approach, focusing on human life and valuing the natural world only in its support of humans. Traditionally, sociology has taken this approach, as society is traditionally defined as the human realm, the natural world being seen as that which is not human. Sociologists tend to look at the impact of environmental degradation on human well-being, but not at the contribution of social institutions and processes to that degradation (Cudworth 2003). Catton and Dunlap call this the 'human-exemptionalist' paradigm (1980). Anthropocentrism is opposed by "deep ecologists," who find intrinsic value in nature itself and argue that anthropocentrism treats the natural world as merely a means to human ends.

Catton and Dunlap call for a revision to the 'human-exemptionalist' ideology, a New Ecological Paradigm, which changes the approach of sociology to view humans as linked to other species with which they are competing for resources (1980). Peter Dickens draws on Catton and Dunlap's arguments to form a critical realist perspective, proposing that a new kind of social theory is needed, one that recognizes that "while humans have distinct characteristics and carry out major changes to nature they are (also) part of nature" (Dickens 1992).

The critical realist perspective in general, as taken by Dickens, will be compared with social constructionism in more depth in Chapter 6. Dickens' specific argument, however, represents an important point in the sociological treatment of the environment. The key point of his argument is the importance of breaking down of disciplinary boundaries, a shift away from

the insularity of individual scientific fields and toward a cross-field synthesis. He states that his position goes beyond an 'interdisciplinary' approach, rather it is "about compartmentalized divisions of intellectual labour being broken down and fundamentally new kinds of understanding emerging" (1992). Marx and Engels had approached this type of theory in the mid-nineteenth century, and Dickens uses their principal themes to further develop the ideas of Catton and Dunlap (1992). Indeed the themes of Marx and Engels as listed by Dickens do cross boundaries, tying people to their social situation as well as to the environment in which they are situated; perhaps Marx and Engels were writing before strict scientific disciplines were constructed. This cross-disciplinary synthesis is vital to the concept of sustainability, which is fundamentally concerned with the actions of a society within a supporting natural environment and its impacts on that environment.

Post-modern world, post-modern condition

Erika Cudworth describes modernism in sociology as an attempt "to explain, in non-religious rationalist terms, the dramatic processes of change that have come to be known as the transitions to modernity," changes such as the development of rational scientific thought, capitalism, industrialism, and the process of urbanization (2003). Postmodernism in sociology, she continues, is a type of theory as well as a conception of society that is characterized by fragmentation and uncertainty (2003). If the 'transitions to modernity' were thought of at the time as a new idealism, a transition to a new utopia facilitated by industry and technology, then the post-modern state is the aftermath of the crumbling of that ideal at the revelation of real social and environmental detriment wreaked by the industrial society. The crumbling leaves only fragments, and fragmentation can characterize everything in the post-modern world from urban neighborhoods split by highways to ecosystems divided by development to the distribution

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of information in bits and pieces through media. The individualist ethic espoused by capitalism may also be seen as a fragmentation; individual pursuits for individual gain provide little to the conception of society as a whole. Sociology in the post-modern era can be characterized by micro-concerns, turning away from large-scale social processes and to things like an individual's subjective experience (Cudworth 2003). Baudrillard (1983) characterizes contemporary society as composed of simulations, where everything is image and little or nothing is real. Facilitating the dispersal of these images is mass media, which provides a continuous stream of images to society. Individual images offer a fragment, or a simulation of a fragment, of some larger whole behind the image. A photograph, for example, captures a single limited image, ignorant of anything outside of the view of the camera and anything outside of the instant in time when the picture was taken. It is a single piece, and technology and media disperse millions of single pieces to society at large, which is left to assemble the pieces.

Alongside fragmentation comes homogenization; facilitated by mass transportation and mass communication, barriers between different parts of the world have been broken down and social cross-pollination allows formerly disparate societies and cultures to be more connected and influence each other more than any other time in history. The world is a collection of fragments, broken from their former structure and mixed up in a giant bowl, and the challenge for mankind, as always, is to adapt, to create a new synthesis of the fragments in the midst of rapid change that will provide direction for the future. Sustainability itself is one such synthesis—it is a problem that extends across social structures, across individual pursuits, across the globe, and its implementation requires a connectivity between these disparate parts to provide a vitalized future for humans.

CHAPTER 6:

SOCIAL CONSTRUCTIONISM AND CRITICAL REALISM

Two concepts from sociology are particularly relevant to the study of social relationship
to nature and to the integration of social issues into concepts of sustainability. Social
constructionism and critical realism are different ways of looking at the way society assimilates
and reproduces knowledge, and can provide insight into how a society sees and interacts with its
environment. Social constructionism holds that all knowledge is attained by society's
perception, and is thus not objectively real or true; it is relative to the society and culture in
which it is produced (Cudworth 2003). This social construction of knowledge is established
independently of reality and may or may not be related to reality. Realism, on the other hand, is
based on an objective reality which influences the knowledge of society (Dickens 1992).
Cudworth recognizes a dichotomy between the two areas of thought (2003), and there has been
considerable debate between proponents of the two (Dickens 1996). However, they are not
necessarily opposed to each other, as will be described below, and both can prove useful in
understanding the social implications of sustainability.

Social Constructionism

Idealism in social theory focuses on perceived reality rather than objective reality: reality
is seen as a mental construct. Social constructionism is a type of idealism in that it states that all
knowledge is socially constructed outside of reality. Social constructionism says nothing about
the existence of an objective reality, only that one cannot analyze a 'real' objective environment,
ie. one can only analyze different human perceptions of it. The social construction of, for
example, the environment, is construction in a conceptual sense, differentiated from material
construction of the environment which refers to physical constructs such as buildings or

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agricultural fields (Barry 1999). For purposes here, I will generally deal with the social

construction of nature, as this is its most important application in terms of understanding

sustainability. However, it can apply to the societal conceptualization of anything, as in the

social construction of risk or the social construction of the housing market.

   A useful example of the social construction of nature is Darwin's theory of evolution.

Originally, Darwin thought that evolution was not random and could occur in individuals

through environmental conditions, a process now known as adaptation that occurs in a different

time frame and cannot produce nearly the change in physiology that evolution can. Since

Darwin's time, better understanding of the age of the earth and genetics has changed

evolutionary theory to recognize that random gene mutation and inheritance of genes lead to

evolution over much greater time scales. Darwin's original theory was a social construction of

nature: based on his perception and prior knowledge, it was his (and later many other peoples')

understanding of a natural process, related to but not exactly representing reality. Nevertheless,

it was a very accurate construction, for the most part. The modern theory of evolution is also a

social construction, and parts of it may still not correspond to reality, but it has been supported so

often and disputed by scientists so little that we can be reasonably confident that it is close to

reality. This example illustrates the concept of social construction, but it is not representative of

most social construction; it is an example from the scientific field, and thus subject to numerous

rigorous experiments aimed at isolating a piece of knowledge so as to make it as indisputable as

possible. Social construction by society as a whole is generally not subjected to the same

experimental rigor and is much more susceptible to inconsistencies with and departures from

reality. It is influenced by prior knowledge or prior construction and new information,

information disseminated through other people, books, television, or any other part of a person's environment and assimilated through perception.

Klaus Eder (1996) presents a complex conceptualization of social constructionism. He argues the social construction of nature is antithetical to the natural constitution of society. The theory of natural constitution of society sees society as a part of the natural process of evolution, and thus society as a product of nature. The social constructionist view is the opposite: nature is constituted symbolically by actions of society. Eder's criticism of the natural constitution of society is that it ignores cultural factors, and he views culture as having dramatic effects on the way a society views nature. A key point in the evolution of culture was the change from hunter/gatherer to farmer/craftsman: nature had changed from providing actual objects to providing materials to make objects. In the hunter/gatherer culture, nature was provider, and in the farmer/craftsman culture, nature was resource, and therefore nature is socially created according to the conditions of culture. The use of nature as a resource and subsequent division of labor according to skills and abilities Eder calls the cognitive construction of nature. He identifies two other levels to constructionism: the normative construction of nature, which refers to the reproduction of constructions through societal norms, and the symbolic construction of nature, which is the fantasy construction often represented by romantic and enjoyable interpretations of nature. The specific manifestations of all three sides to the construction of nature are heavily influenced by cultural conditions.

Postmodern social theory is characterized by abandonment of grand, idealized solutions to social problems and abandonment of scientific inquiry as a means to reveal truth (Barry 1999). If modernism is seen as idealistic, postmodernism is the reaction to those ideals not being realized. It also represents a change of focus to the individual as opposed to society as a whole.

In this sense, the social constructionist view is postmodern in its rejection of the utility of objective reality and broadly applied social theory in favor of culture-specific theory. The postmodern age is also seen as a time when all is image and little is real, and this concept has implications on Eder's symbolic construction of nature and its reproduction. Hannigan (1995) notes that "most of us depend on the media to help make sense of the often bewildering daily deluge of information about environmental risks, technologies, and initiatives." Dissemination of images and information via media represents reproduction of symbolic constructions; these images are not perceived by the viewer in his or her direct environment, rather in symbolic (image) representations of another environment, allowing the viewer to form symbolic constructions of that other environment.

Though social constructionism does not draw from objective reality in its study of knowledge, it does not necessarily oppose it, either. Dickens (1996) points out a scale of constructionism, from weak to strong. Strong constructionists are close to idealists in their rejection of objective reality. Weak constructionists, on the other hand, accept objective reality, but do not consider it influential in the social construction of knowledge. The weak constructionist view is very close to the realist view.

Critical Realism

Realism accepts the idea of reality, holding that there exists an objective environment, whether we as a society understand it or not (Cudworth 2003). Realists also accept social constructions and that they may or may not reflect reality, but the acceptance of reality leads to the goal of assimilating that reality into knowledge. Constructionists who see reality as irrelevant to social construction have no such goal; knowledge is what it is. In an argument for realism, Dickens accepts that all knowledge is developed within human society, and therefore

"all knowledge must in some sense be a social construction" (1996). However, he holds that

"there are in fact structures and powers which generate phenomena independent of our

experience of and access to such objects…an object (and all its causal powers) does not need to

be conceived as 'real' for it to exist" (1992).

From a sociological standpoint, acceptance of a reality outside of perception has

implications for the acquisition and distribution of knowledge: because there is reality outside of

human construction, then academic fields other than sociology are equally capable of acquiring

knowledge. This position is not very radical, but other concepts of sociology such as idealism

and strong constructionism that have no room for objective reality focus single-mindedly on

insight from within and between human minds. In his critical realist argument, Dickens relies on

the biological and physical sciences to investigate the objective nature in which society exists,

and social science to explore a society's interaction with that objective environment. The

realism presented by Dickens is a method for organizing and stratifying knowledge from various

disciplines, such as biology and sociology, to create new connections and insights into the

relationship between society and nature. His call for the destruction of barriers separating

discrete academic disciplines in order for fundamentally new cooperation to occur and

fundamentally new understanding to emerge is a valuable contribution to the study of the

interdependence of society and nature.

Another point in Dickens' realist argument relevant to the interactions between society

and nature is his concept of causal power and causation. The causal power of an object is its

latent ability to cause an event, though the occurrence of that event also depends on contingent

factors specific to its place and time. Dickens attributes causal powers to objects in nature,

saying that the strength of a science such as modern biology is that it offers understanding of

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"underlying causal entities," and that understanding in turn contributes "to more abstract levels of understanding."

Synthesis

Social constructionism and critical realism, as was mentioned earlier, have been subject to a debate within sociology. Though they are distinct, they are not necessarily antithetical to each other. Social constructionism, in its 'weak' form, does not reject an objective environment, and Dickens (1996) states that critical realism is a form of realism that basically accepts social constructionism, but adds objective nature as a causal force. However, critical realism focuses on objective nature and how it affects society and social constructions. I would argue that social constructionism is equally insightful in that it focuses on construction itself, and construction independent of scientific knowledge provides equal insight into society-nature interactions. Society itself is inherently a part of nature, and as realism states, nature has causal power on developments within society. However, the social construction of nature determines a society's actions within and responses to nature, and sustainability is a social action in response to the limitations of objective nature.

Dickens' view of causation focuses on the causal powers of objects in nature. Taking Dickens' causation a step further, social constructions, institutions, and processes could also hold powers of causation aside from natural objects, creating a web of contextual relationships that determine an event. The two concepts are distinct but related, and can be used in conjunction with one another to provide greater understanding of interaction between society and nature then either could alone. Chapter seven will take the two concepts and use them together to investigate how social theory can contribute to the understanding of sustainability.

CHAPTER 7:

APPLYING SOCIAL THEORY TO SUSTAINABILITY

Environmental issues have had an increasing presence in sociology, as has been described, but the key point here is to assimilate the contributions of social theory into the concept and practice of sustainability. This assimilation serves to promote the kind of barrier-breaking that Dickens described, with sustainability as the beneficiary of ideas and methods contributed from a variety of fields, in this instance the field of sociology. The numerous definitions of sustainability nearly all include notions of social issues, but they have been largely ignored in in-depth analysis and application. It is the *conceptualization* of sustainability that social theory can help develop and change, and the concepts of social constructionism and critical realism can provide different perspectives on the problem and help promote understanding. Understanding as presented here is of a specific type and more limited than the 'understanding' described as a major issue regarding sustainability in chapter three. Here it is treated as understanding of the concept of sustainability, the causes and effects of unsustainability, and the underlying processes that create sustainable or unsustainable situations. This usage is narrower in scope but fits within the earlier concept of understanding, which refers to the understanding of cause and effect relationships within environmental, economic, and social process by society as a whole.

The conceptualization of sustainability is the aspect of the problem in which we are most interested at this point. The problem with conceptualization is lack of understanding, as sustainability is a vast and complex web of ideas, and the central goal here is to improve understanding or provide direction toward it. Drummond and Marsden consider understanding to be the key to pushing sustainability beyond its current impasse, stating that "more effective

action depends on the development of policies based on a deeper understanding of why and how the unsustainable comes about…the need is to focus on understanding what it is that causes unsustainable events and practices" (1999). The point in this paper is not about policy as a mechanism for change, but the deeper understanding of what causes unsustainability. Current approaches to preventing unsustainability generally focus on what Drummond and Marsden call 'contingent factors,' which are the specific conditions of apparently unsustainable actions, when instead they should be exploring treating general tendencies. Development of ecological 'fixes,' such as construction of a raingarden to capture stormwater runoff is an example of treating a specific outcome, whereas the focus should be on addressing the conditions within society that promote the tendency toward unsustainability by asking why stormwater tends to always be a problem.

One benefit of Dickens' argument to the evolution of sustainability as a concept is his call for cross-disciplinary synthesis of methods and ideas. This emphasis is not specifically a position of realism in general, but, moving logically, accepting that an object does not have to be perceived to be real inherently accepts insights from disciplines outside of social science. Sustainability is a cross-discipline, cross-society, cross-culture concept, and ecological problems that provoked its inception are worldwide. The problem itself permeates many disciplines, and sufficient understanding of the vast and complex nature of sustainability requires intense efforts of cooperation. The work of the physical sciences is the beginning—they have the ability to recognize and evaluate conditions and changes in the environment in which society exists, conditions which are the symptoms of the more complex problem. Social science and other non-physical disciplines have the capacity to formulate more abstract levels of understanding of the evolution of the institutions and practices of society and how that society interacts with its

environment, drawing from society as well as its objective environment to make complex connections of causality. The work of various research and academic disciplines serves to improve understanding of the conditions of sustainability. It is then left to translate understanding into action, through policy, education, and practice. A field such as landscape architecture is in a position to bridge this gap between academic thought and practice.

The second contribution of realist social theory to the conceptualization of sustainability is its attribution of causality to objective nature. The reliance on objective nature to understand social knowledge and process in the critical realist perspective allows that nature to be a causal force in observed societal effects. That is, objective nature has the power to cause events in society and thus is influential in the evolution of the society-nature relationship. Dickens treats this force of causality exclusively in terms of the natural world, but there is no reason why social constructions cannot also exert causal forces on society. By combining these two ideas, it can be seen that both real and constructed elements affect the social institutions and processes.

The value of the social constructionist perspective in regards to the conceptualization of sustainability lies in its assessment of the way nature is perceived by society. It is an ever-evolving, constantly changing perception, and it will continue to evolve and change as society changes nature and nature changes society. In terms of social, economic, or political action, this perception is more powerful than reality: economic and political structures are constructions of society and function within that society according to the terms of that society. The social construction of nature defines a society's relationship with nature and is the only version of nature capable of moving a society toward the goals of sustainability. If this position is used in conjunction with critical realism, then there exists an objective reality outside of perception that exerts causal forces on that society. Understanding remains the key: knowledge itself is a social

construction, but improved understanding of causal forces in the objective environment as well as of forces within the constructions of society changes the knowledge of society and thus can change the perception of that society, which is *the* vital process for effecting change in how that society interacts with its environment.

In terms of this societal interaction with environment, Drummond and Marsden (1999) view regulation theory as the central tool for promoting change within a capitalist system. Capitalism itself is a regime based on accumulation, specifically accumulation of capital, and "any regime of accumulation will always tend to be crisis prone and temporary" (1999). And while the concept of sustainability inherently needs some kind of equilibrium, capitalism, based on accumulation, cannot by itself provide equilibrium. Regulation theory attempts to provide a sort of balance in an inherently unbalanced process, and is used extensively in the current state of capitalism to address a number of unsustainable, though not environmentally speaking, processes within the system. Drummond and Marsden describe regulation theory as:

> founded on the premise that capitalist socio-economic formations tend to be crisis prone and inherently unsustainable over time and space… (and) the contradictions and crises which threaten them are addressed through strategies which seek to maintain the viability of the status quo.
>
> (1999)

An example application of regulation theory in capitalism is regulation of monopolies. Monopolies are an example of accumulation in pure capitalism, where one entity has obtained ownership and ability to distribute all of a particular good or service. A monopolizing entity has the ability to exploit the consumer, and in the United States' version of capitalism, monopolies are regulated to protect the consumer. The evolution of the capitalist mode of accumulation in contemporary society has developed a system of regulation which allows the pattern of mass production and consumption, placing value on capital and existing social structure while

marginalizing environmental and sustainability concerns.   Thus, in its current state, regulation theory:

> is primarily concerned with averting crises inherent in the capitalist
> dynamic… (and) inevitably tends to involve increasingly profound forms
> of exploitation. Thus it (capitalism) tends to condition development in
> ways which mean that unsustainable outcomes become the norm.
> (1999)

Issues of sustainability have been seen as outside of regulation, "understood as discrete, unembedded events which can be satisfactorily addressed in a direct manner" (1999). In social thought, however, Drummond and Marsden have recognized an emerging consensus that recognizes the need for a shift away from a focus on outcomes and toward consideration of the social processes and conditions that produce them. Developing a framework for sustainable development thus requires a closer relationship of sustainability goals with social theory. Capitalism itself is not opposed to modes of regulation aimed at achieving sustainable outcomes; regulation theory is designed to solve problems inherent in capitalism, and if unsustainability is established as a problem to the continued viability of the capitalist system, then there is no reason why regulation to this end is not possible.

   If progress in sustainability theory requires a deeper understanding of unsustainability and the causality behind it, then equal importance is given to deeper understanding of regulation, for the process by which it facilitates unsustainability as well as how it might be used to facilitate sustainable practice. Regulation defines rights, constraints, and powers in society which determine the practical expression of causality, and a sustainable agenda requires a shift of these practical causal forces from promoting unsustainable events to promoting sustainable ones. Regulation is not limited to policy: practically speaking, "modes of social regulation necessarily encompass elements which range from concrete institutional structures (such as legislation) to

intangible determinants of social action (such as values and norms of behavior)" (1999). It is a more complex system, and its most effective path may not be through legislation, but "through strategies which attempt to influence the institutions, values and norms which are embedded in all societies" (1999). Drummond and Marsden call for intense research into existing economic and social regulation in order to understand how institutional value change might be promoted. Understanding of the dynamics of regulation in the capitalist economy can provide insight to factors of causation and how to establish new forces of causation. The potential of landscape architecture to this end lies in the fact that it is a single discipline that straddles the divide between academic theory and practice. It has the potential, with relatively little 'red tape,' to quickly translate new forms of understanding to practical applications, creating new places that immediately become part of the fabric of society and can serve as a force of promoting understanding and 'regulating' the values of a society. Revising the conceptualization of sustainability within the field of landscape architecture will be the subject of the next section.

PART III: (RE)VISION OF SUSTAINABILITY

CHAPTER 8:

SOCIAL PROCESS AND SUSTAINABILITY: A CASE STUDY OF ENERGY

The term 'sustainability' generally carries behind it thoughts of energy and resource efficiency, pollution reduction, alternative energy sources, amelioration of the global warming process, and other similar concepts of promoting environmental health. Likewise, sustainable applications tend to focus on solving these issues. Little or no attention is given to the underlying social structure that facilitates unsustainable practice, to deeper fundamental forces of causation in the somewhat superficial treatment of environmental problems. The question being asked is not why we tend toward unsustainable practice but how we can find a way to sustain our current practices. The approaches of the current sustainability model are insufficient to address deeper social processes that result in unsustainable practice, and a modification is needed to the conceptualization of sustainability such that it recognizes social causal forces and develops solutions in a socially holistic manner.

Current Focus of Sustainability

Resource efficiency, and its more specific constituent energy efficiency, is perhaps the most important issue in the environmental aspect of the sustainability debate. Dependence on fossil fuels and the pollutants their burnings emit contribute to a variety of pollutions, increasing global entropy which in turn results in globally increasing temperatures, and a host of other environmentally detrimental processes. Humans use various other forms of energy, but none to the extent of fossil fuels, and none have the capacity to be used to the extent of fossil fuels. Energy use in this manner is unsustainable in two ways: fossil fuels are a limited stock resource that will eventually be depleted and the environmental degradation their burning instigates threatens the viability of human and other life on earth.

The current model of sustainability treats this problem centrally with two approaches: improving energy efficiency and finding alternative energy sources. The initiative to improve energy efficiency has created solutions such as vehicles with greater fuel economy, including gasoline/electric hybrids, and 'green building' guidelines which take steps to reduce energy waste such as improving insulation or using low-energy light fixtures and appliances. The search for alternative energy sources is partially a result of sustainability concerns and partially a result of concern over oil availability. Alternative energy sources include solar, hydroelectric, or nuclear, among many others. However, none of the alternative energy sources currently available have the capacity to replace fossil fuels, except nuclear, which is undesirable for its own specific reasons and has the same entropic implications as fossil fuels. Perhaps mankind will devise some new fuel source that will provide for the world's current energy hunger, but the law of entropy remains an issue, and we have not yet found an entropy-decreasing energy source that can be consumed at the rate that fossil fuels are currently consumed.

These measures to increase energy efficiency and find alternative sources are steps toward environmental sustainability. However, sustainability is more than merely environmental sustainability, and these measures are insufficient because they treat the effect, not the problem. They treat sustainability as a steady condition that can be attained within the social status quo, when sustainability is better conceived as process. Burning of fossil fuels is not the problem but the effect; the social structure which makes burning fossil fuels necessary for one to operate within society is the problem. As Eder puts it, "Rather than the farmer, it is the specific social form of natural division that forces farmers in the modern world into environmentally disastrous 'instrumental action' which is to blame for the environmental crisis" (1996). The farmer must practice large-scale agriculture with intense mechanization and heavy pesticide and water use if

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he is to compete with other farmers using these measures to increase production. A reformation

of the concept of sustainability is needed, one that recognizes the social basis of the problem and

forms solutions based on social, economic, and environmental considerations.

A Socially Holistic Sustainability: Sustainability as Process

A socially holistic sustainability recognizes the social underpinnings of the sustainability

problem. It recognizes society as a process rather than a state and sustainability as process rather

than state. More specifically, sustainability is a condition of the social process. The *social*

construction of nature, or society's perception of nature, drives the ways in which that society

interacts with nature and drives the evolution of that interaction over time. The evolution of the

society-nature relationship in turn produces *causal forces* within a society, or forces operating in

that society and created by that society that cause other events. These causal forces act to

produce *social events*. The construction-causal force-event continuum in action is social process.

To say that sustainability is a condition of social process is to say that social process can be

either sustainable or unsustainable. Sustainability is then a process which describes the actions

of a society through time.

If the *social construction* of nature is society's perception of nature and drives that

society's interaction with nature, then what is the social construction of nature in the case of

energy consumption? I would argue that the social construction of nature in this case is

characterized by disconnection. People in contemporary society are isolated from nature by

living in urban or suburban locations, working in buildings, and moving via the isolated cabin of

the automobile. Nature is seen as something 'out there,' separate from and unrelated to daily

life. Thus, on a personal level, people are disconnected from nature. But people do have an idea

of nature, a mental symbolization of what nature is, and in America, that symbolization is

frequently characterized by the wild or pastoral image. In terms of the landscape, that

symbolization of nature is entirely separate from the idea of the industrial or urban man-made

landscape, which is symbolized as 'not nature' (Thayer 1994). Because all landscapes, natural or

man-made, are a part of nature and all beings, human or other, are a part of nature, the social

construction of nature in this sense is again characterized by disconnection, this time from the

reality of the relationship between the works of man and nature. Although society thinks of

nature in symbols of wild or pastoral images, in terms of energy consumption, it acts as if nature

were the infinite provider, two separate and vastly different constructions of nature acting

simultaneously.

     Causal force is the action-producing force operating within society created by the

conditions of social construction. In other words, the social construction of nature drives

society's interaction with nature by producing causal forces which in turn produce action.

Causal forces might also be considered social norms, and in the case of energy consumption, at

least three social norms are acting: the norm of energy consumption, the norm of movement over

long distances, and the norm of alienation. The norm of energy consumption covers both direct

energy consumption in the form of gasoline or electricity and indirect energy consumption in the

form of the embodied energy in manufactured goods. The norm of movement over long

distances is a separate but related norm, referring to automobile or airplane travel, or to terrestrial

and oceanic shipping operations. Regarding the automobile, society has evolved to the point that

not only is it 'normal' to spend large amounts of time in the car commuting or running errands, it

is often spatially infeasible to *not* spend large amounts of time in the car. The first two norms

involved direct relationships with resources, whereas the third norm of alienation refers to a

personal condition. Though not directly related to energy use, alienation affects relationships

within a society and is just as vital a causal force as norms of resource consumption. It has evolved through capitalism's promotion of individual pursuit, the breakdown of community structure and development of more isolated/ing houses, and proliferation of automobiles to the point that one person drives one car. It applies to social alienation from other people as well as natural alienation in the form of the social construction of disconnection described previously.

Social events are the manifestation of causal forces, or the actions of a society in response to causal forces. However, the immediate act of a social event is set into action by contingent factors. The action of driving an automobile is a social event in response to the causal force, or social norm, of automobile travel plus the contingent factor of needing a loaf of bread. The act of watering a lawn is a social event in response to the social norm of lawn watering plus the contingent factor of lack of rain. The traditional approach to sustainability treats only the events. Sustainability in a socially holistic sense is a descriptor of social process; sustainable social process is contingent on social constructions of nature and thus causal forces that reflect sustainable ethics and produce sustainable social events. The evolution of society over time involves changes in social constructions, which in turn effect changes in causal forces and social events. Thus promotion of sustainability in the continued evolution of society involves promotion of sustainable sensibility at the social construction level in order to change processes at the level that directly affects environment.

The social construction-causal force-event continuum is diagrammed in Figure 1. Objective nature and the social construction of nature produce causal forces, which, depending on contingent factors, in turn produce events. The critical realist perspective gives power of causation to objective nature: it has the ability to cause events either in nature or in society. An example of causal force of nature is the ability of a seed to germinate. Independent of human

action, if a seed falls onto good soil and there is sufficient rainfall, then the seed will germinate. Fertile soil and water are in this case contingent factors that combine with the causal force of the seed to produce the event of germination. Adding human influence to this process, the seed may be planted and watered to produce germination. The same event occurs, but in this case it is agriculture. Contributing to this simple agricultural process is a social construction of nature that views nature as a provider for human needs, and a view of nature as changeable to better meet human needs. In this instance, both objective nature and the social construction of nature produce causal forces that result in the germination of the seed in the context of an agricultural society.
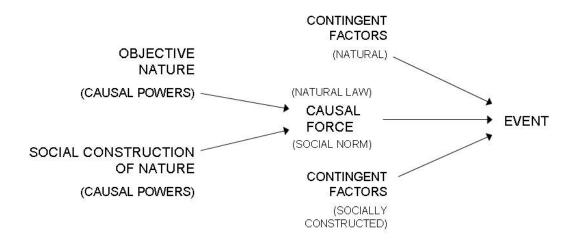

Figure 1

Figure 2 is an elaboration on Figure 1, showing two feedback loops. Events can have environmental impacts which affect the conditions of objective nature as well as social impacts that change the social construction of nature. In the example of the automobile described previously, the environmental impact is emission of gases from combustion. The change in objective nature is the change in chemical composition of the atmosphere. Objective nature is defined by natural law, whereas the social construction of nature is defined by society. This construction determines social norms, which in turn serve as the causal forces of social interaction with nature. Millions of events repeated millions of times contribute to the evolution of a complex social construction of nature.
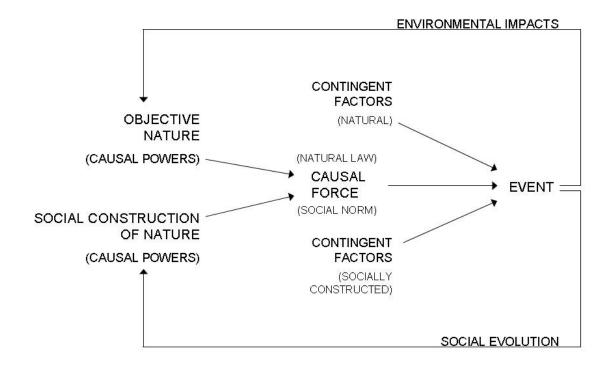

Figure 2

The 'event' in the diagram includes social and natural events, and it is perception of these events that influence the social construction of nature. Thus objective nature also influences the social construction of nature, but only through observable phenomena. Returning to the example of the automobile, a social construction that viewed nature as an exploitable bank of resources contributed to the development of the automobile in the context industrialization. Over time, increasing availability and use of the automobile contributed to the social norm of automobile use as a primary means of transportation. This social norm of automobile use became a force behind development patterns and zoning and facilitated greater separation, or alienation, from nature as well as from other humans. The evolution of the social view and use of nature over long periods of time has created social constructions, social norms, and events that are unsustainable. The goal of sustainability is to look at the entire process and influence the evolution of the social construction of nature to move it closer and merge it with objective nature, such that social process reflects a unity of society and nature.

Though promotion of energy efficiency and the search for alternative energy sources have been the primary causes of 'sustainability' to date to the purpose of reducing energy consumption, there have been other initiatives and actions which do involve deeper social process change, change in the fundamental actions of people in response to unsustainable practice. Alternative transportation is one such measure. Deliberately relinquishing the freedom and convenience of the personal automobile in favor of less convenient public or mass transportation reflects a deeper understanding of natural processes and their relation to the activities of man than does the I'm here/Nature's there construction. Perhaps the environment of the commuter train does not bring one physically closer to a 'natural' world, but it reflects an understanding of interacting social and natural processes to the extent of *changing behavior*. It is

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not finding a way to maintain the status quo; it is changing the status quo for a larger goal.

Moralistic reduction of energy consumption also reflects a more connected construction of

nature. Local farming, by circumventing transportation of food over long distances can also be

indicative of a deeper understanding of nature. These processes begin to reflect a more

sustainable construction of nature. They begin to change social norms, and they begin to change

social process. This type of change is the ultimate goal of sustainability. With the help of

insights from this case study, I will turn to applying this socially holistic view of sustainability as

a process to landscape architecture.

CHAPTER 9:

A NEW SUSTAINABILITY FOR LANDSCAPE ARCHITECTURE

Perhaps the most influential work in the field of landscape architecture regarding a movement towards sustainability is Ian McHarg's *Design with Nature* (1992, orig. pub. 1969). McHarg certainly dealt with social issues; social separation from nature, exploitation of nature, and dire conditions of industrial city life were the bases for his arguments. However, in a historical context, he wrote before 'sustainability' was a term, when industrialization was still largely unchecked by environmental limitations, and anthropocentrism was the dominant approach to environmental interaction. Change for the benefit of society was not radical; change for the benefit of nature was. Thus his major contribution was an awareness of nature and natural process, and applications of his methods have focused on natural process. However, in the time since the publication of *Design with Nature*, environment and nature have come to be valued for their own sakes. Natural process is valued for natural process, and the environmentalist today values environment free from human influence. But integration of natural process into society, an assumption but not a focus of McHarg, is a requirement of sustainability. Nature and society are one, and effective sustainability requires that they be valued as one.

Sustainability is basically a social problem. It is *society* that we are trying to sustain, the society that contains all human life. Ecological systems are an important part of sustainability, but the sustainability of ecological systems is a means to sustainability of society, not an end in itself. Ecological systems are the physical support system for humanity and society, and thus their viability is vital to the survival of society. The sustainable society is in harmony with its

ecological support system, understanding society's impacts on nature and nature's impacts on society.

The unsustainable society is then in a state of disharmony with nature. This disharmony is produced from a lack of understanding of the complex interconnections between society and nature. The unsustainable society generally views nature and society as two separate and independent entities. Misunderstanding of societal-natural interconnections leads to exploitation of nature, as it sees society as independent from nature.

The key to the misunderstanding of the society-nature relationship is the social construction of nature. The dominant American construction of nature is dichotomous: the ideal of nature, held in the pastoral or wild landscape, is largely a symbol and considered separate from the residential, urban, industrial, or technological landscape which is not seen as a part of nature at all (Thayer 1994). This ideal has been passed down from the English picturesque landscape and morphed to include the (formerly) vast American wilderness. However, as Thayer points out, America is not so wild anymore; the landscape has changed with industrial and technological development, and wilderness has become more of a symbol than a reality. But the ideal remains: nature is still considered wilderness, separate and independent of the built environment. Nature is considered 'out there,' as opposed to 'here,' which is the man-made landscapes of everyday life. This separation does not recognize that man, and all creations of man, are a part of nature, leading to a misunderstanding of the interconnectedness of society and nature, of society influencing nature and nature influencing society. There is then an ideal construction of nature, defined by idealized, largely symbolic vision of a wild nature, and an actual construction of nature, defined by human action, though this actual construction of nature is not considered 'nature' at all by society. The actual construction of nature leads to a

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relationship of exploitation, where the resources of nature are exploited to allow actions of society. This exploitation underlines the dichotomy in the American construction of nature: our idealized vision of nature is at odds with our actions within nature. This dichotomy is exacerbated by the spatial arrangement of society; the location of industry in areas separate from people's residences and landscapes of everyday life make them largely invisible. Movement of industry overseas makes them even more invisible.

A new conceptualization of sustainability recognizes the social meaning of sustainability and complex society-nature interconnections, with the goal of supporting a healthy, balanced relationship between society and nature. Society is never constant, it is constantly changing. Nature also is never constant, it is constantly changing. The relationship between the two is therefore constantly evolving. It is a process, it is a dynamic relationship, and sustainability must also be conceptualized as a process, a *dynamic sustainability*. Sustainability is never a state to be attained, rather it is a path on which to travel, and to continue on that path means constant evaluation of the movement along the path. Dynamic sustainability can revise our conceptualization of sustainability through inclusion of social process and provide new insights and connections that help achieve a balanced society-nature relationship. Dynamic sustainability integrates concepts of society into the concepts of nature contained in traditional sustainability, so that society might integrate concepts of nature into itself. To achieve socio-natural integration, dynamic sustainability embraces four goals: social meaning, natural meaning, participation, and change.

Social Meaning

The landscape is laden with social meaning, both intentional and unintentional. An old Indian mound can tell the story of Native American society, and it can tell the story of how that

society ended. It can also reveal the history of the land since Native American time and show differences between values and beliefs of Native American society and present society. Duncan and Duncan (2003) describe another example of a landscape of social meaning in a case study of a picturesque town in New York. The pastoral, well-maintained aesthetic of the landscape reveals the values of the community, but hidden in the landscape are also the human costs of the Latino day laborers who maintain the landscape, their social situation in a nearby community, and their social exclusion from their place of labor. There can also be intentional social meaning in the landscape, as in an outdoor work of art that makes a statement or stimulates discussion about social issues. The idea of 'democratic space' refers to places where free expression of ideas and discussion about those ideas is possible and encouraged. In its simplest form, democratic space is simply public space, and could be as simple as a street corner. Beth Diamond (2004) combines these last two concepts in her description of an assignment to a landscape architecture class to construct socially provocative works of art in the public space of the university campus. In her analysis of the student body's intense reaction to the works, she said, "the students seemed hungry for engagement and all they apparently needed was a catalyst to open up a forum for discourse." This example shows the positive potential of democratic space: to openly exchange ideas and perhaps influence perception. Issues within society are just as important to sustainability as issues of natural process, because society is ultimately a part of natural process. Social meaning in the landscape reveals social structures and processes, opening them up to society and promoting a reflection on these issues. Healthy social interaction of tolerance and understanding in turn opens society up to healthy natural process with the understanding that other people are not only affected by direct action, such as oppression or

prejudice, but also by indirect action such as social exclusion or environmental degradation. Social meaning opens a society to understanding of complex causal relationships.

Dynamic sustainability embraces positive social meaning because it reveals hidden social structures and processes. It promotes the exchange of ideas, understanding, tolerance, and reflection. It creates social interaction within an otherwise socially isolated environment.

Natural Meaning

Natural meaning encompasses both ecological integrity and ecological relationships between humans and their environment. Ecological integrity covers a range of environmentally friendly practices with emphasis on ecological function, reduced energy use, or remediation of degraded sites. In the practice of sustainability, much progress has been made in the treatment of environmentally degraded sites and the creation of ecologically sound new sites. Insights provided by the physical sciences have greatly improved understanding of the workings of real, objective nature, and designers have translated that knowledge into ecologically sustainable design. Protection of natural process has been the legacy of sustainability in landscape architecture to date. Problems with stormwater runoff in urban areas are treated with bioswales, raingardens, retention ponds, constructed wetlands, or pervious pavements. These measures serve to reproduce or mimic natural hydrologic cycles. Protection of open water is achieved through forested buffers around open water or stream restoration. Energy and water conservation is addressed with plantings with low water requirements, reducing mowed areas, or using low-energy lighting. These examples are not at all exhaustive, but they exhibit the focus of sustainability to date: reproducing natural process. They are immensely valuable in themselves, and to continue the progress in ecological integrity, the lines of communication between scientific and creative fields must remain open as there is much about the natural world that

remains unknown. However, from a sustainability standpoint, these processes must be integrated into society, to reveal them to society and increase awareness of society as a part of nature. Natural meaning is the translation of natural process into the social construction of nature. Relationships between natural ecology and human society as revealed in the landscape hold natural meaning because they can influence social constructions and perceptions of nature and the relationship between society and nature. In *Gray World, Green Heart*, Robert Thayer (1994) speaks extensively about the American relationship with nature and the difference between the ideal and the real in that relationship. He identifies the pastoral landscape as the American ideal of nature—traceable back to English landscape design and through Jeffersonian America. Real nature, however, is increasingly covered by the industrial or technological landscape, and the scenic landscape is disappearing. The pastoral ideal ignores technological and industrial landscapes, and, because the workings of man are inherently a part of nature, creates a construction of nature that is not founded in reality. Landscapes of natural meaning reveal inconsistencies between idealized nature and real nature, as well as reveal the place of man-made landscapes in nature. Eco-revelatory design is one movement which seeks to reveal natural process to society. Julie Bargmann's work with acid mine drainage is an example of design which serves the natural purpose of remediating a degraded site but also the social purpose of revealing the process of environmental degradation and the natural process of healing. It is important to note that natural meaning is not only held in 'natural' areas, but also in urban areas. Urban areas are just as much a part of natural process as unbuilt areas, and it is important to reveal the processes at work there too. Revelation of altered or degraded natural process can be just, if not more, naturally meaningful than ecologically restored or intact sites. Additionally, it is important to bring natural meaning to the people, not to require people to go out and find it.

Natural meaning in the landscape of everyday life promote better understanding of the unity of society and nature, and the impacts of social action on nature.

Dynamic sustainability embraces natural meaning because it promotes healthy ecosystems and interconnections between ecosystems. It is aware of its natural and social context. It reveals structures and processes of natural systems to a society otherwise uninformed about the natural world. It promotes accurate social constructions of nature by revealing natural processes and the human interconnections with them.

Participation

Participation in the landscape involves physically being in the landscape and mentally, physically, or spiritually interacting with it. Classical formal styles of landscape design conceive of themselves as whole, unified, stand-alone constructs, to which nothing can be added and from which nothing can be taken without destroying the whole. These designs discourage participation because they are complete without the user; they are intended to be seen only. Jusuck Koh (1988) presents a different type of aesthetic, termed 'ecological aesthetic,' which embraces an *inclusive unity* that invites participation. Whereas classical aesthetics promote unity within the design itself, ecological aesthetics promote unity with people and unity with context, inviting participation by making people feel like they belong. The traditional pastoral aesthetic is characterized by its scale of vast expanses of rolling hills or rugged mountains that must be seen from a distance to be appreciated. This concept of distant view creates a disconnection from the natural world that supports us. The distance and separation of humans from ecological underpinnings present in the American idealization of nature and division of 'man-made' landscapes from 'natural' ones is exacerbated by the physical distance implicit in the pastoral aesthetic. By providing an experience where people are *part* of the landscape, participatory

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designs attempt to re-form the bond between humans and humans or humans and environment that is missing from exclusively unified designs, which promote observation rather than interaction, and from contemporary society, where many people spend most of their time out of doors within the isolated, constructed confines of the automobile. Recreational areas are the simplest forms of participatory design: they are designed for activity. But this participation is generally of a passive form, more like use than participation. There might also be participation of a more active form, or interaction. The design itself could be changeable by the user, with moveable objects or allowing left objects. A plaza with moveable chairs or a memorial with left mementos are examples of interaction with design. Graffiti is another example, though against the designer's intentions, but the designer's intentions to not have to encompass all forms of participation or meaning. Graffiti can hold great social meaning, expressing social conditions through participation with the landscape.

Dynamic sustainability embraces participation because it promotes interaction with nature and with society. It reveals interconnections within society, within nature, and between the two. It makes users recognize that they are integral parts of society and of nature.

Change

The landscape of change recognizes and accepts social and natural process and remains relevant as these processes continue. The unchanging landscape represents holding on to an ideal state from some time in the past; it does not accept social change and thus cannot interact with a changing society. A simple example of an element of change in the landscape is the deciduous tree, which appears different in each season and reflects natural cyclical change. In addition to cyclical change, there is a slower change in society that might be termed evolutionary (thought not in the Darwinian sense). Using the same example, the growth and death of a tree

would be a slower change, and a dead standing tree in the landscape would reflect that change.

A third type of change is instant change, and it could be reflected in the cutting of a tree or a fallen limb. These three types of change are all natural in society, and the changing landscape forms a connection with society that allows it to hold meaning. Ann Spirn (1988) describes an aesthetic vision similar to that of Koh, one that "celebrates motion and change, that encompasses dynamic processes, rather than static objects, and that embraces multiple, rather than single visions." A dynamic landscape of change reflects a society in process and interacts with a society in process, thus becoming a part of a society in process. A static landscape represents clinging to an ideal state whose time has passed, a fictive element that remains a part of the social construction of nature and the social construction of society itself. Participatory design can result in change; an historic site in a contemporary context can reveal change; maturation of plants can show change; revealing the history of a site through design can represent change. Design that welcomes change welcomes process, recognizing society as process, nature as process, and sustainability as process. It understands that process means changing needs, changing values, and changing issues.

Dynamic sustainability embraces change because it reflects the dynamic nature of society, the dynamic nature of nature, and the dynamic nature of their interaction. It accepts change as natural and helps users understand change within their own lives.

Dynamic Sustainability

The key to dynamic sustainability is the social construction of nature, the social construction of society itself, and the social construction of the relationship between the two. Social construction might be simply described as perception or understanding, and the goal of dynamic sustainability is to influence perception and understanding by making the user aware of

the potential difference between perception and reality. The role of landscape design in this process is revelation: dynamically sustainable landscapes hold meaning, encourage participation to disperse that meaning, and change over time to remain relevant to society and continue an open dialogue with that society, with the intent of revealing new ideas. As social interaction is a vital part of the dynamically sustainable landscape, the landscape architect must bring the landscape to the people, as opposed to the people to the landscape, in order to integrate the landscape into society. It is important to note here that 'landscape' refers to natural or built environments; both are a part of nature and a part of society. The dynamically sustainable landscape opens a dialogue between society and its environment, natural or built, and a dialogue within society.

Though the focus here has been on dynamic sustainability in the landscape, it might also be applied in other arenas. In the built environment fields, dynamic sustainability applies equally to architecture and engineering. Its fundamental ideas relating to the societal relationship with nature have relevance to any person living in society or the environment. Its goal remains the same as any sustainability: to provide for the continued vitality of society. In terms of Drummond and Marsden's regulation theory, it provides a new understanding that in turn helps understand the implications of an accumulative economic system and its potential impacts on society.

FINAL THOUGHTS

Robert Thayer, in his commentary on the rapidly changing technological landscape and its relation to the natural world and to American society and perception, states that the ultimate goal of sustainable landscapes

> is the transformation of *culture*—the taming of technology, the emergence
> of a new environmental ethic, a new measure of life quality, and a
> substantially broadened sense of *community* including not only humans,
> but all life….Therefore, it is important to look at sustainable landscapes in
> terms of the nature and degree of social change they imply.
> (1994)

Ultimately sustainability *is* about culture and society. It is a social concept: it is society that is being sustained, and environmental issues are relative only because it is nature that supports society. Furthermore, it is society itself that has caused *un*sustainability, and the transition to sustainability requires modification to the structure of that society. Nearly all of the publications that address sustainability in detail include some commentary on the social aspect of the issue. The Brundtland report was in large part dedicated to social issues, and covered them in depth. However, since then, social issues seem to have been lost behind environmental issues, perhaps because it is the environmental sector that is suffering the most immediate detriment and the environmentalist contingent has been the first to pick up the idea. However, the loss of social issues in the sustainability debate may also be attributable to the fact that isolated degraded environments can be remediated in large part with existing technology and within existing society, whereas changing social structure is a much more difficult process. Sustainability remains a virtuous concept, but for it to continue to survive and thrive, it must fundamentally integrate deep understanding of social conditions and processes with knowledge of the ecological systems they affect. The ultimate success of sustainability will be measured by its ability to reconcile these two seemingly separate but actually deeply interconnected sides of our world.

None of the concepts that have been presented in this paper are new. My goal was instead to provide new connections between concepts to provide insight into the concepts themselves as well as interconnections between them.   I have followed Peter Dickens' call for "compartmentalized divisions of intellectual labour being broken down," and hopefully "fundamentally new kinds of understanding" (1994) will occur. I originally intended to form a critique of sustainability, and I did in a very specific way, with the criticism that it is an incomplete concept without a deep inclusion of social concerns. Ideas from social theory have helped provide a new conceptualization of sustainability, that of dynamic sustainability.

Sustainability is a concept that is not bounded by profession or discipline; it is a society-wide problem that requires society-wide participation and cooperation to reach its goals. Analogous to Dickens' breaking down of barriers between academic disciplines, the field of landscape architecture is in a unique position to break down barriers between academic thought and practical application. In the application of sustainability, it has the potential to take academic thought and knowledge and, through creative expression and design, transform it into practice, integrating it into society in meaningful ways. Landscape architecture represents a liaison between the scientific exploration of nature and the societal perception of nature, and thus provides opportunity to influence the evolution of the social construction of nature.

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