Chapter 2
The Transition to Sustainable Living and Practice
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Return to the Villages
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This paper borrows from the "greening" of world-systems research to argue that we've come to another crises point for progressive societies. Now at a global level, the momentum of human societies takes them beyond the carrying capacities of natural ecologies and the physical environment. Across history, great civilizations fall back to village society as resource consumption, environmental damage and disease overcome imperial power and innovation. Historically, similar strategies to prevent decline are adopted, but loyalty to ideology and the power of elites combine to prevent radical changes.

The Epic of Gilgamesh is among the oldest stories remembered. One of its tales, "Journey to the Forests of Cedar," illustrates early accounts of forest depletion (George 1999, pp. 30-47). For timber to expand the city of Uruk where he rules, Gilgamesh kills Humbaba, the forest guardian, who protected a great forest. Gilgamesh and his followers then stripped the forest. The gods warned Gilgamesh in dreams they sent to him on his forest journey that floods and droughts would follow his killing of Humbaba and the cutting of the cedar forests, and so it happened.

The mythological tale of Gilgamesh parallels the archaeological records left by ancient Mesopotamian societies which show the steady march from abundance to rationing to the disappearance of forestland and the exhortations and policies that attempted to stem the decline. To meet consumption demands and to repair and expand irrigation canals, Sumerian rulers from the Third (and greatest) Dynasty of Ur in the late 3rd millennium BC sent their armies north as far as southern Turkey to conquer kingdoms and woodlands (Oppenheim 1955).

As deforestation led to flooding and soil salinization, grain production in Sumeria diminished considerably and Sumerian supremacy was replaced by northern kingdoms like Babylonia which became the dominant Mesopotamian power (Jacobsen 1982, p. 74). Following his Sumerian predecessors, famed Babylonian ruler, Hammurabi, established strict rules to ration wood consumption and wrote of the woodland, "[things] *are very pressing in the opinion of the palace*" as depletion began to affect his society in the 2nd millennium BC (Driver 1924 pp.11-12.). Despite the efforts by rulers and technicians,

the loss of forestland destroyed watersheds and accelerated the salinization of the soil and, by 1700 BC, the area had become a land of poor farmers and villages.

Societies, most now extinct, that relied on a combination of sustainable farming practices and hunting and gathering, seemed capable of lasting almost indefinitely. Some survived thousands of years in isolation or in limited association with neighbors until more aggressive and acquisitive societies brought them into contact, and thus competition, with the larger outside world. The contact and competition led to their dissolution.

How did sustainable societies managed to survive for thousands of years without destroying their local and regional environments? Every human society exploits the physical and natural environment around it. Even the smallest hunting and gathering band can deplete local resources and profoundly change local ecologies. Doubtless, a painful iteration of rises and declines was experienced as generations learned how to protect their local resources within the natural variations of the physical environments and ecologies they shared. From the Amazon Basin to the African Sahel to the New Guinea highlands to pre-Columbian California, sustainable societies established themselves and adopted practices that allowed generation after generation to survive.

Sustainable societies are those that exhibit behaviors that sharply reduce or prevent accumulative damage to the surrounding physical and biological environments. While all human societies make alterations, sustainable societies produce relatively little alteration over long periods of time and, thus allow societies and ecologies to adjust with minimal damage to each. Sustainable behaviors include strict limitations on population growth, restrictions on technological development, closed economy or restricted terms of trade, and the perpetuation of society at the expense of personal gain (Howarth, 2007).

In contrast, arising from and in close proximity to sustainable societies, unsustainable but spectacularly successful societies, often noted in history as empires, rose to prominence and then fell. Unsustainable societies exhibit rapid, unchecked population growth, pursuit of material goods, an accelerating trend toward transforming natural resources into social resources, and the pursuit of technology to increase productivity (Coates and Leahy, 2006). Their governments pursue power aggressively, and they tend to exhaust local, and then regional, resources rapidly. Partly driven by the

need for resource acquisition, and partly by their hierarchical governing systems, they develop sophisticated war technology and conquer their neighbors.

As they felt the consequences of scarcity and environmental destruction, they accelerated their aggressive, often successful, approaches to expanded resource acquisition and a more efficient use of the declining resource base. However, nearly every empire fell directly or indirectly due to their reliance on resource depletion and the strategies that they used to address resource depletion. "*Falling*" as used here is a socioeconomic and political term. The society realizes a sharp loss of social, economic and political complexity often referred to by the term, *dark age* (Chew 2001, 9-10)

Why do progressive societies fail to learn sustainable practices, and thus ensure their own decline? The world's empires recognized their environmental dilemma. Historical accounts often read like modern political commentary on the subject of environmental problems. I posit two primary reasons why progressive societies fail to resolve their environmental contradictions; ideological loyalty and elite intransigence. But political history is also a story of folly and hubris or as Barbara Tuchman dryly titled her commentary on history and government, "The Pursuit of Policy Contrary to Self-Interest" (Tuchman 1984).

Much of human innovation is directly tied to efforts to increase productivity in the face of population and resource pressure. When faced with declines, we assume that our innovative prowess will reassert itself and solve the problem. But our capacity for using resources and degrading the environment surpasses our ability to implement alternative strategies. It's here that our faith in ideologies and the institutionalization of powerful elites who fear the loss of power paralyze our ability to make necessary changes, and we fall. The empire becomes a runaway train unable to slow or significantly alter its path until it can no longer power itself and crashes with dramatic effect.

Do sustainable societies have anything to teach unsustainable societies that prevent environmental destruction without ending their inventiveness and material progress? No obvious lessons appear. Among many tribal people, no economic or social return to individual innovation exists, except within very narrow and specific boundaries. The close-knit bonds of tribal and village life dissuade innovation and their decentralized political and economic systems prevent the pooling of capital or labor needed for major

projects of any kind. In the case of war, that's probably a good thing. In the case of medicine, it probably isn't.

This pattern of static, low-growth sustainable societies or innovative, high-growth unsustainable societies occurs in every part of the world. Jungles and deserts hid for centuries the remains of once grand empires that fell. Small village societies reside where once their ancestors built large societies with imperial ambitions. Globalization advanced so swiftly over the past century that the division of human society into unsustainable and sustainable may be hidden from obvious view. The cross-fertilization of ideologies, techniques of production and inventiveness allowed a worldwide unsustainable empire based on capitalism to rise. But, despite its impressive scope and breadth, capitalism cannot address the environmental and ecological crises that it spawned any more than its ideological predecessors.

What is outside the scope of this limited inquiry is the question of why low-growth sustainable societies transform into high-growth unsustainable societies? As always, key questions in historical inquiry are why did an event take place when it did instead of some other time, and why did it occur in one place and not another. Recently, Jared Diamond has sought to answer these questions by relying on environmental conditions. His argument follows from a long literature, primarily anthropological, that explains the broad dimensions of human cultures using local or regional physical environmental and ecological circumstances. Some societies are prone to aggregation and increased productivity because of favorable topographies and climate, while some societies remain static due to unfavorable ones.

Diamond's argument resonates if for no other reason than it provides one theoretical end to the vast evanescent string ball that represents the complexities of human society. We may not be able to unravel the whole string from the work of cultural geographers but, like untangling a gnarled ball of fishing line, having one end of the line to work with gives us a real advantage. Human societies cycle through periods of growth and decline; cultural geographers' grip on one end of the string provides a reoccurring insight.

Ferocious Traditionalism

For thousands of years, the New Guinea highlands have been the site of successful and sustainable human society. New Guinea farmland was terraced, drained, fenced, and intensively managed but continued to support a large population. Complex drainage systems arose as early as 9000 years ago. Individual New Guinea farmers possess a tremendous knowledge of plants and demonstrate wonderful skills as farmers and gardeners. But they live in an area with few broad plains for farming, almost all the land available to them is steep hillsides divided by impassable ravines.

With no centralized control of food production and land ownership, New Guinea highland society had no central political organization, and made little cultural or material progress outside a constant learning about domestic food plants. Each village had a governing culture that relied heavily on consensus, tradition, and the influence of charismatic individuals to make decisions. The isolation of villages produced hundreds of languages as New Guinea farmers could not travel easily from village to village. Outside of food production, material inventiveness wasn't encouraged, and, if successful, wasn't distributed. It was a society frozen in time, but capable of surviving indefinitely.

Villages are the basic government and economic unit of human society. With rare exceptions of true nomadic hunter-gatherers like the Ik of Uganda or some of the San People (Bushmen) in southern Africa, villages are the starting point for human society. Villages are the minimal level of complexity required for an enduring culture and all the diverse political complexities of human society arose from villages. When we fall, we fall into villages, and when we rise, we rise from villages. But successful village life places powerful behavioral demands on people and visits harsh punishments on transgressors (see Schlitz 2007 for a view of European village life in 1255 AD).

Despite the romanticization of so-called indigenous peoples, first-hand reports refer continuously to the violence, intra and intertribal conflict, and the propensity of tribal members to pack up and move to other tribes as result of real or imagined slights. Quite often, indigenous village life more resembles Shirley Jackson's 1948 short story, *The Lottery*, and less the utopian Garden of Eden posited by some postindustrial commentators. Within the secure embrace of tribal and clan membership exists the demanding, often stultifying, mores and expectations of unchanging cultures. Much of these culture traditions were survival strategies—behaviors that protected local resources

from depletion and stemmed population increases. Existing for thousands of years within a local ecosystem requires a strict control of economic behavior and procreation. Ferocious traditionalism is the price that societies paid for sustainability.

Among sustainable societies, a constant requirement exists to limit population growth. Even a very small annual increase in population numbers results in terrible destruction of local resources. An increase of 1% doubles a population in 72 years. Sustainable societies existed for thousands of years; therefore they must have controlled population growth quite strictly.

Strict controls over reproduction quickly translate into strict controls over the reproductive behavior of women. Population growth turns on the number of fertile women, and the rate at which they give birth. As a result of the need to control population numbers, women are typically devalued. They are considered subordinate to, or property of, male patriarchs. Their menstrual blood is considered unclean, even poisonous. A regular and often fatal danger for women is the accusation of witchcraft. Strict rules govern sexual activity, including efforts to delay sexual activity by young people. Abortion and infanticide are practiced with frequency, with infanticide more often visited on girls than boys.

All these practices are found among the highland peoples of New Guinea who adopted strict rules to govern the sexual behavior of men and women. Various tribes and clans regard menstrual blood as poisonous to men, and refer to sexual organs as something "bad" (Martin and Voorhies 1975, pp. 269-272). Among some tribes, sex was taboo for over 200 days each year, and women accused and killed for witchcraft.

As with many peoples whose protein supply is limited and whose pressure to limit reproduction is profound, some New Guinea tribes practiced cannibalism. The Australian government, which governed New Guinea Papua until 1975, banned cannibalism in 1959 as *kuru*, a prion disease associated with eating human brains, became rampant. Accounts from observers and scientists working in 19th Century Australia recorded consistent patterns of infanticide and cannibalism. Adulterous women were subject to cannibalistic killing, and children, particularly girls, were also the victims of cannibalistic killing. Palmerston, in his 1887 dispatches, describes coming upon cannibalistic feasts and noting, "*The hideous habit of murdering and eating little girls is*

carried on far more in these jungles than in any other part of the colonies, which accounts for the female children being so scarce"(Palmerston, 1893).

Even where cannibalism is not prevalent, male warfare and female infanticide strongly influence demographics. The ratio of boys to girls is 150:100 in the Yanomamo villages located in the most intensive tribal war zones along the Venezuela-Brazil border (Chagnon 1974, p. 159). Chagnon writes, "*The data are consistent with the argument that intensive warfare leads to large villages and increase female infanticide. ...Much of the fighting has to do with the acquisition of women, who are in short supply*. (Chagnon ibid p. 159)"

The egalitarianism and close-knit ties of village communities appeal to the atomized, mobile individuals of post-industrial societies. Identification by family or clan characterizes individual self-description, and people are embedded in the security and camaraderie of large families and clans. Visitors from outside village life often comment on the warmth and closeness of family, tribe or clan members. But the egalitarianism and close ties comes at a price. Individual achievement, outside strict boundaries, is not prized. The social culture dissuades individuals from becoming "different."
The need for egalitarianism among hunter-gatherer and simple farming societies is implemented via social pressure and expectations.

Among the Bushmen foragers of the Kalahari Desert, the most prolific hunters are subjected to complaints, even scorn, about the size and value of their kills. Bushmen explain that social distinctions cannot be allowed to take root or the cohesiveness of tribal equality will break. If an individual tribe or clan member can achieve superior status from increased productivity, the incentive for each member to transform ecological resources into social resources would quickly deplete local ecologies. Peer pressure and social identity, like the force of gravity, exerts its powerful and continuous effect on human behavior.

Few policies exist in contemporary society to reflect the ferocious traditionalism of sustainability. One example melding ferocious traditionalism with a modern Leviathan is China's one-child policy. China's policy has resulted in female infanticide, particularly among families who already have one daughter. Sex ratios among infants in China are 117 boys to 100 girls (Das Gupta 2005). While female infanticide was a

common practice before 1990, after 1990 sex-selective abortions contributed strongly to the imbalance in sex ratios (Coale 1996). Despite these restrictions, China's population growth remains .9 % annually, which doubles the Chinese population before the close of the 21st Century. China is changing the one-child policy to counteract the male-female imbalance, to address the problem of an aging population, and to acknowledge the tendency of a more affluent population to have fewer children.

Doing what you already know how to do, but faster

In the 13th Century, a thriving society, the Anasazi, existed in the southwestern United States. Goods and services pulsed into elite centers like Chaco Canyon in tune with the harvest cycle. After a population and building boom in the 11th and 12th centuries, a combination of drought and civil war brought down the Anasazi, and the survivors migrated south to the valleys of the Little Colorado River and the Rio Grande.

Before they fell, the Anasazi increased the number of dams and canals to store and divert water, moved to more defensive positions atop mesas, and built watchtowers and walls to protect themselves from raiding parties. To support the increased building, they had to import timber from farther away as local sources were depleted. Without the use of draft animals, logs weighing as much as 700 pounds and 16 feet long were imported from outlying mountain ranges, such as the Chuska Mountains over 50 miles (80 km) to the west (Betancourt, et al. 1986). The need for increased road building and the loss of farm labor to timber production and road maintenance lowered the marginal productivity of Anasazi society and environmental degradation accelerated even as economic activity increased.

The cohesive system that characterized the Anasazi's Chaco Canyon capital began to break down, perhaps in response to a severe region-wide drought, to water management that led to arroyo-cutting, and to deforestation. As with their irrigation-dependent predecessors in southern Mesopotamia, the Anasazi developed a water management system in a very dry place. Their success fueled population and economic growth, and when the inevitable environmental problems arose, the Anasazi met them by building more dams and diversions, more storage chambers for food, and increasing production in marginal outlying areas. Religious and ceremonial leaders built additional temples and shrines to seek divine relief. Raiding increased, provoked by high taxes,

famine, and drought, and signs of cannibalism accompanied the archaeological evidence of killings by raiding parties (Turner 1999). By the 15th Century, the great societies were gone, replaced by villages dependent on small-scale farming. Also gone, and not yet returned, are the pinyon and juniper forests of Chaco Canyon (Betancourt ibid).

The symptoms of decline are familiar to historians and archaeologists. As resource scarcity is felt in the availability of goods and services, increased effort to acquire new resources commence. The efforts grow frantic as the need to stave off crises becomes a reoccurring theme. Competition within society grows more intense, and external conquests become an accepted and legitimate practice. As the reserves of commodities shrink, the effect of normal variances of environmental conditions like weather, previously handled with ease, hit society with much greater impact. Exogenous events like hurricanes or earthquakes hurt more as the reserves needed to rebuild are exhausted. The response is to redouble efforts based on past successful practices. The confidence in past practice and ideology prove fatal to future success. We do what we already know how to do, but faster.

The Anasazi were dependent on irrigated farming, hunting, and timber. Modern empires are dependent on fossil fuels, especially oil. On September 5, 2006, Chevron Corporation announced that a consortium of oil drilling companies had discovered oil deep under the Gulf of Mexico. One of their drilling wells had reached through 7000 feet of seawater and then more than 20,000 feet under the sea floor to a total depth of 28,175 feet. The oil is contained in ancient bedrock deep under the ocean. To drill so deep under the ocean floor and pump oil to the surface represent a spectacular engineering feat, but is also a measure of desperation. The cost to develop that one oil field so deep in the ocean is estimated at 3.5 billion dollars. The environmental costs of drilling, pumping, transportation, storage, distribution and burning of that oil are not calculated.

The pressure to secure fossil fuel resources by constant exploration and war parallel the Anasazi long-distance timber gathering and the endemic conflict of the Anasazi's downfall. It's doing what you already know how to do, but doing it faster to keep pace with the acceleration of your problems. It is stunning short-term success at the cost of worsening long-term consequences. It's elite investment in the continuation of their wealth and power at the cost of future stability. It's an ancient tale retold.

The Return of Epidemic Disease

The most devastating impact of societal decline is the onset of epidemic disease. *Dark ages* are characterized by disease epidemics as the decline of infrastructure and productivity allows diseases, previously held at bay, to renew their assault on human populations (McNeill 1976). Europe lost as much as 30% of its total population from the plague in the 6th Century and again in the 13th Century. The loss in the settled areas was as much as 50%. Similar epidemics are recorded in China, India, and the Middle East as population increases met regional productivity declines. While we have not yet experienced a recent global environmental and ecological downturn, the impact of lost productivity, infrastructure and social cohesion would produce overwhelming fatalities from disease.

Until the 20th century, cities were the disease and death centers for human populations; infant mortality higher was higher in cities and longevity much lower. Waste water treatment, reliable food supplies, improved building construction and improved primary health care are recent innovations that keep epidemic diseases at bay. The deterioration of these innovations would almost certainly see the onset of epidemic diseases with horrible loss of life. A combination of changing climate and ecology, perhaps due to global warming or other environmental alterations, and a weakening of the infrastructure and productivity that allows large populations to crowd together successfully would kill millions of people and erode the cohesiveness of modern societies.

John Evans of the World Bank (1993) cites three stages of public health morbidity: infectious disease which are communicable and vector-borne diseases; mixed-stage which are infectious diseases for poor people and chronic diseases for rich people; and a chronic disease stage in which populations are relatively disease-free until late in life. High infant and child mortality characterize the infectious disease stage while deaths from heart attacks and cancers are more common in the chronic disease stage.

Global warming will allow insect, mammal and ocean vectors to expand into new territories. Changes in human behavior create changes in disease vectors that produce epidemics. Deadly emerging diseases such as AIDS and the avian flu have quadrupled over the past 50 years according to new research by a team of scientists reported in the

February 21 edition of Science magazine (Jones, et al. 2008). Humans intrude into new areas, and destroy ecologies that bring small mammals or insects into human habitations. The combination of socio-economic, environmental and ecological factors that correlate with increased incidence of emerging infectious diseases are intensifying worldwide (Woolhouse 2008), and represent exactly the kind of circumstances that would prevail with global warming, a loss of modern infrastructure and a decline in economic productivity. Contemporary cities would be the perfect incubators for disease as were their ancient counterparts.

Besides the overarching effects of global warming, the devolution of the oceans is also a likely source of disease epidemics. One gram of human feces contains one billion viruses and one liter of raw human waste contains 100,000 infective viruses (Pain 1989). With human sewage worldwide poured into the oceans and the increased acidity of the ocean from atmospheric pollution, "dead zone" areas have increased to over 200 (Diaz 2006). Dead zones are oxygen-depleted areas, some as large as 27,000 square miles, that consist of a soup of anaerobic bacteria and simple forms of ocean life. Besides suffocation from the loss of oxygen, predatory algae contains deadly bacteria and viruses that kill large sea animals and allow the algae to feed at leisure. These bacteria and viruses can also infect human populations.

Despite their modern water water treatment, developed countries also increase organic contamination of the oceans. By October each year in Chesapeake Bay, one milliliter of water contains as many as one billion viruses. A tremendous exchange of genetic material occurs as raw sewage, urban waste, and chemicals mix with heat and ultraviolet radiation in shallow ocean waters. Cholera epidemics arise from offshore algae blooms, and as ocean warms and algae blooms increase and expand north, we may see more cholera epidemics (Lipp 2002). The eighth recorded pandemic began in India when cholera came ashore in Calcutta off the Bay of Bengal in 1992 (Epstein 1993).

A thin line of medical and public health infrastructure stands between the mass numbers of people in modern societies and the diseases that decimate human populations. The ability to combat the onset of epidemic disease successfully depends upon an expensive infrastructure of waste water treatment, food and drug distribution and primary

health clinics and hospitals. Hundreds of millions of people would die quickly from epidemic disease if this energy-intensive infrastructure ceases to function.

Ideology loyalty

The power that civilizations hold over their peoples is not based on physical force or economic control. Any society's hold on its people rests on loyalty. Theology, culture, or political process can become the bedrock of a faith that capture the loyalty and obedience of people and grant legitimacy to their rulers. Citizens of organized states police themselves based on their faith that the "principles" of their individual societies derive from a god(s) or certain political forms and processes. Their material and imperial successes becomes the proof of the value of these principles and thus a reliable guide to future behavior and a reason to adhere to demands by rulers.

Sustainable societies are as aware of the value and restraints of their traditionalism as unsustainable societies are conscious of their choice to innovation and acquisitiveness. Each type of society cloaks the rationale for its ideological choices behind reverence for the past, the word of god(s) or its sense of human nature. By habit and the teaching of societal leaders, people believe in the inherent good sense of their ideology, even when empirical evidence runs contrary. We often accept that contrary evidence tests our loyalty, without considering whether it tests our good sense. We are loyal to our ideologies and traditions for many reasons including that the price of disloyalty can be quite high.

The desire to advance careers and gain the favor of those in high rank by writing within the current mainstream of thought acts to persuade scholars and writers to fit their views within accepted frameworks. We are not so far removed from times when the people followed the religion of their king. The successes, real and imagined, of a powerful and influential culture operate as a continuous check against criticism. The progress and power of the society becomes proof that its ideological underpinnings remain inviolable guides. To recommend substantive alteration to the existing governing or economic paradigms remains a heretical act, even in the face of mounting evidence of decline. If nothing else, these constraints act as inertia to slow and delay not only our understanding of changing circumstances, but also our ability to alter our behavior to

meet new challenges. Our failure to grasp the significance of profound environmental change follows directly from our information bias.

A set of cognitive and informational constraints bind our ability to understand the importance of our observations and limit our ability to grasp underlying patterns. Partisanship and loyalty to one's cultural background persuade us toward the importance of one set of facts and away from another. The concatenation of facts on the basis of errors in judgment becomes the foundation for overconfidence and a concurrent failure to understand the real meaning of phenomena. We already know where and how to expect the next favored fact, and, not surprisingly, we find it just where we expected.

An associated problem occurs as the complexity of circumstances and observations prevents placing an event in its proper context. Critical changes of great influence remain unnoticed except to a few, while minor changes of little influence are loudly announced. Virtually everyone circa the United States in the fall of 2006 knew that the Democrats won a majority of seats in Congress and that the US stock market hit an all-time high, but few knew that recent reports showed a phenomenal loss of coral reefs throughout the world (Sherman 2006; Borestein 2006). History may record that the latter information proved to be a change of great influence while the former was of little consequence.

All records, by the way that they are kept, include systematic bias. Even scientific inquiry follows information pathways that prejudice records. Bruno Latour (1999) details a series of scientific investigative steps that reduce nature to collected specimens in a contextless field study. The scientific value of these specimens is amplified because of their comparability and standardization with similar specimens from other ecosystems. His descriptive accounts of the reduction of nature to specimens in a field report and the amplification of those specimens as the definitive parts of a particular ecosystem shows the transformation of an Amazon soil sample into a scientific study. Each step in the reduction/amplification process moves nature and field report farther apart, and reduces our understanding of nature to a set of comparable specimens absent their relationship to whole ecosystem. The advantages of the technocratic/reductionist epistemology are confirmed in the practical successes of science while the limits and dangers of that epistemology receive little critical attention.

As a matter of ease and with the active assistance of those who seek to persuade us, we acquaint ourselves with new information via analogy and comparison (Stone, 1988). Yet, based on our information bias, we use improper analogy and comparison, and assume that past experience is a reliable guide to new phenomena. If the power of partial comparison or analogy appeals to our limited understanding, we promote the analogy to metaphor and transfer the correlation of small pieces or analogy into comparisons of entireties or metaphor.

As with Latour's work in the Amazon, the analogous value of the chosen specimens of nature from different ecosystems becomes the basis for elevating the comparison from analogy of specimens to metaphors of whole ecosystems. We make similar errors in trying to transplant social systems from one culture to another or trying to assert the value of past success as justification for future behavior in different circumstances. As long as carefully chosen pieces of analogy recommend themselves to us, we assume that the whole is comparable, not merely a few pieces.

Our shared understanding of the power of the metaphor becomes the basis for our confidence in the truth of the assertion. But when circumstances arise that have little recent historical parallel, and with which we have little experience, our inclination to metaphor dissuades us from active investigation. As the shared value of the analogous pieces disappear, we remain tied to the power of the metaphor we derived and fail to see the importance of new phenomena. The use of air pollution and greenhouse gas "markets" represents the power of metaphor in social behavior. Our belief in markets persuades us that they'll work like magic in almost any situation; we insist that new circumstances like the filling of environmental sinks are analogous to old circumstances like the most efficient way to translate commons resources into individual economic gains. Thus market advocates export the metaphor of invisible-hand magic to situations with little comparison to the circumstances that allowed market systems to work so well in the past.

Elite intransigence

Jack Goldstone presents a common pathway of political decline in his book, Revolution and Rebellion (1991). He, and others including Eisenstadt (2006) and Tilly (1993), describe the deterioration of political authority as governments respond to

economic pressure in ways that alienate elites and the general population. Intra-elite conflicts arise as powerful families and business interests seek individual stability and power. The intra-elite and external conflicts exacerbate the inability of the central government to rule effectively. General unrest and mobility devolve to insurgencies and the mobilization of the population into competing factions led by contending elites. External wars and conflicts arise over resource supply. In 1991 for the first time, but not the last, the United States military came to the oil fields of the Middle East to push a dictator out of his recent conquest, and ensure stability in world oil distribution. In March, 2003, the United States military returned again for an indefinite stay as a surging Islamic culture and growing population threatened economic and political stability. Once again, an imperial power found itself embroiled in incessant warfare to protect its supply of resources.

A universal extravagance exists among elites in hierarchical systems and, in combination with faulty administration caused by a focus on short-term interest, elite behavior often accelerates the onset of long-term crises. Mancur Olson's work (1982), on the short-term goal orientation of modern interest groups and the increasing complexity of rules, and loopholes, reflects a contemporary account of the historical behavior of elites. Tied to their fortunes and the ideologies that favored them, elites are unlikely to initiate revolutionary change that threatens their wealth and power. Instead, they hold fast to power and seek to stave off revolutions with appeals to loyalty, subsidy to supporters, and the use of force. A devotion to the principles and processes of capitalism dominate elite discussions of policy to solve environmental and ecological problems, and material success enjoyed by post-industrial societies becomes the proof of capitalism's virtues and the political leverage to control the discussions of policy.

Capitalism arose as an ideology that is premised on environmental plenty and became an established text with John Locke in the late 17th Century as he refined his social contract argument with Thomas Hobbes. Hobbes argued that our chaotic and passionate nature should surrender to a powerful sovereign who would establish rules for people to pursue their selfish interests within a binding framework of laws. A strong polity was needed to keep the adversarial nature of people in check and prevent a small minority of greedy and violent persons from trapping us in a cycle of conflict. But

Locke, who lived in calmer and more prosperous times than Hobbes, and who grasped the value of the enormous untapped commons outside Europe, moved away from Hobbes' requirement for an autocratic leader. Locke believed that the social contract was a natural condition of society so he placed the creation of a civil society as the first step with the establishment of a polity as the second step. Locke's confidence in people's social comity and his rejection of Hobbes' Leviathan is premised on ecological abundance.

The fullest statement favoring the value of private property and the recognition that material progress is the measure of society came from Adam Smith. Smith argued that everyone is free to pursue his own interests, as long as each does not violate the laws of justice. Smith presented the invisible hand argument that economic prosperity grows from the selfish economic behavior of persons operating within a polity that cooperates with, not dominates, individual economic behavior. He believed, as did Locke, that reason, moral sentiment and prosperity are sufficient to keep people behaving within reasonable bounds. Ferocious traditionalism or the authoritarianism of Hobbes would not be needed or desired.

Across the several centuries since Locke and Smith, and bolstered by the political revolutions of electoral democracy, a consensus formed that contemporary material accomplishments were the product of the capitalist ideology. The requirement of a large ecological commons and the vastness of the environmental "sinks" went unnoticed by all but a few. Locke and Smith's admonition to focus on private property and free exchange as the basis for a successful society provided the impetus for transforming nature into material progress with swift and stunning success.

The fierce loyalty of cultural leaders to their free market economic ideology and its political partner, electoral republics, became the basis for aggressive, acquisitive imperial behavior. For our purposes here, the loyalty to ideology blocks discussion, much less implementation, of new economic or cultural paradigms that direct us toward a more benign exploitation of the physical environmental and ecology. Even in the face of compelling evidence to the contrary, faith in the ideology dominates the discussion of the environmental problems and proposed solutions. The abundant consumption, economic security and "free-choice" individualism of contemporary unsustainable societies explain

the strong faith placed in capitalism and electoral democracies by their citizens, but as William Ophuls pointed out, "*….liberal democracy as we know it….is doomed by ecological scarcity,"* and *"…..such central tenets as individualism, may no longer by viable*" (1992 p.3).

Reform movements and ritual

In 1970, the State of California encouraged by local activists claimed that a tidal wetlands in the southern California city of Huntington Beach and across the famous Pacific Coast highway from the ocean needed protection from development. That decision launched an ongoing battle to protect the Bolsa Chica wetlands and restore the wetlands' link to the ocean. On August 24, 2006, construction to lift the Pacific Coast Highway was completed, and a channel that links the wetlands to the ocean was opened. A tidal basin of 366 acres is now reconnected to the ocean, and approximately 200 more acres adjoining the tidal basin will become wildlife and marine life habitat. Restoring the Bolsa Chica is an impressive accomplishment.

But, as with Chevron's deep sea oil production, the project exemplifies a continued environmental and ecological decline, not a genuine effort toward a solution. This small project consumed up to 150 million dollars, not including the costs of 35 years of political and legal conflict. The legal battles continue as oil companies, who owned the wetlands for much of the 20th Century continue to operate oil pump jacks in the wetlands, and seek to profit from selling the portion of the wetlands not owned by the state to home developers.

Much of the financing for wetland restoration came from the Long Beach Port Authority and the Los Angeles Port Authority. In return for funding up to 50 million dollars of the restoration, the ports received mitigation credit that allowed them to expand into undeveloped wetland and marine areas. The average cost of remediation acreage ranges from $150,000 to $300,000 per acre. Since mitigation credits allow a 2:1 swap for inner harbor development and a 1:1 swap from outer harbor development, the development of the 45-acre expansion at the Long Beach port required only 22.5 acres of the port authority's mitigation credits from Bolsa Chica (PMPA 2005.) The mitigation policy also allows developers to "bank" credits for development in the future.

The city of Huntington Beach has permitted home development surrounding the Bolsa Chica. The housing permits remain subject to environmental review and litigation, but some home construction is already underway. As spectacular a success as the Bolsa Chica represents for local activists, it's a net loss for the almost completely disappeared southern California wetlands. Bolsa Chica illustrates perfectly the costs, conflicts, politics, and media attention of environmental "boutique" projects that make us feel good about our efforts but have little real impact on the problem and give legitimacy to expanded development into other rare ecological areas.

Robert Briffault in his 1932 book, The Myth of Civilisation, rails against the belief that "liberal reforms" can transform organizations originally established to promote the interests of the powerful into organizations that promote the interests of "mankind at large" (p17). He consciously adopts the realism view that politics is an unsentimental business about distributing power and resources while maintaining order and stability and power brokers wisely restrict the language of liberty and the general welfare to public documents and pronouncements. In like fashion, wealthy and powerful individuals and organizations which owe their success, in large part, to externalizing or ignoring environmental and ecological damage are in an unlikely position to initiate radical change. They relegate their environmentalism to public documents and pronouncements except where immediate effects require tactical changes in behavior such as the removal of lead from gasoline or reducing the use of CFCs to protect the ozone layer.

Like our predecessors, we've become aware of the environmental and ecological problems associated with economic and population growth. As early as the Epic of Gilgamesh, the destruction of nature and the need for ecological conservation appeared. Reform movements arose then and they arise now. The contemporary political context of public opinion, interest group advocacy, and electoral strategies reflect "environmentalism."

We initiate environmental expertise in academic departments that feed graduates into a web of government agencies, consulting companies, non-profit advocacy groups, and corporate offices. Successful operators in this web shift skillfully from position to position. They focus on mitigating the damage of industrial and post-industrial society without genuinely confronting the fundamental momentum of acquisitiveness that

operates as the centerpiece of modern society's boast of success. They seek to smooth the ecological rough edges of capitalism and consumerism with boutique projects like the Bolsa Chica wetlands that are brief in time, small in scope and almost without real influence in the broader society or the natural environment.

Nature is understood as an environmental and ecological infrastructure that requires integration with the production of goods and services. Yellowstone National Park, one of the premier "wilderness" parks in the United States is the site of over 200 continuing experiments by scientists. On site "enhancement" and bio-prospecting for animals and plants with commercially-valuable DNA occur frequently. The common complaint among Park Service officials is not the intrusion on "wilderness", but the failure of "benefit sharing" as the profits from the research aren't shared with the Park Service (Robbins 2006).

We exhibit landscape amnesia as our sense of nature diminishes to gardens and parks. Successive generations establish continuously lowered parameters for biodiversity, e.g., national parks as "wilderness" with a managed population of monitored and tagged animals. The loss of the great biodiversity reservoirs like the Amazon or the oceans is divorced from ordinary behavior and the loss is felt like nostalgia; poignant but with no direct impact.

Legislatures and agencies promulgate environmental laws that are enforced with decidedly mixed results. Like drug laws, a key set of entrepreneurial actors and a large set of active consumers conspire continuously to ignore the rules. Also, like drug laws, the transaction costs of inspection, enforcement, compliance and litigation of environmental laws are unusually burdensome. The instinct of business operators is to lower the unit cost of production, and the instinct of consumers is to maximize the availability and convenience of product use. Even committed environmentalists realize that much of their ordinary behavior alters the physical environmental and damages ecologies.

In November of 2006, the United States Supreme Court heard arguments from state governments and environmental organizations that the federal government is required to regulate greenhouse gases like carbon dioxide (Massachusetts v. Environmental Protection Agency, No. 05-1120). The Supreme Court ruled in favor of

the states, but the EPA denied waivers that would allow the states to implement greenhouse gas emission standards that exceed federal guidelines. EPA Director, Stephen Johnson refused to allow California and 15 other states to implement new greenhouse gas standards because "in light of the global nature of the problem of climate change, I have found that California does not have a need to meet compelling and extraordinary conditions" (Johnson 2008).

While the Supreme Court debate represents a valiant effort by state governments and environmental advocacy groups to address the problem of global warming, the entire episode has a somewhat ritualistic quality. Given the scope and breadth of atmospheric change and its attendant consequences, legal arguments about institutional scope or government waivers illustrate the inability to address the problem. As evidence by the increase in temple building, our predecessors among the world's fallen civilizations also turned to the comfort and familiarity of tradition and ritual as they sought answers to their environmental crises.

Learning from the fall

The experience that you have determines the knowledge that you value. Too often, one sort of knowledge is perceived by its owners to be evidence of intellectual superiority over another sort of knowledge. People from aggressive, acquisitive societies quite often see themselves as superior to people from simpler societies. Having practiced the crafts and acquired the skills needed for material prosperity, people of acquisitive societies find their prosperity to be the most compelling evidence of the superiority of their kinds of knowledge. In unsustainable material societies, the skills of business and politics represent the most desired knowledge. In sustainable societies, gardening, farming, gathering, simple carpentry and tool making represent the most desirable knowledge. Each set of people are likely to view the others' knowledge base as inadequate, and given the distinct viewpoint of the observer, both are right.

The Hopi of southwestern United States provide an illustration of how a society may view the world after falling. Their cultural experience incorporates the earthy wisdom of a people who make a subsistence living from farming, ranching and hunting/gathering with the learning that comes from a society that recently fell from a lofty perch of material success. The Hopi are the descendants of the people who built

and lost a successful irrigation society in the now southwestern United States. Their architecture is quite famous as is their cosmology. They had the earth rotating on its axis. Their sense of physiology mirrors that of Tibetan Buddhism or India's Hinduism with their identification of psychophysical centers located in key junctions of the body. The Hopi's striking blend of theoretical knowledge and ascetic behaviors is what makes the Hopi irresistible to New Age spiritualists and ecologists (see Waters 1963; Courlander 1971; Malotki 1993; for accounts of Hopi spirituality and culture).

Their theology includes a single god-creator, a vast void before the creation of the universe, the subsequent creation of life, an initial period of peace and unity called the First World, followed by the failure of humans to maintain respect for their god and their fall as the earth was destroyed by fire, a second period of opportunity followed by the abandonment of their god, another fall from grace and another earth destruction but this time by ice. Once again, humans emerged chastened into the third period. In this third period, the people reproduced rapidly, developed cities and thus civilization. The difficulty of maintaining goodness in civilization manifested itself and once again the world was destroyed, this time by flooding. The people emerged into the fourth period which is the current time. Hopi kivas represent this emergence with the kiva as a womb in the earth and the ladder leading out as the umbilical cord.

For our purposes, and serving as a linguistic clue to their expansion and contraction as a civilization, the Hopi developed terminology to describe the dissolution of societies and their regress to an earlier, simpler way of life. They now see the simpler life as the more pious, and make references to the unsustainability of faster-paced, materially-progressive and spiritually-corrupt life. Their term, "*tuskyapqatsi*', refers to a crazy or frenzied life, and similar terms exist for a life of quarreling, a life of mutual disrespect, and onto descriptions of abusive and corrupt behavior in sexual practices or the use of alcohol and drugs. Many of these terms are subsumed under a Hopi philosophical concept termed, "*koyaanisqatsi*" meaning the corrupt life or life out of balance. These terms and the current Hopi admonitions against a materially ambitious and behaviorally liberal life arise from their experience of societal crashes occurring with some frequency, mostly notably the swift decline of the late 13th Century.

Conclusion

On August 29th, 2005, Hurricane Katrina struck the city of New Orleans. The levees that protect the city from floods were breached and 80% of the city went underwater. On the day that the hurricane engulfed New Orleans, the city ceased to function. As help from outside required days, even weeks to arrive, city residents discovered how quickly an advanced civilization can disappear. To date, much of the city remains empty. Costs to rebuild are estimated to exceed $200 billion. Building a coastal city below sea level in a hurricane zone may have been an act of hubris; rebuilding the same city after the sea reclaimed it may be an act of foolishness.

Garrett Hardin (1968, p 457) reminds us of a key lesson of complex systems, "*We can never do merely one thing*." The more we alter physical and ecological environments, the more broadly the effects ripple. At some point, the marginal returns to increasing complexity diminish such that more of the same activity makes the problem worse, and not better. Sustainable societies met this dilemma by limiting their actions and thus limiting their effect on the environment and remaining within manageable parameters. Unsustainable societies met the problems of complex effects and marginal returns by ignoring them, and attempting to address each symptom independently from the whole. Our innovative nature made this strategy viable, with spectacular success in the short term, but guarantees long-term decline.

The real test for capitalism arrives as environmental sinks fill and capitalism can no longer rely on a benign and expansive environment to absorb its externalities. If the natural social comity of Locke and Smith exists at all; it certainly doesn't exist at the level of the modern nation-state. It may take centuries to build from village society to advanced civilization, but it only takes one day to go from civilization to village society.

The social ties that hold civilizations together can't survive the loss of prosperity, security and power that comes from resource depletion and environmental decline. William McNeill's *macroparasitic* (1992, p73) exploitation of classes parallels a similar relationship to nature and both exploitations worsen in the frantic pace to maintain economic success as resources become scarce and environments stressed. As with our view of past societal crashes into dark ages, the current experience is too often chronicled as hegemonic rivalries, falling rates of profit or class struggles. The disease epidemics are seen as exogenous events; natural disasters that strike absent the influence of social or

environmental circumstances. Somehow the prisms through which we view human history filters out the green light, and we only see in anthropocentric colors.

Imperial history mirrors Tolstoy's observation that "*Happy families are all alike; every unhappy family is unhappy in its own way*." The long and detailed narrative of the fall of great societies reads like high drama. Revolts and revolutions, the stirring glory of imperial war, famine and disease, the grand pageantry of elite extravagance; all combine to produce some of history's most compelling stories.

The charismatic presentation of the drama blinds us to the pedestrian realities of environmental and ecological problems, but fits neatly with our historical bias that man is the measure of all things. William McNeill writes, with regard to the relationship between society and nature, that "[it] deserves a place in any really satisfactory account of the past; they, too, ought to be woven into the narrative of the rise and elaboration of separate civilizations and cultures, and viewed as ecumenical processes comparable in importance with the rise of a world system of economic complementarity and cultural symbiosis" (McNeill 1990 pp. 20-21).

Human society, quickly globalizing, has now reached the capability to alter the environment at a global level. Such vast reservoirs as the oceans and the atmosphere are now subject to human-induced alteration. Yet, despite the realization of these alarming conditions, contemporary human society seems incapable of shifting its organizational, economic, political or infrastructural gears. As with times past, the likely result is a painful devolution, and the rise of simpler, sustainable practices while history awaits the next iteration of progressive, acquisitive societies.

Few alternatives present themselves. William Ophuls' mistake may be his belief that an autocratic leviathan can replicate the successful ferocious traditionalism of village society at the level of empire. No previous empire, including those with impressive elite-driven ferocities of their own, survived the ideological loyalty and elite intransigence that prevented environmental and resource depletion. Despite the acceleration of reform activity like rationing or the increase in imperial conquest to secure resources or the warm embrace of theological and legal ritual, ideological loyalty and elite inflexibility led to stagnation and decline.

Nascent attempts at revolutionary environmental solutions like Arne Naess' deep ecology or Murray Bookchin's social ecology represent efforts to synthesize sustainable decentralized societies with material innovation and progress. Aldo Leopold, often cited as a precursor to deep ecology stated that "….*an ethic, ecologically, is a limitation on freedom of action in the struggle for existence* (Leopold 1949, p. 238)." Such contemporary issues as immigration, population control, the use of fossil fuel, the protection of wilderness, and consumer choice are subject to pronouncements from deep-ecology based groups like Earth First!, or the Animal Liberation Front. Those listening closely to revolutionary environmental admonitions can hear the echo of the ferocious traditionalism of sustainable societies even as the advocates for those visions seem blind to the harsh realities of sustainable village life.

Murray Bookchin argued that "*One of our chief goals must be to radically decentralize our industrialized urban areas into humanly-scaled cities and towns artfully tailored to the carrying capacities of the eco-communities in which they are located* (Bookchin and Foreman 1991, p. 79)." His vision, shared by many others in the social and radical ecology movements, proposes a decentralized and autonomous set of small towns communally managed with strict reproductive and ecological restrictions. The soft glow of Bookchin's utopian commune is not consistent with the harsh realities required of ecological sustainability.

Bookchin, and others, noticed that much of human society lived in exactly these kinds of communities but failed to notice that these communities endured only with the adoption of social and behavioral constraints that would be anathematic to the tolerance and individual liberties that contemporary social ecologists take for granted. William Ophuls' prediction that we'll turn to an environmental Leviathan to address our depleted and polluted environment requires the wherewithal to maintain a Leviathan-sized society. No imperial Leviathan in the past successfully met the challenge. More likely, we'll ride the decline to devolved societies with new forms of ferocious traditionalism to guide our survival.

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