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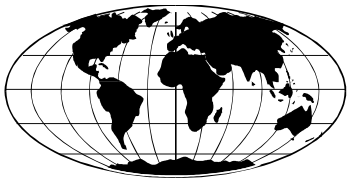
Sustainable Communities Review

Merging Traditional Concerns
for the Environment
with the Social and Cultural Aspects
of Community Life

Sustainable Communities Review



Sustainable Communities Review (ISSN 1094-835X) merges traditional concerns for the environment with the social and cultural aspects of community life. The *Review* seeks to broaden the traditional focus of sustainable development to include other dimensions of community life that promote sustainability, such as empowerment, education, enterprise, and environment. The *Review* features cutting edge thinking in a reader-friendly style. We welcome articles, commentaries, and news about ways to engage all citizens in sustaining quality community life and healthy environments to be submitted for consideration for publication. Subscriptions are $10 per year for individuals and $25 per year for institutions. Send check or money order, made out to Center for Public Service/UNT, to University of North Texas, Center for Public Service, Sustainable Communities Review, P.O. Box 310919, Denton, Texas 76203-0919. Back issues of the *Review* can be accessed at www.unt.edu/untcps/agingpubs.htm. The publisher, the University of North Texas, and the sponsors assume no responsibility for any statements of fact or opinion expressed in the published papers or advertisements.

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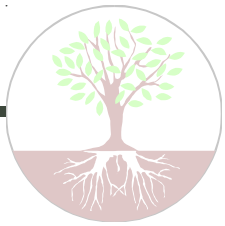

The contributions in this issue one way or another inspire readers to think about more sustainable regions, from Lerma-Chapala to south Dallas County. Dr. Kamau's article on water and women focuses on basic resources that will determine the future of these two regions. The Lerma-Chapala decision whether to conserve water may determine whether some 16 million people will need to migrate to other parts of Mexico or Texas. Lake Chapala may dry up, and thus some 50,000 retirees may take their dollars to some other regions of the world. If this happens, one economic engine of Jalisco economy, far more important than a major manufacturing company, would be lost. As Iftekhar Amin lays out in his article, forced "resettlement of any population—without proper planning" results in many negative unintended consequences for humans and the environment. With Dallas/Fort Worth expanding from 5 to 8 million in the next thirty years, water and air quality will become a pressing issue.

Dan McEntire moves us to consider the difficult situation of planning to prevent disaster—gradual or immediate. Because Mexico is a neighbor, perhaps the United States and Mexico both need to learn how to prevent community and ecological decline. In his paper, Dr. Lyons considers the management of toxic waste, how waste knows no borders. I recently learned about the special hospitals established in Belarus to handle all the ill children after the Chernoble disaster.

Professor Cairns argues that the United States should restrict migration in the name of "limited carrying capacity," or how population increase will not allow us to address sustainability. But is the control of migration a temporary and unsustainable solution for our planetary crisis? More important, isn't the "rich world" responsible for assisting the less wealthy societies to become viable for our mutual well-being, viable within the sustainable paradigm?

One of our final articles takes us back to simpler time and asks us the review the "bike" as a means of transportation, doing less damage to the environment while making us all healthier and less obese. Holloway and Mansfield both discuss ways for all of us to become engaged in a complex mix of issues. Learning through service—or what is called service learning or volunteerism—is one part of the solution ahead.

The book reviews in this issue reinforce the need for action on many fronts, from how Guadalajara and Dallas continue to extract resources from, or some say rape, rural communities and regions, to how rural areas rethink how they relate to urban economies, that is, how they feed the people and provide the energy to sustain life in urban areas. *Fatal Harvest: Tragedy of the Industrial Age* shows us the price of rapid urban expansion. While recycling is part of the solution, Princen, Maniates, and Conca may be addressing the heart of the problem in high income societies in their volume *Confronting Consumption*. The final books discuss political, educational, and demographic (aging of population) issues that are significant factors in the sustainability struggle. Brett Williams reviews three in his essay that address how we should redesign our cities and communities. Policies that encourage 4,000+ square feet houses in North Dallas, or the mega-sized SUV, may need to be reformulated.

In Mexico and the United States the national ideology about the balance between economic/business/corporate promotion and the exploration of the environment remains a struggle. My moderate Republican colleagues in Washington tell me that the new EPA director will be very corporate friendly and very weak on regulations; in Mexico the development of Baja and the Sea of Cortez as major tourist areas will tell us how well this balancing act between business and the environment has done in the Fox administration.

Stan Ingman and Iftekhar Amin

Women's Promotion of Sustainable Water Usage Is Imperative To Avert the Global Water Crisis

M. Njoki Kamau, Claude D. Johnson, and Joyce M. Kramer

Everything is water. Water is all
—Thales, ca. 624–546 BC

Life on Earth depends on water. Water comprises 99% of our bodies and covers 71% of the Earth's surface
—C. A. Shumway

While all life depends upon water, the life within water is often forgotten
—C. A. Shumway

In almost all world cultures, vast wisdom is encapsulated in proverbs, riddles, pithy sayings, and mythologies concerning the centrality of water in sustaining life. Some of the sayings are "Water is life." "Water is medicine." "Water is life's bloodline." "Water is like blood flowing in our veins." "Life is water, do not waste it." There is no doubt that water is one of the most important resources on this planet. Along with the air we breathe, life cannot exist without water. Knowing this, it would seem logical that the protection and conservation of the planet's water resources would be given the highest priorities. However, nothing could be further from the truth. Water is the most

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"Throughout the world, dilution is used as the 'solution to pollution.' Rivers, lakes, and oceans are treated as open sewers and are unrealistically expected to absorb an ever-increasing amount of untreated effluents from industries, agriculture, and humans."

Kamau et al. *(continued)*

taken-for-granted, squandered, exploited, polluted, and abused resource, especially in faucet-turning cultures.

Worldwide, the largest fresh water usage is for agriculture at 69%, with industrial and domestic usage at 23% and 8%, respectively, although the percentages do vary considerably depending on the level of industrial and economic development. Europe, for example, uses 54% for industrial purposes, 33% for agriculture, and 13% for domestic requirements, while Asia uses 86% for agriculture, 8% for industry, and 6% for domestic uses (Population Information Program, 1998).

A human needs to drink about 3 liters of water a day, but 90 liters per day are needed for other life functions and to keep healthy (Brewster, 1987). Many people around the world use much less, but North Americans use excessively more. On average, Americans use about 590 liters per person per day, and Canadians use about 500 (Litvin, 1998). Due to urbanization and affluence, the domestic per capita use of fresh water in North America has increased twentyfold in the past 100 years (Population Information Program, 1998). In the near future, the problem of excessive water use is expected to increase throughout the developing world as it becomes more urbanized.

Throughout the world, dilution is used as the "solution to pollution." Rivers, lakes, and oceans are treated as open sewers and are unrealistically expected to absorb an ever-increasing amount of untreated effluents from industries, agriculture, and humans. This pollution of fresh water sources has deleterious effects, especially on women and children in Third World nations. These women are charged with a multiplicity of arduous tasks such as walking long distances, sometimes ten kilometers, in search of fresh water from dwindling sources. They carry heavy burdens, at times amounting to more than 40 pounds per barrel of water on their heads or backs, and they trek back and forth several times over long distances before enough water is acquired to meet the family's immediate needs. Women are also expected to boil or sterilize this water to ensure that it is safe for their families. This often requires that they carry huge bundles of firewood over long distances. In spite of all the efforts women make to safeguard their families, many children and adults still die from waterborne diseases. Women, as the informal health care providers, are called upon to take on the additional burden of nursing, caring for, and comforting the sick and the dying in their families.

The Impending Global Water Crisis

Observing the manner in which humans exploit and pollute the fresh water resources of this planet, one would think that there must be endless supplies. However, the facts are startling. All of the earth's drinkable water could fit inside a cube-shaped tank that would measure only 95 miles on a side (Smith, 2000). Only 2.5% of the entire water covering the earth's surface is fresh water; the other 97.5% is salty or seawater. Even more alarming is the fact that of the mere 2.5% of the earth's water that is fresh, 70% of this fresh water is trapped in polar ice caps and inaccessible aquifers. Therefore, only three quarters of one percent (0.75%) of all the water on this planet is accessible in the form of lakes, rivers, and shallow aquifers. It is surprising to note that less than 1% of all the fresh water resources (0.007% of the total amount of water on this planet) is renewable on a sustainable basis. In evaluating the amount of fresh water that is available,

one must realize that if 20% of the renewable fresh water resources are used up, the water levels of lakes, rivers, and aquifers will begin to drop (Lefort, 1996; Kuylenstierna, et al., 1998; *National Geographic,* 1993; Postel, 1997; McMichael, 1993; Smith, 2000; Sampat, 2000a; Sampat, 2000b).

Studies such as Population Information Program (1998), Kuylenstierna et al. (1998), and Dowdeswell (1998) indicate that the world population is increasing dramatically, that the world has become more urbanized, and demands for water have increased, causing water stress and scarcity. Water stress or scarcity problems now affect more than 31 countries with a total population of about 460 million people. By the year 2025, predictions are that 48 countries, having a combined population of 2.8 billion, will face water stress or scarcity problems. By 2050, the number is expected to rise to 54 countries, having a combined population of about four billion, or 40% of the projected global population of 9.6 billion at that time. Most of countries that have or will encounter the most serious problems are in the Near East, North Africa, and Sub-Saharan Africa, but non-sustainable exploitation of precious water resources is occurring all over the world.

In China, for example, the once mighty Yellow River, known as "Mother River," has not reached the sea during the past decade on an average of seventy days a year, as a result of the extraction of water for industrial, agricultural, and domestic use. In the United States, excessive withdrawal from the Colorado River, to provide irrigation for the deserts of California and the southwestern U.S., along with the ever increasing urban demands, causes the Colorado to dry up somewhere in Mexico before it reaches its natural terminus in the Gulf of California. Groundwater is being overexploited; the average annual overdraft of groundwater around the United States is about 15% above replacement. Groundwater from the large Ogallala aquifer, which underlies part of eight midwestern U.S. states, is being extracted at an annual rate of 130 to 160% above replacement. Much of this water is used to irrigate some six million hectares of agricultural land. Estimates are that this aquifer could be depleted in about 30 to 40 years (Soule and Piper, 1992; Population Information Program, 1998; Postel, 1999; Postel, 2000; Sampat, 2000a; Sampat, 2000b).

Water Scarcity and Pollution: Impacts on Third World Women

Water is a particularly critical issue for women. Those living in the rural regions of the Third World are acutely aware of their vulnerability to water shortages and degradation. As the informal water managers and providers of clean water, rural and low income women in the Third World are daily confronted with the daunting task of deciding from which sources drinking water should be collected and how it should be obtained, purified, and stored. They also decide from which sources to obtain water for washing clothes, feeding animals, and watering their vegetable gardens. These women have learned to collect water from various sources depending on the quality required for particular uses. Their water decisions are critical and sometimes they are a matter of life and death (Chiuri and Nzioki, 1992).

Most Third World women are called upon to walk several kilometers (multiple miles) each day in search of uncontaminated water for drinking, cooking, cleaning utensils, and bathing. This arduous task saps time and energy from other potentially productive activities (Postel, 1997). Women's time is overextended, and they are left with inadequate time to regenerate themselves or for education. Research on education shows that two-thirds of the world's adult illiterates are women while two-thirds of the world's children who cannot read and write are girls. In Kenya, specifically, 61% of the total female population cannot read and write. Also, studies indicate that when women are themselves infected by waterborne diseases, their children experience declines in nutritional levels, sanitary levels, and childcare. School absenteeism exceeding 60% has been observed, either because children themselves are sick or because they must take on the chores of sick family members.

Moreover, women and their children are disproportionately affected by famine, as caused by wetlands being drained, rivers being diverted, and oceans, lakes, and rivers becoming polluted. Pollution of water and destruction of wetlands have led to decreases of preferred protein in the diets of affected women and their children. This is because wetlands are a breeding ground for many fish species (McMichael, 1993; Shiva, 2000). Water development projects, and in particular dam construction, lead to the draining of wetlands that stabilize and control water cycles and remove toxic metals from the water.

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Wetlands are also destroyed by high levels of saline and other toxic agricultural effluents that destroy the mangrove habitats of edible fish (Shiva, 2000). Fish are also being killed directly as a result of agricultural spills. For example, in the United States between 1995 and 1998, 13 million fish were killed from polluted agricultural runoff in Illinois, North Carolina, Missouri, Indiana, Iowa, Ohio, Oklahoma, and Minnesota alone (Grant, 2000).

Contamination and the killing of fish have had very negative impacts on gender relations. As local sources of fish are destroyed, women in fishing communities tend to experience sharp drops in their status relative to men. This is because fishing as a livelihood moves out of the family sphere and is commercialized, thereby becoming a purely male occupation. For example, after the Colorado River was diverted and the spawning grounds became dry around the delta, native men were forced to move out of their communities sometimes for days, weeks, and months in search of fertile fishing waters. This meant that fishing, which was once a shared economic activity, became the exclusive domain of relatively affluent, young, and able-bodied men. The cash earned by the men's commercial fishing generated hierarchical gender relations, because the women become economically dependent upon the men (Harrar, 1997).

Pollution of lakes, oceans, and rivers directly impacts the health of people who depend upon fish as their preferred source of protein. Women of childbearing age and children are at especially high risk. Mercury emitted through the smokestacks of hydroelectric plants interacts with bacteria in the air and creates methyl-mercury. Through precipitation and runoff, methyl-mercury gets into rivers, lakes, and oceans where it tends to accumulate in predatory fish like pike, trout, tuna, mackerel, and swordfish as it passes up the food chain (Revkin, 2000). Recently the American Broadcasting Corporation aired a "20/20" program on fish risk (Walters, 2001). Last year, ten scientists from the National Academy of Sciences reported that eating some types of fish can lead to death or impairment of women and their unborn children. The report estimated that each year about 60,000 children are born in the United States who have been exposed during pregnancy to methyl-mercury levels that are high enough to cause neurological and learning difficulties. This report specifically identified tuna, swordfish, and mackerel as having disastrously high mercury levels. The report also warned women, especially pregnant women, not to eat fish harvested from contaminated rivers and lakes. Studies conducted by the Canadian Federal Health Department connected high birth defects, uterus poisoning, and several types of cancers with living near a heavily polluted body of water and with eating contaminated fish (Mackinnon & Mittelstaedt, 1999). Another study conducted in the United States found that an extraordinarily high number of babies without brains have been born to women on both sides of Rio Grande, a river heavily polluted by the United States-controlled maquilladora industries on the Mexican bank (Kamel & Hoffman, 1999). It therefore appears that while women benefit the least from corporate profits made by polluting water, they pay dearly with their own poisoned bodies and the neurological impairment of their fetuses.

In addition to the surface water contamination described above, deep underground waters are contaminated. In Bangladesh about 77 million people are suffering from arsenic related diseases as a result of drinking water from "tube wells." Tube wells are very deep wells that are dug in search of clean deep underground water (Murcott, 1999; Shiva, 2000). Salinization of groundwater does not only lead to scarcity of drinking water but also to lack of food, loss of livelihoods, fights between men and women, and forced migrations out of the coastal villages (Shiva, 2000). A villager from Kuru, one of the affected communities in Mellore District, India, explains:

> The village is surrounded by prawn farms on all four sides. We have lost all our drinking water, where earlier there used to be nine wells in this area. We no longer live in this village as all the houses have collapsed because of dampness and salinity. Five hundred families have been displaced. Social tensions are created by aqua companies, resulting in a fight between the aqua companies and the villagers leading to three deaths in the village. (Qtd in Shiva, 2000:47)

Women commonly take the brunt of such economic and social disruption in their attempts to maintain functional households and to protect the health and well-being of their families. Given that pollutants lead to chronic illness, as well as severe episodic illness and disability, of

women and their children, women as the bearers of life and the principal child caretakers must act quickly to protect not only themselves but also their children and all humanity by constructively influencing decisions about water and other essential resources.

Waterborne Diseases and Irrigation

As they do with water pollution from toxic chemicals, women and their children pay a heavy price when their communities are affected by waterborne diseases. There are an estimated 900 million people sickened by waterborne diseases around the globe, and each day 2,500 die in the Third World. Most are children. Furthermore, when women farmers and agricultural workers are affected by toxic pollution and waterborne diseases, agricultural productivity declines (UNICEF, 1997).

Some of the particularly virulent waterborne diseases include malaria, river blindness (onchocerciasis), typhoid, and schistosomiasis (McIntosh, 1999; Gleick, 1998; McMichael, 1993; Postel, 1997). Schistosomiasis (also called bilharzia) is particularly deadly. It is caused by parasitic worms, released by aquatic snails, which penetrate the skin when humans are exposed to infested waters. Schistosomiasis causes disorders of the liver, spleen, lungs, and nervous system; the disease is very difficult to treat because people who are already weakened by the disease can be killed by the potent drugs required to destroy the parasite. Schistosomiasis currently infects 200 million people in 70 countries. Most outbreaks occur after the construction of large dams. Available data indicate that there was a marked increase in schistosomiasis infections after the construction of the Sennar Dam in Sudan, the Aswan High Dam in Egypt, and the Akosombo Dam in Ghana, as well as others in the Middle East and South America (Gleick, 1998; Postel, 1997). Even the World Bank, a long-time supporter and financier of some of the largest dams in the Third World, admits that the people whose rivers have been dammed and those who reside close to the dams have lost more than they have gained from the resulting reservoirs. Jose Olivares, a World Bank economist for Africa in the 1990s, pointed this out with respect to the devastating impacts of schistosomiasis:

> The scale of disease connected with irrigation is so massive. . . . Horror stories are told in almost every country. . . . Weakened and debilitated by this disease, the projects' beneficiaries have almost certainly lost in terms of health more than they have gained from greater access to irrigation water. (Postel, 1997)

Extreme infestations of waterborne diseases have been documented around the Gezira irrigation project in Sudan and in the vicinity of the Aral Sea within the former Soviet Union. Before the Gezira irrigation project was started, the prevalence of the schistosomiasis was between 10% and 15% of the population, but once the project was completed, the infection rates rose to 80% of the population in the Gezira region. The Aral Sea was once the fourth largest freshwater lake in the world. The need for irrigation led to the diversion of the two main tributaries, the Amu and Syr, which supplied water to the Aral Sea. The Aral Sea has shrunk by 40%, its volume dropped by 60%, and storms of toxic dust salts pollute the remaining waters and adjacent farmlands. Many species of fish perished along with the communities that once depended upon fishing for their livelihood. The surviving communities have reported increased occurrence of typhoid, hepatitis, and esophageal cancer from drinking water heavily polluted by toxic salts, pesticides, and agricultural runoff from irrigated farms (Postel, 1997). It is of the utmost importance that the negative impacts of the Gezira and Aral Sea irrigation projects be considered around the world when evaluating future water development proposals. Many development projects, especially reservoirs in the Third World, have been undertaken to meet political agendas so as to satisfy the World Bank and the IMF and to entice big foreign investors (Shumway, 1999; McMichael, 1993). There is ample evidence indicating that many of these water development projects have significantly improved the lives of the elite while increasing the poverty and suffering of peasant farmers, pastoralists, and fishing communities.

Water Misuse and Cash Crops

Similarly, development of industrial farms has also negatively impacted water quality and further disenfranchised the world's rural poor, especially women. Around the world, mega-farms owned by corporations have bought out small family operated farms. In the United States, a few companies like Smithfield, ADM, Dupont, Wal-Mart, IPB, and Monsanto are buying and consolidating many small farm operations, thus taking control of

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farming as an enterprise. In the pretext of feeding the whole world, smaller farms are losing out as an economic mainstay while the rest of the population is exposed to the risk of drinking contaminated water resulting from the agricultural effluents which mega-farms produce. Mega-farms often specialize in single-crop monoculture (Greider, 2000). They use large amounts of fertilizers, pesticides, and herbicides, as well as enormous amounts of water when irrigation and agricultural chemicals are required to maximize production. Excessive irrigation, if practiced, can cause the soil to become water-logged, with the result that natural salts are leached into the groundwater and soil. When this happens, much additional water is needed to flush out the salts before the farms can become productive again.

Livestock corporate "factory farms" have become a major source of water pollution in North America; they dispose of an enormous amount of untreated animal waste, which ends up in the rivers and ground water systems. This has the potential to contaminate drinking water sources, causing sickness and even death. In addition, spills from factory farms have killed many hundreds of thousands of fish, and runoff has also caused large algae blooms. To put the problem in perspective, a cattle feedlot operation of 25,000 cattle produces more fecal matter than a city of 250,000 people. In the United States, the total amount of animal waste produced, mainly in factory farm type operations, is 130 times the human waste produced by the total U.S. population. Seventy percent of all water pollution in the United States results from agriculture (Nikiforuk, 2000; Population Information Program, 1998; Sampat, 2000a; Coyle, 1999).

But pollution problems are worldwide. In Europe, half the lakes are eutrophied; 90% of the rivers have high nitrate concentrations, and groundwater contamination from agricultural and municipal sources is widespread. Rivers in Asia are among the most polluted in the world. Some contain bacterial counts from human waste that are ten times higher than in most developed countries. Eighty percent of China's major rivers are extensively polluted and cannot support fish. In the United States, some 40% of the surface waters are too polluted for swimming and fishing, and 48% of all the lakes are eutrophied. Pollution in the St. Lawrence River from United States and Canadian sources around the Great Lakes has raised the PCB levels in the beluga whales so high that, according to Canadian Law, they now qualify as "toxic waste dumps" (Population Information Program, 1998; Litvin, 1998; Brown and Halwell, 1998).

Women, especially rural women, know that nature must be coaxed and not dominated and that continued environmental degradation will lead to their community's eventual demise. Women, as the source and caretakers of human life and as the providers of the food that nourishes their families, are interested in promoting harmonious and complementary relationships with the natural environment, which they respect as the ultimate source of all life. In contrast to men, women are more likely to view their relationship to nature in terms of collaboration, rather than competition and conquest; they are more likely to adapt their management practices so as to respect and care for the natural environment. Rural women, in particular, view natural resources, such as rivers, lakes, and oceans, not as "free" to be exploited and conquered, but as waters that must be carefully nurtured to ensure the continuity of the resource and the life it supports (Chiuri and Nzioki, 1992).

What Women Can Do to Protect Water as a Crucial Natural Resource

Bearing in mind that women view nature as life sustaining, that women have vast existential knowledge concerning water, and that women bear the brunt of water pollution and scarcity, it is only logical that women should be proactive and integrate water issues into the international feminist agendas. The challenge for women is to work hard to influence the predominantly male planners and developers of agricultural, municipal, and hydraulic projects, who tend to view nature as an enemy to be subdued, tamed, and dominated, rather than respected. Maybe women can be guided by the sharp wisdom of Botswana's fishers and pastoralists, who successfully protested and blocked their government's plans to divert the Ovakango River. The Botswana people depended on the integrity of the Ovakango delta for their livelihood. At a public meeting with the government officials, the Botswana protesters poignantly articulated, "We believe this river has a life of its own. It is not for man to kill it" (Postel, 1997). Through such collaborative organizing, women, and men who share their environmentalist concerns, must prevail so that humanity and nature can coexist for the overall enrichment of humanity and other species.

For generations, women have globalized their resistance and solidarity while compassionately yet fiercely fighting against various forms of injustices. Women need to incorporate the fight for water justice into their local, national, and global agendas. All over the world, women have transformed imagination into power through political activism. Political activism on behalf of sustainable water policies and practices would include public awareness raising along with lobbying politicians and powerful business people to wake up to the world's critical water issues. Women and like-minded men should use every forum available to them to educate and ensure a sustained water discourse is maintained. Women, especially mothers and teachers, can educate children as to why it is important not to misuse water and why they should be concerned about their water. The aim here is to instill new thinking about water into our children, who stand to gain throughout their lifetimes if water is available and wholesome. Women, in all levels of governance, can push for policy that would require public schools to teach our children about diversion, damming, and the contamination of water, as well as about the negative health repercussions that occur when we pollute our valuable water resources. Women have to be engaged in sensitizing the general public as well as children to the idea that it is in our own self-interest to conserve water and not to pollute it. Women can also promote, through example as well as through political activism, the principles of water stewardship—that it is the responsibility of every individual citizen to conserve water and to keep the resource clean. This should be matched with strict enforcement and compliance policies. If our children are sensitive to issues that directly affect their lives, they can act and be hopeful that the future of water quality and availability will be guaranteed.

" . . . while women benefit the least from corporate profits made by polluting water, they pay dearly with their own poisoned bodies and the neurological impairment of their fetuses."

Since water affects all women's lives, the problem can be effectively addressed if all women's groups form coalitions and join hands with other social justice groups so as to present a united resistance against the big polluters and consumers and so as to force governments to take action. Women must become aware of local, national, and international policies and practices that affect water quality, and they must aggressively campaign for changes that will sustain the quality and quantity of water as an invaluable natural resource. They must do so, not only for their own immediate families, but for the generations to come and for people everywhere.

To save our fresh water resources, it is necessary to create awareness nationally and internationally about how the poor, particularly women, are marginalized by modern trade policies and development projects. Women can create a space for this consciousness raising by inviting women representatives from displaced communities to tell their stories. Adopting feminist principles, women can begin by listening to the stories of the groups who have less power and who have been personally affected. Such testimonies can be powerful in raising people's consciousness as well as creating empathy and understanding. Heightened awareness has the potential to unleash and galvanize organized resistance. It is, for example, collective resistance which brought the controversial Sarovar Dam project in India to widespread international attention (McIntosh, 1999).

Unmasking the illusion that there is an endless supply of fresh water can be a step toward a sustainable water future. When urbanites just purchase their food at the supermarket or turn on faucets, shower, and jump into swimming pools at will, they have difficulty understanding that there is not a lot of water on this planet. In urban-industrial societies as well as in some elite urban centers of the Third World, there tends to be little understanding of where and how the food we consume is produced, about the sources of the water we use, or about what happens to our household and industrial waste water. Popular education, including visits to rivers and lakes and to waste-water treatment plants as well as to family and industrial farms, can make people become personally connected to water as a vital resource that is in jeopardy. The first steps are to become personally aware and to engage in community consciousness-raising; then women in urban-industrial environments need to campaign for

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sustainable water policies and practices and to make certain that the food they purchase, whether from local or international sources, is produced responsibly.

Unmasking the illusion of plenty can lead to a sensitivity of the looming water crisis and enhance the need to conserve water. Instead of constructing dams to create the illusion of plenty, we can learn to do much with little. We can learn from indigenous and rural inhabitants as well as older generations within urbanized settings, who have experiential knowledge about water conservation and about rain water harvesting and storage. We can all learn how to reuse gray water and how to consume less. From indigenous women, especially those in the global south, we can learn how to grow crops that are appropriate to the climate and do not require irrigation. Simple lessons, which can be critical in conserving water, can be learned from indigenous women and others who have experience getting along with less water.

Urbanized women, who wish to beautify their yards, could apply these lessons by planting the species of grass and flowers which are native to their localities, watering their gardens sparingly, and avoiding the use of pesticides and herbicides that pollute our rivers, lakes, and aquifers. Lawn care accounts for a very high percentage of domestic water use as well as water pollution in North America. Conley, Schraufnaagel, Browne, and Seymour (2000) report on the magnitude of the problem of cosmetic lawn care:

> In New York State last year 20% of total pesticides were used for agriculture, and 80% for "non agriculture use" by commercial applicators (lawn chemicals). Remember that these get into the groundwater and surface water systems. In addition to decreasing their use of water and water polluting chemicals at home, it is extremely important that urban women become aware of where and how their food is produced; they must do all they can to make certain that the food they put on their table is produced using farming practices that are sustainable and non-polluting.

Feminist scholars and research scientists can lobby for more research dollars to be devoted to indigenous systems of science and technology. The wisdom of indigenous and rural people, especially of farming women, is knowledge that has been ignored, devalued, and overlooked in the process of technological advancement, but it still holds promise for providing balance and for guiding the ways in which we relate to water.

Women can push for the adoption of sustainable development principles. For development to be sustainable, different approaches to and different thinking about water issues need to be implemented. Sustainable practices are not "business as usual." Sustainable development requires that we assess the long-term social, economic, and environmental implications whenever initiating projects that affect our water supply. Developers must use democratic approaches and consult with the affected communities, including the women whose interests are all too often ignored. Sustainable development means empowering communities and societies at the "grassroots" level so that the wisdom and decision-making power of ordinary people can be used to benefit both humans and nature. Sustainable development would mean reforestation, use of natural geothermal power, understanding how water purifies itself when left in the natural surroundings, and appreciating how thousands of water and wetland species contribute to the sustenance of the ecosystem.

Since water issues directly affect women, women need to become more active in politics, business, and industry so that they can influence how water is used and conserved. To accomplish this, women need to organize and support one another. They also need men to support them to achieve high levels of education and to break down the other barriers that prevent women from becoming influential power brokers. It will only be when women get into high level decision making positions that women's concerns regarding water will be seriously addressed.

Conclusions

We conclude by emphasizing that the world is rapidly regressing toward a global water crisis. Women are the principal home makers and health providers nearly everywhere, and they are the primary food producers in many Third World settings. Women are profoundly affected by the quality and quantity of water that is available to them, their families, and their communities. As central stake holders, women need to take leading roles in lobbying their governments and business enterprises to avert a global water crisis and to attain sustainable, equitable, and just water policies.

Article

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Sustainability of Involuntary Resettlement in Developing Countries: A Case Study of Bangladesh

Iftekhar Amin

Involuntary displacement due to infrastructure change is fast becoming a matter of worldwide concern. The main problem is that this type of displacement usually goes hand in hand with loss of livelihood and impoverishment of the displaced—the opposite of developing countries' poverty reduction and development goals. A study conducted by the World Bank of all 1986–1993 Bank-financed projects entailing resettlement, as well as many resettlement operations outside Bank-finances projects, found that although progress has been made in recent years, major difficulties and failures remain, with implementation performance often less effective than expected. The study estimated that this type of displacement affects at least 10 million people in the developing world annually (Cernea, 1994).

There are huge controversies regarding the impact of such projects on sustainability. Sustainable development affords a compre-hensive and critical model of development anchored in the integration of three principles: economic development, social development, and environmental protection. But the ability of developing countries to practice sustainable development is affected by factors such as domestic policy, environmental policies, public participation in decision making, financing policies of the bilateral and multilateral lending institutions, private sector investment, and clean technology development (Hecht, 1999). For development to be socially and environmentally sustainable, it must also take into account and draw upon the values, traditions, and cultures of the people in the countries and societies that it serves (Davis and Ebbe, 1993). This study focuses primarily on the socio-cultural and environmental aspects of a resettlement process in Bangladesh that resulted from a bridge building project that was begun in 1994 and completed in 1998.

Continued p. 10

"The resettlement program that the Bangladeshi government proposed for the displaced people raised huge controversies, many of them concerning sustainability."

Amin *(continued)*

Resettlement in Some Large Projects

A framework for studying the Bangladesh experience emerges from review of four large projects in developing countries that indicate that such projects often do not meet the conditions of sustainable development. Several examples can be cited.

½ *Narmada Valley Dam in India:* The Sardar Sarovar dam on the Narmada River in India is a stark example of how the World Bank's conditions on resettlement and environmental damage, which were attached to its loan in 1985, could fail. An independent report found that, among other things, the benefits were over-estimated, environmental impact assessments were not conducted and resettlement conditions were not met. Sadly, this is not an isolated case (Mehta, 1999).

½ *Three Gorges Dam in China:* The massive Three Gorges Dam, which China started to build in 1994, will displace up to 1.3 million people. America's Export-Import Bank, dissatisfied with China's guidelines on resettlement and the environment, refused to finance the project three years ago. But the dam is going ahead with Swiss, Japanese, and German capital. The government claims that the relocation will continue until year 2013 and this population will move to the neighboring provinces (Qing, 1998).

½ *Epupa Dam in Namibia:* A World Bank study treated the Namibian government decision to build the Epupa Dam on the Cunene River as economic lunacy. The government's consulting engineers recommended the cheapest and most environmentally friendly of four alternative dams, but the Mining and Energy Ministry preferred a larger and more expensive one. It would displace relatively few people (between 6,000 and 10,000), and many jobs are promised, but most of these will probably go to skilled workers from overseas (Al-Khalisti, 1993).

½ *Forest Management Project in Uganda:* A few years ago, a forest management project started by the Ugandan government with financial assistance from a multilateral European donor agency undertook the massive displacement of communities living in the Kibale game corridor and forest reserve, without offering them any viable economic alternative. By the end of 1992, about 35,000 people had been violently evicted. They were provided with only a few tools from relief agencies and essentially were left to fend for themselves (Al-Khalisti, 1993).

Resettlement: The Bangladesh Case

In 1994, the Bangladesh government began construction on a bridge over the Jamuna River, a project that displaced around 100,000 people from their land and homesteads. The Jamuna is the mightiest of three rivers in the country and ranks as the fifth largest river in the world in terms of volumetric discharge. The objective of the project was to establish a strategic link between the east and the west regions of Bangladesh and to integrate the country by generating multifaceted benefits for the people: promoting better inter-regional trade as well as economic and social development. The resettlement program that the Bangladeshi government proposed for the displaced people raised huge controversies, many of them concerning sustainability. It is those issues that this article addresses.

The researcher visited the project area and interviewed a non-random sample of the people who were resettled as a result of the project.

Official government data, data from different agencies involved in the resettlement projects, and World Bank and ADB's reports have been used in this study, together with journal articles and books that provided additional information.

Description of the Project

The total cost of Jamuna multi-purpose bridge was approximately one billion U.S. dollars. The government of Bangladesh expended some U.S. $362 million and also borrowed 200 million dollars each from Japan through its Overseas Economic Co-operation Fund, the World Bank (International Donor Agency), and the Asian Development Bank (ADB).

During the construction of the Jamuna bridge the government developed a resettlement project for the affected people. The objective was to follow the World Bank's guidelines to implement the resettlement plan. Provisions and entitlements were determined for different groups of project-affected persons commensurate to the loss suffered. The types of losses or disturbances were placed into fourteen categories using World Bank guidelines. A survey conducted by Bangladesh Rural Advancement Committee (BRAC) reported that the total number of affected people was estimated to be 77,220. This survey revealed that 39,000 persons (6,000 households) were directly affected (loss of agricultural land, properties); another 37,800 (5,900 households) were indirectly affected due to loss of access to land (tenant cultivators, farm workers, small business/ industries, squatters, non-titled persons) for making their living. Of the individuals affected, 42 percent were farm workers (BRAC, 1994).

For implementation of the Revised Resettlement Action plan, the unit responsible for the plan engaged both governmental agencies and non-governmental organizations (NGOs). Most of their projects were criticized by different studies for their inadequate attention to the social and cultural aspects of the project that affected peoples' lives (Proshika, 1998).

Payment of Compensation: World Bank policy explicitly states that all resettlement programs must be development oriented, and that all steps must be taken to prevent those dislocated from becoming permanently impoverished and destitute (World Bank, 1996). This guideline was not followed during implementation of the Bangladesh resettlement project. There were numerous complaints about unfair compensation because the promised compensation was not fair by the time the beneficiaries received it.

In many cases the compensation was inadequate to permit replacement of loss. The reasons that hindered land purchase were 1) most of the landowners could not afford to buy same amount of land at a higher price; 2) most did not receive all their compensation at one time; 3) conditions for buying land were difficult enough to discourage the seller. In addition, to collect their compensation the villagers had to pay 10 to 25 percent of their compensation as bribes to the project officials.

According to the project authority only 22.12 percent of the affected people were able to purchase land.

An important factor is that giving cash compensation for the cultivable land was not a proper solution for most of the villagers. Most of them were skilled only in farming; no other occupation was known to them. Their land has re-use value; they use it to generate income year after year. Since they often have to use a larger portion of the compensation money to build a new home they could not buy same amount of land as they owned before.

Living Standard: Though the objective of the resettlement project was to maintain pre-eviction status of the affected people, in reality things turned out to be different. During implementation of the project not enough job opportunities were created and the scope of work was reduced. The ferry port where there were hotels, restaurants, fishery industry, the offices of shipping and transport companies, and other companies, was a major source of employment for the people of the area. When the ferry was closed, the income of many of the affected people decreased. After interviewing twenty persons randomly selected from four villages of that area, one study reported that the income of the respondents declined compared to their pre-eviction status (Rahman, 1992). Even getting a job at the bridge construction work was extremely difficult, and jobseekers had to bribe the contractor (Siddiqui, 1997).

The respondents also reported that their living standard had fallen. The fall is reflected in resettlement sites that look like suburban housing developments. An average rural household is quite unused to living in such neatly defined spaces. Moreover, the space allocated is not adequate for those who need cattle sheds, manure pits, haystacks, poultry sheds, and the like. If farming households are settled there, the runoff from the area will contaminate the ponds and make them a real health hazard. Also, the people in the resettlement area said that except for water they now have to buy everything. Before moving to the resettlement site they cultivated vegetables

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in the small parcels of land near their homesteads, and most raised some poultry and cattle, which served as a source of food and often provided extra income.

Legal Issues: Some of the World Bank's operational guidelines are often difficult to follow in a developing country like Bangladesh due to an inadequate legal framework. Acquisition of land by the government in Bangladesh is known to have a severe adverse impact on the majority of the affected people. One of the most serious problems is the determination of compensation for land, which has generally been far below the market price of the acquired property. Furthermore, the ordinance recognizes only the legal owners of the properties being acquired. Thus it excludes tenants, sharecroppers, squatters, and farm workers who depend upon enterprises located on the affected land.

Culture: Both the NGOs and the government failed to consider the impact of resettlement on the social integration, kinship structure, and culture of the affected people. The displaced people continue to suffer from feelings of alienation, a loss of identity, and a lack of group solidarity. The structure of rural society in Bangladesh, traditional ways of maintaining livelihoods, familiar surroundings, the existence of different societies in the same village, behavior, and relationships involved were not considered at the time of resettlement. The basic social unit in a village in Bangladesh is the family, generally consisting of a complete or incomplete patrilineally extended household (*chula*) that resides in a homestead (*bari*). The "bari" is not simply a residence; it has wider connotation to the villagers. The house in which they have been born and brought up, and in which their fathers and their forefathers had lived evokes a very emotional response. Furthermore, land is the symbol of prestige. To lose land means losing prestige, power, and income.

Most of the power structure in the village is based on the kinship ties. When the villagers were displaced and had to resettle in new villages, their ties with kin were loosened. Women have been forced to seek jobs outside the home, which is socially and religiously unacceptable for some village people. Unless the new settlers were seen to bring remarkable benefits, the host communities were likely to be hostile to them. Thus such issues as village leadership and politics posed problems at the resettlement site and in other villages.

Migration to Cities: Although there are no official statistics about the numbers of the displaced people from the Jamuna Bridge Project who have migrated to the urban areas, it is certain that many have done so. The migrants not only face economic hardship, they are also discriminated against by the government, the bureaucracy, and the urban elites. They are considered to be the roots of poverty and crime and social tensions. Research shows that the urban migrants do not gain in terms of income and that they are not satisfied with their condition (Bhorer Kagoj, 1997).

Effects on the Fisheries: For the people of Bangladesh fish has traditionally been the major source of protein in their diets. The construction of the bridge obstructed the flow of sufficient water into the adjoining rivers, which had adverse effects on the fisheries. A socioeconomic survey was conducted under the Environment Management Plan to assess the impact due to the closure of northern intake on the fisheries and fish catch, and socioeconomic conditions of the fishermen due to the bridge construction (Ministry of Fisheries, 1997). This survey covered 5,745 fishing households in 154 villages, from a sample of approximately 10 percent or a total of 594 fishermen who were randomly selected. The research found that, on the whole, the bridge construction and related works impacted on fisheries of the area in several ways: (1) reduction of fish habitat (i.e., less space in rivers, canals, floodplain, and marshland); (2) reduction of natural recruitment of fish stock; (3) reduction of spawning and grazing area for fish; (4) reduced fishing catch resulting in an overall decrease in fish production and income of households.

The household average fish catch per day was 3.09 kg before the closure. After the closure it was reduced to 1.21 kg, which meant an annual average loss of 60.79 percent per household per day. This survey also showed that there has been decrease of consumption of fish by about 40 percent, meat by about 64 percent, eggs about 45 percent, and milk about 53 percent after this closure. Such decreases in the consumption presumably affected the state of health of the fishermen in general and the women and children in particular.

Conclusion

Resettlement is not only an economic problem. Statistics and numbers cannot portray the actual scenario of this process. Past studies and surveys depended upon statistics and numbers to show the success and failure of the project. Social, cultural, and environmental aspects have received much less attention. The problems that resulted from the Jamuna bridge project indicate that it is important to have social programs to help the people who have been displaced and relocated. Furthermore, their input for developing the program is essential. Government and NGOs should involve the affected people in the various stages of policy and decision-making throughout the implementation of the resettlement project. For future projects, Bangladesh needs to formulate a national policy to guide resettlement. In order to do so it can draw upon the experiences and information gathered by the World Bank, Asian Development Bank, NGOs, and local and international scientists. In doing so, however, it must exercise caution. Only organizations that have had prior positive experience in dealing with the socio-economic, cultural, and environmental problems of a community should be engaged in the formation of such a plan.

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Applying Sustainability to the Study of Disasters

An Assessment of Strengths and Weaknesses

David A. McEntire and Dorothy Floyd

Over the past ten years, the concept of sustainability has been increasingly applied to disaster studies. In 1987, the World Commission on the Environment and Development defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987: 44). Since this time, many scholars assert that sustainable development (or sustainable hazards mitigation as it is now known) is the new paradigm for disaster research. The following paper addresses the applicability of this concept to studies of disaster by pointing out its respective strengths and weaknesses. The article suggests that additional work will be needed to integrate the concept into disaster prevention, preparedness, response, and recovery activities.

Sustainability and Disasters

Sustainable development has recently become an important concept in disaster research. Both development and disaster scholars have linked the principles of sustainable development to catastrophes. The original group of scholars that proposed this concept recognized the complex interactions among development, the environment, and disasters. One of the reasons why these issues became topics of discussion was due to the fact that the 1970s witnessed twice as many natural catastrophes that resulted from environmental and developmental mismanagement as compared to the 1960s (WCED, 1987). These scholars recognized that the overuse of land often leads to soil erosion and drought (United Nations, 1986), the elimination of vegetation promotes subsequent famines (Grann, 1985), and the depletion of forests increases the likelihood of flooding downstream (WCED, 1987). In addition, scholars recognized that industrialization was posing threats to both man and the environment. They cited the explosion of liquid gas storage tanks in Mexico, the dangerous release of dioxin in Italy, the chemical fire at a warehouse in Switzerland, and the nuclear accident in Chernobyl as examples (WCED, 1987).

Aware of these problems, scholars and institutions espousing sustainable development made explicit recommendations to reduce disasters. As examples, the Stockholm Conference, the Bruntland Report, and the Rio Conference each advocated environmental protection and caution with toxic substances to reduce disaster (Rao, 2000; Rowland, 1973; WCED, 1987). *Our Common Future* (WCED, 1987) also suggested that countries limit activity that may pose trans-boundary environmental degradation. However, these scholars did not show how sustainable development could be applied to other disaster issues. This task was left up to the scholars who were specifically interested in catastrophes.

Current disaster scholarship also explores the connections between environmental management and disaster reduction. Many scholars assert that new forms of progress will protect the earth's natural resources, reduce the threat of calamity and promote continued development. Geiss & Kutzmark (1995) assert, for example, that the designation and protection of green spaces (e.g., parks) can mitigate flooding by serving as catch basins for storm-water runoff. Another argument is that the reduction of greenhouse gasses may reduce the occurrence of severe weather and droughts (Mileti, 1999). Thus, protecting the environment is proposed as a means to reduce or avoid disaster and achieve sustainable communities (Geiss & Kutzmark, 1995).

"The argument here is that post-disaster assistance is often not productive. In fact, the literature is replete with examples of how the delivery of aid may even be counterproductive."

An additional area of sustainable development has been explored by Phillip Berke (1995). Following the recommendations produced at the 1992 United Nations Conference on Environment and Development, Berke notes how seven principles of Agenda 21 can be applied to disaster.

1. *Needs and ecological limits* suggest that all people have rights to health and safety, and that natural disasters inhibit the future of development.

2. The *precautionary principle* indicates that the lack of knowledge about hazards should not discourage efforts to reduce the loss of life and property resulting from disaster.

3. *Intergenerational equity* implies the goal of avoiding the imposition of adverse impacts upon future generations through inefficient investment of resources into development projects that discount potential catastrophes.

4. *Reduction of poverty* alludes to improved economic equity within generations so that the poor have access to affordable and well-built housing in areas that are less prone to hazards.

5. *Responsible regionalism* implies that communities must consider how development may create hazards for other communities.

6. The *polluter (or culpable) pays* prompt individuals, corporations, and governments to take financial responsibility for activity that leads to disaster.

7. *Participation* encourages equal opportunity among all people in shaping natural disaster reduction policies (Berke 1995: 9–10).

Another motif of sustainable development in disaster studies relates to proposals for sustainable relief and recovery operations (Berke, 1995; Berke et al., 1993; McAllister, 1993). The argument here is that post-disaster assistance is often not productive. In fact, the literature is replete with examples of how the delivery of aid may even be counterproductive (Anderson and Woodrow, 1991; Cuny, 1983; McEntire, 1999e; Portsea, 1992). One of the biggest stumbling blocks to effective post-disaster operations has to do with the assumptions that organizations make about disaster relief and recovery. For instance, it is generally assumed (often incorrectly) that disaster victims cannot take care of themselves, that host governments are weak or corrupt and should not be trusted with donations, that aid organizations do not have

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to be accountable to disaster victims, and that relief and recovery programs concentrate on the needs of recipients instead of providers (Berke, 1995). Other inhibitors to effective post-disaster operations include insufficient resources or funding for relief operations (McAllister, 1993) and the failure to link recovery activities to future disasters (Berke, 1995; Berke et al., 1993).

As a result of such problems, scholars have argued that disaster relief should be carried out with a development perspective (McAllister, 1993) and that a developmental approach needs to be applied to disaster recovery (Berke et al., 1993). In other words, it is suggested that a gap exists between post-disaster assistance and development that is artificial, misleading, and detrimental. Therefore, disaster relief and recovery aid need to be linked to long-term development.

" . . . it is suggested that a gap exists between post-disaster assistance and development that is artificial, misleading, and detrimental. Therefore, disaster relief and recovery aid need to be linked to long-term development."

Specific recommendations for a sustainable relief-to-development strategy are a) acquiring an appropriate quality and sufficient quantity of aid (McAllister, 1993), b) relying on internal capabilities and not depending solely on external resources, c) promoting participation among potential and actual victims (Berke et al., 1993), d) engaging in partnerships instead of paternalism (McAllister, 1993), e) gaining knowledge about the requirements for outside assistance, and f) being flexible in the administration of recovery programs (Berke et al., 1993). Other suggestions include taking advantage of the development opportunities that disasters reveal by addressing the perennial problems of the community during recovery (e.g., increasing availability of housing for the poor, improving the infrastructure, expanding open spaces, modernizing public facilities, and stimulating the economy), and reducing the potential for future disaster (e.g., through the appropriate construction and location of buildings and settlements) (Berke et al., 1993). Thus, sustainable development is used to signify the tailoring of disaster aid to the specific needs and options open to the affected community in order to help the community recover and minimize the probability of future catastrophe.

The fourth use of sustainability goes into more depth on how to reduce natural disasters through new development practices. This perspective can be credited to Denis Mileti and his colleagues at the Natural Hazards Research and Applications Information Center at the University of Colorado. During the mid-point of the International Decade for Natural Disaster Reduction, Mileti et al. (1995) proposed the need to integrate the sustainability and natural hazards debates. Their argument was that

> losses from natural disasters occur because of development that is unsustainable; that natural disasters occurring in unsustainable communities can restrict efforts toward sustainability through their impact on environmental degradation, ecological imbalance, hindered socioeconomic development, and lower quality of life; and that more resilient human communities are better able to mitigate natural disaster losses." (122)

Put differently, it is believed that certain development practices increase the occurrence of disaster, that disasters inhibit development, and that steps need to

be taken to help societies better prevent and recover from disaster.

This group of researchers then listed six requirements for sustainable communities: (a) doing away with mitigation devices that create greater hazards in the future, (b) defining acceptable levels of risk, (c) enhancing the ability of communities to respond independently to disaster, (d) protecting and improving the quality of the environment, (e) supporting economic growth and the quality of life over the long term, and (f) fostering a more equitable distribution of the costs and benefits of development over generations.

But it is Mileti's *Disasters by Design* (1999) that has explored furthest the link between sustainable development and disaster. Following up on the United States' first assessment of knowledge about hazards that took place in 1972, Mileti worked with a large and distinguished group of experts (e.g., engineers and physical, natural, social, and behavioral scientists) to identify the current state of knowledge about hazards and disasters. His synthesis of research over the past two decades is impressive. It examines many different types of natural hazards, mentions several alternative ways of approaching them, and discusses the implications of recent research for those academics and practitioners interested in reducing disaster.

The central finding of his work is that a shift in culture (e.g., values, attitudes and behavior) will be necessary if unsustainable practices are to be avoided and hazard mitigation is to be sustainable in the future. He proposes a new way of thinking about natural hazards that would: (a) recognize the complex interface between earth and social systems (as well the interactions between local activity and globalization), (b) take responsibility for hazards and disasters, (c) anticipate the uncertain and unexpected, (d) reject short-term thinking, (e) understand more fully the impact of social forces on the occurrence of disasters, and (f) embrace the principles of sustainable development.

Mileti then asserts that five tools are necessary to achieve what he terms "sustainable hazards mitigation." These include (a) better land use planning and management to limit settlement in dangerous areas, (b) the enforcement of building codes and standards to protect people and property, (c) increased reliance upon insurance to cover possible financial losses from disaster, (d) enhanced prediction, forecasting and warning systems, and (e) improved engineering for buildings and infrastructure to minimize death and damage associated with disaster.

Finally, Mileti offers suggestions on how his view of "sustainable hazards mitigation" may be implemented. His numerous recommendations for the stakeholders in disaster reduction involve:

- building consensus on a common agenda for disaster reduction
- participating in networks and allowing for flexibility in organization
- developing tools for improved decision making
- measuring progress to determine the need for future adjustments
- consolidating knowledge about hazards and putting it into practice
- establishing holistic government policies for disasters and development
- improving local and regional responsibility and capability
- transferring knowledge about disasters to other nations, and
- determining the hazardousness of the nation.

Thus, Mileti applies the sustainability concept in disaster studies to illustrate the importance of new development practices, what those policies may look like, and how they are to be implemented. His work has justifiably been praised for altering views about disaster and bringing more attention to this problem facing human kind (Myers et al., 2000).

Utility of the Sustainable Development Concept for Disaster Studies

There can be little doubt about the benefits the concept of sustainable development provides for disaster studies and disaster reduction. Five are particularly noteworthy. First, the concept reveals a neglected variable in the disaster equation. Specifically, it illustrates how environmental degradation can have an impact upon the occurrence of disaster. For instance, deforestation may increase the likelihood of flooding while the possibility of global warming from pollution may lead to

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stronger or more intense storms. The sustainability concept, therefore, illustrates how crucial environmental protection can be for hazard mitigation.

Second, the sustainability concept adds to the understanding about the complex relation of development and disasters. It indicates that development often promotes disaster, that disasters inhibit development, and that better development practices are needed to reduce disasters. Thus, sustainable development contributes to the understanding of the development-disaster debate in the research literature.

Third, sustainable development suggests how the future of both development and disasters may be influenced in various phases of disaster. Pre-disaster mitigation, for example, may reduce disaster and facilitate a continuation of development. Disaster assistance may retard development by making people more dependent upon outside resources. Recovery activities may add to or take away from the potential impact of imminent hazards. Sustainability indicates the need to explore the linkages among hazards mitigation and the recovery phase of disaster.

Fourth, the sustainability concept also broadens views about what is required for hazard mitigation. It indicates that many variables (e.g., culture, economics, environment) play a role in calamity, and that various actors (e.g., government officials, businesses, non-profit organizations) need to work together in order to mitigate disaster. Sustainable development, consequently, provides a larger picture of the problems and solutions to disaster than has heretofore been offered. In contrast, the concept of comprehensive emergency management, popular in U.S. emergency management circles, only looked at how mitigation, preparedness, response, and recovery activities would reduce the quantity and quality of disasters. It did not include or address various social, political, cultural, and economic causes of disaster.

Finally, sustainability notes the importance of "process" for hazards mitigation, which comprehensive emergency management ignored. It highlights how everyday activities, such as the location and construction of buildings, has a bearing upon catastrophic incidents. Hence, sustainable development implies that disaster reduction is a process rather than a goal only, and provides advantages for those scholars interested in understanding and reducing the impact of disaster.

Limitations of the Sustainable Development Concept

In spite of its several benefits, there are problems associated with the application of sustainable development to disaster studies (McEntire, 2000a; McEntire, 2000b). First, sustainable development is unclear as a disaster concept. It is evident that many disaster scholars have not defined the term sustainable development. Although the term has frequently been mentioned in the literature, it is often not clarified (see Berke, 1995; Berke et al., 1993; McAllister, 1993; Mileti et al., 1995). It has even been asserted that no attempt should be made to define sustainable development (Geiss and Kutzmark, 1995). In contrast, other researchers have relied upon multiple definitions of the concept, and many disaster scholars frequently refer back to the WCED definition of sustainable development, even though it is not specifically related to disaster (see Berke, 1995; Geiss and Kutzmark, 1995; Mileti et. al., 1995). In other cases, sustainable development has been used to signify relief-to-development strategies (Berke et al., 1993; McAllister, 1993). Even where serious attempts have been made to define sustainable development, there is a lack of clarity about linking this term to the reduction of calamity. For instance, Mileti (1999: 4) asserts that "sustainability means that a locality can tolerate—and overcome—damage, diminished productivity, and reduced quality of life from an extreme event without significant outside assistance." This definition emphasizes post-disaster activity while downplaying disaster mitigation. A further concern about this definition is that it diminishes the role of sustainable development in promoting pre-hazards mitigation. Researchers are often guilty of making both of the above mistakes, even though they note the importance and need to specify and delimit meaning (see Mileti et. al., 1995: 122).

A second weakness of sustainable development deals with the type of question it poses for disaster researchers and practitioners. It asks first and foremost, "How can development be continued into the future?" Such a question certainly brings up a desirable goal for humanity and undoubtedly relates to disaster studies because environmental degradation and other activity can limit the prospects of development, but finding an answer to the

question could generate a major problem for academics and practitioners, considering that "sustainable development does not necessarily lead to safe development" (Berke, 1995: 14; see also Mitchell, 1999: 505). Put differently, sustainability may be more concerned about resource conservation and other activities that ensure future development rather than the process of reducing disaster impacts.

The third problem of sustainable development is the difficulty of separating it from the natural hazards perspective of disaster. In previous decades, researchers focused a great deal of attention on the social and psychological impacts of disasters (see Drabek 1986). Nevertheless, many researchers over-emphasized the physical component of disaster. Like them, current researchers who embrace sustainable development may be guilty of making a similar mistake. Thus, in promoting sustainability, they may unintentionally imply that the environment (although a degraded one) is the source of certain types of disasters (Geiss and Kutzmark, 1995). Even Mileti (1999) falls into a similar trap. In *Disasters by Design*, he appears to have overcome the limitations of the natural hazards perspective. The book begins with an extensive survey of the many factors that lead to disaster, and he notes the need to include social, political and economic variables. However, he admits that his tools for sustainable hazards mitigation strikingly resemble those found in the previous literature. The current usage of sustainable development may, therefore, downplay social variables and limits its ability to take the discussion to a logical and more comprehensive conclusion.

A fourth difficulty in applying sustainable development to the field is related to those discussed above: the concept may not go directly to the root of the disaster problem. To understand this argument, it is important to recall that studies repeatedly illustrate that disasters are not "natural" (Cannon, 1993). For instance, an earthquake in an uninhabited area is not a disaster but a physical process by which tectonic plates relieve built-up stress. At a minimum, therefore, an earthquake agent develops the potential of becoming a disaster when it strikes a populated area. But even this is not enough. The triggering agent must interface with people who are vulnerable (e.g., those who are exposed to risk, are susceptible, and/or are less resistant and resilient to disaster) (McEntire, 2002). Thus, a disaster occurs only when a triggering agent interacts with various forms of vulnerability (Cannon, 1993).

Unfortunately, sustainable development may not fully take the above observation into consideration. It attempts to reduce disasters by protecting the environment, improving the quality of life, altering physical development patterns, and/or by eliminating other "unsustainable" practices (Mileti, 1999; Mileti et al., 1995). Obviously, environment protection, improvements in the quality of life, and altered land-use management help to ensure development by reducing many disaster vulnerabilities, but there are other types of vulnerabilities that may not be taken into account by this concept. Among these are those associated with historical events, demographic trends, family structure, unforeseen consequences of technological advances, lack of political and financial support for emergency management, insufficient planning, training and exercises, the privatization of utilities, and failure to link recovery to mitigation. The term "unsustainable practices" could conceivably help in this

"Obviously, environment protection, improvements in the quality of life, and altered land-use management help to ensure development by reducing many disaster vulnerabilities, but there are other types of vulnerabilities that may not be taken into account by this concept. Among these are those associated with historical events, demographic trends, family structure, unforeseen consequences of technological advances, lack of political and financial support for emergency management, insufficient planning, training and exercises, the privatization of utilities, and failure to link recovery to mitigation."

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respect, but it is new to disaster studies and runs the risk of ignoring a great portion of the previous disaster literature. Therefore, if sustainability confronts many of the vulnerabilities created by culture, development, or the management of disasters it may do so partially, indirectly, or even by chance.

Because of these weaknesses, the notion of sustainability is often used too narrowly in disaster studies. As discussed earlier, the original conceptualization of sustainable development is broad. However, researchers have not yet shown how each of the variables related to sustainability may reduce disaster; they have only illustrated how environmental protection and caution with hazardous materials may reduce disaster (WCED, 1987; Berke, 1995; Geiss and Kutzmark, 1995; Mileti et al., 1995; Hatcher, 1996). Others limit the concept's meaning by equating sustainability to relief-to-development strategies (Berke et al., 1993; McAllister, 1993). Even those who attempt to expand the discussion about the causes of disasters imply that land-use planning is sustainable development. It has been argued that "a sustainability approach to natural hazards would envision a future with human communities and settlements that relate wisely to the natural areas that they occupy over the long term" (Mileti et. al., 1995: 122). In his book, Mileti asserts that "no single approach to bringing sustainable hazards mitigation into existence shows more promise at this time than the increased use of sound and equitable land-use management" (1999: 155–56). Boullé, Vrolijks and Palm declare "the major concern, at present, is the establishment of suitable national and local policies in which natural disaster risks are addressed within the context of development planning and programming" (1992: 187). Burby likewise agrees and declares that by "planning for and managing land use to enhance sustainability, we can reduce our vulnerability to disasters, if not eliminate them" (1998: 1).

> "The final problem of the sustainable development concept deals with its inapplicability to all types of disasters. While there can be little doubt about the pertinence of sustainable development to extreme natural events and some types of technological disasters, there is less evidence that it is related to other types of catastrophes or mass emergencies."

These examples show that authors who rely on sustainable development often focus too heavily on one or a few variables, possibly causing them to ignore, miss, or downplay the plethora of other factors that interact to produce disaster and the need for a holistic approach. For instance, it may be impossible to alter land-use decisions without including variables such as poverty, culture, politics, psychology, business practices, economic forces, etc. In addition, while it is certainly true that careful land-use practices are needed and would undoubtedly be beneficial, past research indicates that people do not always participate in this type of mitigation (Mileti and Passerini, 1996). Indeed, people often locate in hazardous areas because of the abundance of resources that these geographic regions provide (Burton et al., 1993). Also, it is important to remember that there are no hazard-free areas.

The sixth problem of using sustainable development is that it may be more relevant to certain phases of disaster than others. For instance, McAllister (1993) and Berke et al. (1993) focus on how post-disaster activity may promote or discourage the future of development. By comparison, Mileti's (1999) focus is mainly on the mitigation phase of disaster. Even when Mileti tries to link sustainability to preparedness, he is aware of the tenuous fit: "Warning systems seem to have little direct bearing on sustainable development" (1999: 197). Noting these difficulties, Berke (1995) has commented that

> the interest groups involved in mitigation . . . and long-range disaster recovery are likely to be closely associated with the interests of sustainable development advocates. However, for those interest groups concerned with emergency preparedness and response issues (e.g., disaster warning, search and rescue, evacuation, and

> sheltering) the relationship with sustainable development would be less salient. (14–15)

Hence, the concept of sustainable development is less useful in recognizing how preparedness and response actions or inactions also determine vulnerability to disaster. In this sense, sustainable development is a step back from the all-phases approach of prior research paradigms (e.g., comprehensive emergency management). It neglects previous studies that suggest that preparedness and response are also needed to reduce adverse impacts because people may not support mitigation and some disasters cannot be prevented. As a result, the use of sustainability may unintentionally imply that humans have sufficient knowledge, will, and power to control natural forces.

The final problem of the sustainable development concept deals with its inapplicability to all types of disasters. While there can be little doubt about the pertinence of sustainable development to extreme natural events and some types of technological disasters, there is less evidence that it is related to other types of catastrophes or mass emergencies (McEntire, 2000a; McEntire, 2000b). For instance, the sustainability notion has an unclear connection to certain types of industrial disasters such as a coal mining accident. Sustainable development may or may not have relation to hazardous material cargo spills, but it undoubtedly has less applicability to other transportation incidents such as train derailments, boating accidents, and airplane crashes. Furthermore, the concept also fails to address the unique demands of conflict disasters such as riots, school shootings, and terrorist activity. Sustainable development may thus be more associated with "natural" disasters than others that are human-induced or hybrid in nature. This is a significant omission since the threats of technology and terrorism pose current questions and additional challenges that must be addressed by future disaster researchers and practitioners. It is also ironic in that the sustainability concept is regarded as a holistic disaster paradigm (Mileti, 1999).

Discussion

In spite of significant advantages, there is uncertainty and unease about the relation of sustainable development and disasters. One observer points out that "hazards play largely a symbolic role in the sustainable development debate, with limited, if any, impact on the shaping of sustainable development policies" (Berke, 1995: 13). In a more negative tone, Hooke (1999) has noted that the term sustainable development is, or should be, out of the disaster debate. In a 1 January 1999 e-mail to the author, Dr. E. L. Quarantelli observed that sustainable development "is usually more a statement of ideological position than a very useful tool either for scientific or practical purposes." Others favor a more complex perspective and "contend that natural hazards should not be considered as a subset of sustainable development problems, but should be viewed as a separate set of problems that often, but not always, overlap with sustainable development problems" (Berke, 1995: 14, referring to Kriemer and Munasinghe, 1992; see also Mitchell, 1999: 505). Even those scholars who espouse sustainable development in the disaster literature have questioned the clarity of the concept and its applicability to catastrophes (Berke, 1995; Mileti et al., 1995). Berke (1995: 14), therefore, notes the problems of relying upon the sustainable development concept:

> It is clear that all adverse impacts of [disasters] will not be eliminated as is currently put forth in much of the sustainable development literature. The knowledge gained by [disaster] researchers and the extensive experience of [disaster] practitioners needs to be meaningfully introduced into the sustainable development debate. Otherwise, naïve assumptions about sustainable development eliminating [disaster] impacts could lead to the shaping of flawed policy.

Conclusion

Without a doubt, sustainable development is an important conceptual tool for both scholars and practitioners alike. This review of the application of sustainable development illustrates the many strengths of applying the concept to disaster studies. However, the sustainability concept has inherent weaknesses that limit its ability to capture each of the variables associated with disaster and serve as a holistic and sound paradigm for disaster scholarship. With this in mind, future research should be conducted on sustainable development and disasters. It is hoped that this paper will generate further discussion about these important issues.

Article

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Toxic Chemicals:
Government Policy and Industrial Strategies in the United States

Don Lyons

Among the most serious issues to resolve in the movement toward more sustainable societies is that of toxic chemical generation. Toxic chemicals are chemicals that are fatal to humans in low doses or to 50 percent of test animals at stated doses and are generally the most important characteristic in defining hazardous waste (LaGrega, et al.,1994). Currently, toxic chemicals are essential to many manufacturing processes and an inherent ingredient of many products. While the activities of the organic chemical and primary metals industrial sectors account for much of the toxic chemical stream, durable goods, the food industry, most household and other consumer products employ toxic chemicals (Freeze, 2000). Consequently, such chemicals are an unavoidable byproduct of industrial society and present a fundamental contradiction in contemporary Western life: demands for greater environmental quality versus demands for more material goods.

Efforts by industry and government to reduce the amount of toxic chemicals produced and released into the environment trace much of their philosophical roots to the concept of sustainable development. The most widely cited definition of sustainable development comes from *Our Common Future*, a report published over a decade ago by the World Commission on Environment and Development (WCED), that defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987: 43). This paper outlines some of the emerging industrial strategies and reviews the most important government policies that relate to toxic chemicals within the broader context of sustainable industrial development.

Sustainable Development

While earlier environmentalist arguments favored a "no-growth" policy, sustainable development examines what type of development can be achieved, given the objective of integrating economic and environmental policies (Pezzoli, 1997). However, there is a wide continuum of understanding of what sustainable development actually means. At one end of the continuum, in "weak" sustainability approaches, environmental concerns assume a higher priority but there

is no clear specification of the environmental quality to be achieved and the primary agenda continues to be economic growth, albeit with an environmental "flavor" (Gibbs, et al., 1998). The focus is on top-down planning and scientific, technological, and/or design-based solutions within a broad "business-as-usual" philosophy with sustainable development becoming synonymous with sustainable growth. Some commentators argue that this approach is little more than the latest ideological counterattack of global capitalism and is doomed to failure because growth and sustainability are essentially incompatible (Lele, 1991; Escobar, 1995).

At the opposite end, the "strong" sustainability position defines sustainability as synonymous with sustainable livelihoods arguing for minimum levels of environmental quality and social equity to be achieved before consideration of other goals. The explicit assumption here is that society cannot let economic activity result in a continual decline in the quality and functions of the environment, despite the realization of the positive outcomes of economic activity (Jacobs and Scott, 1992). Targets for environmental impacts, such as emission levels need to be set, and regulatory measures that constrain firms and individuals to ensure measurable movement toward the goal of greater environmental quality need to be implemented. However, optimal limits are likely to change as the social context and appropriate geographic scale for intervention changes and may rest upon particular approaches to sustainable development that may or may not be correct (Drummond and Marsden, 1999).

A sustainable industrial hierarchy

The continuum of sustainability can be matched to a hierarchy of strategies aimed at reducing the volume of toxic chemicals used by industry. At the apex of a hierarchy is source reduction or the elimination of toxic chemicals from production processes and products. This can be equated with strong sustainability since it completely removes the toxic chemicals from the production system. Occupying the next level of the hierarchy is recycling or reuse of toxic chemicals. This is less sustainable than source reduction since the risk of toxic chemical discharge continues although the need to generate, treat, or dispose of the chemicals is substantially reduced. The final three levels are energy recovery, treatment, and disposal. These strategies are, at best, defined as weak sustainability because they seek to manage the chemicals after they have been produced and thus promote a "business as usual" philosophy albeit with more attention paid to the management of the toxic chemicals produced.

Toxic Chemical Management Strategies

Source Reduction

Source reduction presents the most optimal solution for sustainable industrial development (National Academy of Sciences, 1994). Substituting materials in the product configuration and modifying the production process has proved profitable in many situations, for example, the use of less toxic solvents in cleaning operations and non-cyanide bathes in metal plating operations (LaGrega et al., 1994) and the elimination of the solvent N-Hexane from the process used to extract of vegetable oil.

While product configuration and process changes are sometimes easily accomplished, often they require considerable research and development costs and capital outlays that reduce their attractiveness. Furthermore, the ability and motivations of individual firms operating in real-time markets to adopt such strategies varies enormously. Factors such as firm size, type of production (commodity versus specialty), capital intensity of the production process, availability of and diffusion of new innovations, degree of certainty associated with change, past capital outlays (amortization costs of current capital investment), new capital investment, and the perceived competitive advantage of change all play a role in whether firms will adopt material and process substitutions (Lyons, 2001).

Revision in housekeeping and maintenance procedures, modifications in waste minimization assessments, environmental audits, loss prevention, waste segregation, and employee education represent less complex and costly methods of source reduction. There are real limits, however, to the amount of toxic chemical reduction that can be achieved without process change or material substitution (Pushchak and Rocha, 1998).

Recycling and Reuse

Other factors being equal, on-site recycling is preferable because shipping toxic chemicals off-site is expensive and has significant liability and environmental ramifications if accidents occur. Recycling may involve the

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collection of non-product residuals for direct reuse, recovery via chemical, physical, or electrochemical separation processes, or treatment and removal of impurities. Fewer problems with contamination (as compared to post consumer recycling), increases in the price of petroleum products and solvents, the decreased costs of recycling systems, and increased costs of disposal all operate to increase the attractiveness of the recycling option. Although there are numerous success stories of recycling operations, and the EPA estimates that at least 20 percent of all hazardous waste (including toxic chemicals) generated in the U.S. could be recycled, reused, or exchanged, only about only 5 percent of such waste is managed in this manner (Billatos and Basaly, 1997).

Energy Recovery, Treatment, and Disposal

Incineration is used to destroy various chlorinated hydrocarbon liquids and solids and/or to recover energy (heat) in the process by either adding waste-heat recovery systems to incinerators or firing wastes into existing boiler units. Both approaches can cause problems with emissions of hazardous materials and excessive equipment maintenance (Martin and Johnson, 1987) even though both lead to a reduction in the volume of toxic chemicals that need to be treated. Treatment is designed to render a toxic chemical less dangerous or harmless so it can be disposed of more easily. A variety of new and emerging technologies can neutralize and even destroy toxic chemicals. Oxidation, bioremediation, carbon absorption, gas absorption, dechlorination, neutralization, precipitation, and vitrification technologies are all currently being used in the U.S. (Gottinger, 1997). Treatment, however, is the least cost effective and environmentally unsustainable strategy since it is reactive. The chemicals are first produced and then destroyed making the process economically inefficient and increasing the risk of discharge to the environment.

Disposal is at the base of the management hierarchy. Landfill disposal occurs in specially designed excavations, or "cells," which are covered with fill material. While the goal of landfilling is the permanent storage of the waste, wastes can be released from the landfill either accidentally or routinely as leachate or volatized gases. Because of the risk of release, the U.S. Office of Technology Assessment (OTA) has recommended that land disposal be discouraged, and increasingly communities are unwilling to provide sites for hazardous management facilities diminishing the general utility of this option (U.S. OTA, 1983).

Toxic Chemical Regulation and Sustainable Development

Statutory Programs

Toxic chemical generation is regulated under a variety of statutory programs administered by the EPA's Office of Pollution Prevention and Toxics and other EPA agencies. The most important statutory programs are the Toxic Substances Control Act (TSCA) of 1976 and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) of 1947, both variously amended since their first passage. TSCA regulates the manufacture of toxic chemicals that are not waste products but are used by industry. TSCA allows the EPA to identify potentially toxic materials before they are manufactured in large quantities. Companies are required to give the EPA 90 days notice (premanufacture notification or PMN) before producing a new chemical. The EPA can then control the manufacture and distribution of new chemicals believed to be harmful to human health and the environment, and in some instances ban those chemicals from use (e.g., polychlorinated biphenyls, or PCBs). FIFRA regulates existing and new pesticides and herbicides (Portney and Stavins, 2000).

Regulations governing toxic chemical releases include the Clean Air Act (CAA) 1970, the Clean Water Act (CWA), and the Safe Drinking Water Act (SDWA) of 1974, all variously amended since their first passage. Generally the CAA consists of initiatives to attain and maintain National Ambient Air Quality Standards and to ensure that all new sources of potential atmospheric emissions are equipped with the "Best Available Pollution Control Technology" to control hazardous air pollutants to the maximum extent possible (LaGrega, 1994). The CWA also specifies that "Best Available Practices" be used to control toxic emissions to surface water and prevents industries from discharging non-treated chemicals into community sewers. The SDWA protects groundwater sources of potable water and regulates the underground injection of toxic chemicals, industrial and hazardous waste (Texas Center for Policy Studies, 2000).

Voluntary Programs

More recently, the EPA has developed over 100 voluntary information- and market-based approaches to encourage industry to adopt source reduction as their priority strategy for pollution prevention (USEPA, 1998). Among the more innovative approaches are information programs such as the Design for Environment, Green Labeling, and others that provide detailed information to industry for the development of new source reduction strategies. The Persistent Bioaccumulative Toxic Pollutants (PBTs) program brings together regional and national EPA programs to develop new ways to reduce risks from and exposures to priority PBT chemicals. Under Project XL companies and regulated entities that demonstrate that they can achieve environmental results superior to those under current regulatory constraints are offered regulatory flexibility (USEPA 1998, *ibid*). Finally Title III of the Superfund Amendments and Reauthorization Act (SARA), the Emergency Planning and Community-Right-to-Know Act of 1986, requires major toxic chemical generators to report to the EPA via state regulatory agencies, releases, transfers, and management (since 1995) of toxic chemicals as part of the Toxics Release Inventory (TRI) Program. TRI has two related goals: the provision of plant specific information to the public and the promotion of voluntary incentives to industry to reduce their overall generation and releases of toxic chemicals as a result of public pressure.

Evaluation

Where EPA regulatory programs lie along the sustainability continuum depends to a considerable extent on the level of enforcement and whether definable limits on pollution have been set. In most cases enforcement is weak, and limits have not been set. The EPA has not utilized TSCA extensively, and of the 70,000 chemicals used in commerce; the EPA has direct control only over nine. The difficulty for the EPA lies in the requirement that for every proposed control action, the agency must weigh the costs to industry against the benefit to the public and any controls must be designed in a way that is the "least burdensome" to industry. In addition, due to the enormous variety of new and existing chemicals, the EPA generally depends on chemical toxicity studies done by the chemical industry rather than conducting its own analyses (Fagin, et al., 1999). FIFRA also requires a cost benefit analysis instead of setting unambiguous and measurable safety standards that pesticide manufacturer must meet to avoid a ban.

Weaknesses can also be found in the CAA and CWA. Rather than set limits for particular pollutants, the CAA and the CWA require the use of "best available technology," a slippery definition that allows for considerable maneuvering by industry and has led to numerous court battles for each of the 189 pollutants covered by the law. Also, rather than enforce emission standards, EPA often issues regulations controlling design, equipment, work place practices, or operations instead. Finally, both these laws allow for less difficult standards for smaller polluters further hampering efforts to reach specific standards for criteria pollutants (Fagin, et al., 1999).

It is difficult to assess the utility of voluntary programs since reductions that occur may be due to reasons other than those associated with the voluntary programs (e.g., market driven technology changes, individual motivation by company CEOs). Studies of the effectiveness of TRI-based programs generally conclude cautiously that the TRI program has had some success in some states in reducing toxic releases, although many caution that the accuracy of TRI data is questionable and therefore identified reductions may be not be real (Jobe, 1999). Assessing other voluntary programs is hampered by program novelty, lack of data, and weak metering and evaluation methods.

Conclusion

Our technical ability to eliminate, manage, or substitute toxic materials from our current manufacturing processes and products has advanced enormously over the past 20 years. But even as our technical knowledge continues to present us with more opportunities and individual "pioneer green capitalists" have built profitable companies based on sound environmental principles, questions of functional performance, processing efficiency, and cost still dominate process design and product configuration of most products.

Why is this the case? A large part of the problem is inertia. What is required is nothing less than a revolution in the way production is organized. Industries are organized

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around particular production processes and business milieus that have proven themselves to be profitable. Current strategies, while not perfect, are successful strategies, whereas change brings with it the possibility of greater uncertainty and perceived (or actual) greater risk. As such, it is very difficult to convince entrepreneurs to abandon their current profitable model for a model that has yet to prove itself. It is also difficult to see how even proven models of environmentally sustainable production could diffuse rapidly through business communities. Profitable business models encapsulate considerable strategic knowledge that firms are unlikely to share with their competitors, thus slowing the diffusion of new strategies across industrial sectors.

Paradigm shifts within capitalism generally occur in response to crises that make current strategies uncompetitive, either because of internal contradictions within the paradigm or because new emerging paradigms can respond better to the new realities of the marketplace. Presently, most firms are not challenged by the superior competitive position of firms practicing more sustainable models of production, so there is little market place motivation to change. What is needed is a crisis. But it is important that we set the term *crisis* in context. Crisis in economic terms refers to profound changes in the economy that make current models of manufacturing processes obsolete. For example, during the major economic crisis of the 1970s, a significant part of the difficulty was the inability of the dominant U.S. manufacturing paradigm (i.e., mass production or fordism) to respond to consumer demands for a wider choice of consumer products and the ability of the newer Japanese paradigm (flexible production) to satisfy those demands. It took U.S. manufacturers a decade or more to adopt those new techniques, after which U.S. manufacturing became competitive again.

The key then is a marketplace mechanism that compels U.S. business to respond with manufacturing process changes and new product configurations. This can come about only through changes in consumer preferences that demand products with lower or zero toxic inputs, all of which happens only through consumer education. Environmental product labeling, targeted procurement programs, recycling and reuse programs, and environmental literacy media campaigns are needed to help consumers understand the environmental implications of the products they purchase and wastes they generate. And while this may seem like a daunting task, we have most of the tools and expertise available already. As a nation, we spend enormous effort marketing goods to consumers. People may be just as likely to pay for ensuring the health of their families and the soundness of the planet if such values were the subject of commercial marketing.

Government policy can play an active role too. Given the adversarial climate between business and the EPA and the current political climate, stronger regulations are unlikely to emerge from state or federal governments. Nor would such laws necessarily prove successful or feasible on the ground. As has been demonstrated with many Superfund cleanups, if the technology doesn't exist to clean up a heavily polluted site, binding standards with the weight of law are likely to lead to lengthy and expensive court battles rather than a successful environmental conclusion (Freeze, 2000). This is not to say that we should abandon regulatory approaches. Rather, what is required is greater cooperation between government and industry to develop appropriate regulations within the context of what is technically feasible and within an understanding that ultimately the solutions must be found in the marketplace.

But more needs be done to entice industry to more sustainable paradigms via tax concessions for sustainable capital outlays, fostering research, and supporting markets for new and advanced materials via public procurement policies, cooperative research, and the introduction of pigovian (polluter pays) taxes dedicated to support the emergence of sustainable industrial processes.

On a more optimistic note, it is generally the case that the kernel of the new manufacturing paradigm emerges within the old regime. The numerous success stories of firms developing new processes that dramatically reduce the amount of toxic chemicals generated (Hawken, Lovins and Lovins, 1999) may herald the beginning of a new production regime and a new way of approaching industrial production. If the U.S. chooses to ignore these technological advances, ultimately it may not be the environment that forces U.S. business to change, but its inability to compete against the more efficient (and environmentally friendly) producers that were the first to adopt the new production technologies.

Article

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Service Learning in Mexico
Using a Sustainable Community Approach

Linda Holloway

This paper is a personal reflection on my experience on service learning in a foreign country. In addition to presenting a brief review of service learning and concepts of sustainable communities, it addresses the benefits of service learning in helping students to gain a multicultural perspective in human service delivery.

It's one o'clock in the morning and I am huddled in the back of a pickup truck with five or six American students in Mazamitla, Mexico. There are five more students in the pickup truck in front of us. Ambassadors of the mayor of Mazamitla greeted the group when we arrived at the airport late one afternoon in May. After a long bus drive to Mazamitla, we transferred to the pickups and began searching for the cabañas we were to stay in for our first night. Our adventure had begun!

The original purpose of the class was to learn something about disabilities and how people deal with them in Mexico. Mazamitla is a small town in the mountainous region of Jalisco, Mexico. While not exactly "third world," it is a rural community where agriculture is the major industry. There are few social services available to people of the community; most are available only to those who can make the 3-hour bus trip to Guadalajara. Our university has been involved in sustainable community projects in Mazamitla for over three years—primarily environmental and housing projects.

When a special school for children with disabilities opened, our university was invited to assist with activities in the school. I have a background in rehabilitation and disability studies and was eager to learn more about the services offered in this community. In addition to this, the university students hoped to visit other human service programs in the community and to gain a better understanding of the Mexican culture.

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In retrospect, we not only accomplished that purpose but we went far beyond it. Our learning took place in a foreign country and, more importantly, in a culture that was new to all of us. We learned about living in close quarters and of the value of interdependence to accomplish our daily tasks. We shared some of our ideas and skills, but gained even more from the kids, parents and communities that we encountered. By the end of the two weeks, life in the United States seemed surreal . . . it was as though we had been completely absorbed by this new world.

Gaining a multicultural perspective

The important role of culture in the rehabilitation process and the need to be culturally sensitive in providing human services cannot be emphasized enough. Not only is there a higher rate of disabilities among ethnic/racial minorities (Smart & Smart, 1997), there is also evidence to suggest that minorities do not receive the same level of services as their white counterparts (Moore, 2002; Wilson, Turner, & Jackson, 2002). It is so important that Amendments to the Rehabilitation Act of 1973 established a Rehabilitation Culturally Diversity Initiative (Sec. 21. [a][1], 1992). It specified that there was "inequitable treatment of minorities" and acknowledged the fact that "ethnic and racial minorities tend to have disabling conditions at a disproportionately higher rate" than non-minorities (Sec. 21[a][2]&[3], 1992).

According to the U.S. Census, approximately one in eight people in the United States are Hispanic origin (2000). In the state where the students were from, Texas, the Hispanic population comprises 32% of the state's population (www.texasalmanac.com, 2000). Human service professionals can no longer afford to be "uni-cultural." Workers must recognize and respond to the fact that understanding disabilities is a matter of understanding the society in which the disability exists. Mpofu, Thomas, and Thompson (1998) succinctly emphasized this point by stating that "the convergence of thinking among rehabilitation professionals that disability is a socially construed phenomenon appears to be incontestable" (205). Service learning offers a concrete means for providing students with opportunities to gain multicultural competencies and to practice reflection-in-action.

The challenge of service learning

Service learning is a method of teaching and learning that enhances academic instruction with active participation in a collaborative effort with the community. It is based on the premise that people learn best by doing. It encourages students to employ critical thinking skills and reflection, thereby giving more meaning and relevancy to classroom learning.

Hardy & Schaen (2000) note that while the benefits to students have been well documented, there is little information on the benefits to the communities they serve. To address this gap, they investigated the satisfaction levels of both the community and the students with service learning projects. They found both enthusiastic about the results. Eby (1998) argues that "service-learning must incorporate the perspectives of all its stakeholders, partnerships between colleges and communities must be authentic, principles of good practice must be followed, and the learning agenda must include social structural issues" (5–7).

Aware of the inherent complexity that is a part of service learning, the author approached the Mexico experience in a way that gave equal emphasis to the interests of the people of Mazamitla and those of the American students enrolled in the course. Attention was given to such factors as preparing the students for the physical and cultural realities of being a foreign country, attending to their safety and security needs, and discussing the needs and expectations of stakeholders in the community. In addition to these considerations, research and consultation with other educators led to the conclusion that the incorporation of the principles of the concept of sustainable communities would provide a concrete foundation for the kind of project we had in mind for Mazamitla.

Using a sustainable community model

The notion of "sustainability" has received almost as much attention within corporate and governmental circles as the idea of service learning has received within education. Sustainability emphasizes holistic, self-regenerating, and systemic approaches to complex societal problems. As the term implies, sustainability recognizes that truly effective responses to social problems as well as social opportunities must go beyond

immediate "fixes" to include mechanisms for perpetuating and expanding progress. According to Meadows, Meadows, and Randers, (1992) "a sustainable society is one that can persist over generations; one that is far-seeing enough, flexible enough, and wise enough not to undermine either its physical or its social systems of support" (209).

A derivative of the sustainable society is the sustainable community which broadens the traditional focus on sustainable development to include other dimensions of community life that promote sustainability, such as empowerment, education, enterprise and environment. Sustainable communities are communities that are self-supporting and can maintain and rejuvenate themselves. They build on the life experiences of the people who live in the communities (Nozick, 1992). Sustainability is not something that is "brought to" a community. It is not the exclusive domain of the experts by which deteriorating communities are revitalized. According to Hartman, "sustainable communities are successful when they are developed with community partnerships" (2000: 13). Sustainability requires genuine collaboration between the community that knows what it wants and individuals with knowledge about the dynamics of building communities that survive and grow.

The concept of sustainable community has been addressed in ecological, environmental, governmental, architectural, and gerontological literature, but its parallel with the field of human services is clear. The concepts of empowerment and choice are cornerstones of the independent living philosophy. Effective approaches to sustainable communities are very much like successful human service programs, through which consumers empower themselves to act on their own best interests with the collaboration of human service personnel with resources to support their efforts. The class that we took to Mexico was specifically designed to capitalize on the important connections between human service, service learning, and sustainable communities. The course allowed the students to learn about human services from a multicultural perspective, to directly combine theory and practice, and, finally, to help them lay the groundwork for generalizing the human service values of choice, self-determination, and empowerment beyond the consumer/professional relationship.

"The concept of sustainable community has been addressed in ecological, environmental, governmental, architectural, and gerontological literature, but its parallel with the field of human services is clear. The concepts of empowerment and choice are cornerstones of the independent living philosophy."

Understanding Mexican culture

As is often the case in service learning, the students gained far more from the experience than the service that they gave. They received a much better appreciation of the Mexican culture and the generosity of the people in this rural town. According to one student, "Not only did I learn about the field of rehabilitation in

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Mexico but also about the culture and lifestyle of the people that live there. Although I saw poverty and, in one case in its extreme fashion, never once did these people complain of the lack of luxuries they didn't have or couldn't afford. They tended to focus on what they had and seemed content to go on with their daily lives."

The concept of disability is different in Mexico than the U.S. I had often read that in Mexico, disability is viewed as an act of God or punishment for one's actions. While there was some discussion of this among the families, for the most part, they accepted it as their lot in life. The families did not complain about their "burden," but accepted it as the way things were. There appeared to be much more of a focus on living in the "here and now" and less worry about the future. However, some of the mothers did mention the fact that they were worried about what would happen to their children after their deaths. Most indicated that a sibling would be responsible for the child since there are no state supported residential services in the area.

One student summarized what the group was feeling. "The trip was a valuable experience that I will remember for the rest of my life." Not only did the students learn much about the Mexican culture and disability in a developing country, but they also gained confidence and a better understanding of themselves.

Summary

In the end, why go to all this trouble? Prentice and Garcia (2000) state that "the only sufficient reason to create a service learning program is because college personnel want to enhance the academic education of students in areas that are not accessed with traditional pedagogy" (26). In addition to gaining a multicultural perspective on disability, the students learned much about themselves and what it feels like to be in the minority.

Not only did most of them "look" different, but also many couldn't speak the language well. They had to endure strange foods, such as tripas, troublesome and sometimes non-existent telephone connections, and a general lack of amenities. Not only did cell phones not work, but also the payphones were not very reliable. Forget about logging onto your computer and checking your email—we didn't even have a telephone in our cabaña. Our primary method of transportation was our feet. On lucky occasions, we rode in the back of a pickup.

"In addition to gaining a multicultural perspective on disability, the students learned much about themselves and what it feels like to be in the minority."

We found that the parents wanted the same things for their children that parents in the U.S. want for theirs. We made home visits to seven of the children at the special school. We talked to the mothers and learned the children's history. All of the parents were very complimentary of the special school. While each of the children is very different, some common themes emerged. These included 1) a desire for more one-on-one intervention with their children, 2) a need for more education about disability for the parents and siblings, 3) a need for transportation to the special school and to medical appointments, 4) a need for respite care to give parents some relief, and 5) a desire for their children to learn to read and write. All of the parents wanted their children to be as independent as possible and worried what would happen to them when the children are no longer around.

Through it all, the students challenged themselves to be accepting and tolerant. Even though the amenities were not the greatest and we were clearly "the minority," the students all felt that they were very welcomed. One student noticed how some of the Mexican nationals were being treated as they came through U.S. customs, contrasting it with the welcome we received. Another commented, "I cannot help but feel a deep compassion for the Mexican people who opened up their lives and their hearts to us while we temporarily entered their lives."

The Role of Bicycles in Sustainable Communities

Vivek Shirsat and Mitty Plummer

The CO_2 Problem

After the industrial revolution, the concentration of carbon dioxide, or *CO_2*, in the atmosphere appears to have increased dramatically as a result of the burning of coal and other fossil fuels. The huge increase in CO_2 has possibly had a detrimental effect on both global weather patterns and the change in temperature over the years. The problem is that the rising levels of CO_2 in the atmosphere are a leading cause of the greenhouse effect, which subsequently causes a gradual rise in the temperature of the Earth. These effects on the temperature can be traced to the direct actions of mankind during the post-industrial revolution. The purpose of this study is to look at the potential impact of greater bicycle usage in reducing CO_2 from human transportation.

Comparison of the Number of Bikes to the Number of Cars

There have seemingly always been more bikes in the world than cars. This applies to third world countries especially. In fact, by 1995 there were about 3.8 million more bikes produced than there were cars. The problem is that in countries like the United States it seems that the use of the bicycle is more recreational than it is practical. But in Asia bicycles transport more people than all of the automobiles in the world combined. Furthermore the number of automobiles produced in the world is not growing rapidly, while conversely the number of bicycles produced has increased nearly twenty-two percent since the start of the nineties and it seems that this growth will most likely continue.

Comparison of the Environmental Impacts of Cars and Bicycles

The environmental impact of the automobile could possibly be, over time, profound. Because of the threat of global warming many institutions have set up goals for the reduction of the number of automobiles on the road. These goals include reducing auto emissions by implementing laws that force companies to design automobiles that emit less greenhouse gasses. Studies done on the climates of large cities such as New York City and Los Angeles show that there is a correlation between the amount of CO_2 in the air around and in those cities and the trend of rising temperatures experienced in those cities. The larger concentration of CO_2 in these cities is partially due to the large concentration of automobiles, cars at idle, cars stuck in traffic, and cars at speed. In 1997 more than 30 percent of CO_2 emissions was from human transportation. This accounts for 446.5 out of 1466 million metric tons of carbon equivalents (MMTCE) introduced into the atmosphere. In fact, over the last century the average surface temperature of the Earth has risen between 0.45 and 0.6 degrees Celsius. The general rule is that a doubling in the amount of CO_2 in the atmosphere will raise the temperature 1.5–4.5 degrees Celsius. As a result of this temperature increase the sea levels will also rise; as will the amount of precipitation that the world receives.

Table 1 shows that the CO_2 produced by bicycles and their riders is inconsequential when compared to the amount of CO_2 produced by an automobile. But when choosing a mode of transportation for short distances it is

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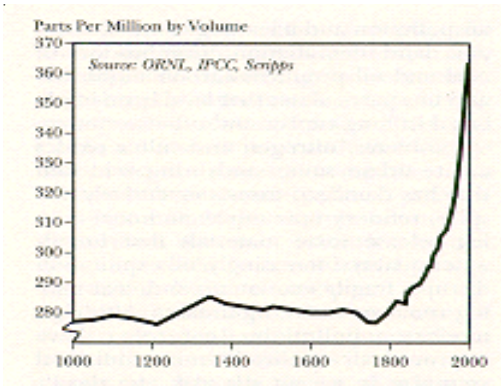

Figure 1: Atmospheric CO_2 concentrations over the past 1000 years. (Brown, 1999)

interesting to note that the human appears to produce more CO_2 than an electric bike of the same specifications. A human pedaling a bicycle at 15 mph for 20 miles (1.3 hours) will emit about 78 liters of CO_2 gas. On the other hand, charging a 160-watt hour battery with power from a power plant that burns coal will produce only 20 liters of CO_2 gas. In contrast a typical automobile operating at 12 miles per gallon will emit about 16 pounds (13,547 liters) of CO_2 gas. The technology needed to build electric bicycles already exists in many forms. It is easy to see that, from an emissions standpoint, the electric bike demonstrates an apparent superiority, even when the most CO_2 producing process is used to produce the electricity.

Or does the electric bicycle really introduce less CO_2 into the "biosphere" than a hard peddling human? No, the human runs on carbon already present and cycled in and out of the atmosphere through plants and animals. The

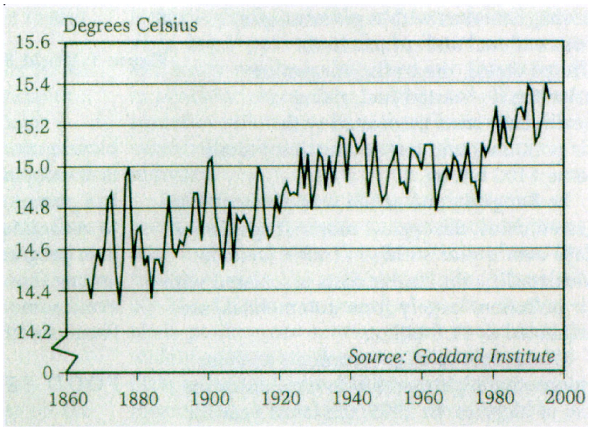

Figure 2: Atmospheric temperature since 1860. (Brown, 1997)

electric bicycle, on the other hand, uses fossilized forms of carbon dug up for the express purpose of extracting its energy and then inadvertently reintroduced to the atmosphere.

To compare the efficiency of different modes of transportation, scientists have devised a dimensionless parameter called the **locomotion transport number.** The locomotion transport number is the ratio of the power of the system divided by the product of its weight and the velocity at winch It travels. Bicycles are clearly the most efficient when one realizes that the weight of the bicycle and rider is almost entirely the weight of the rider. When the weight of a ship or plane is subtracted from the total weight to look at only the transport number based on the transport of cargo or passengers, then even ships and planes look bad compared to the humble bicycle.

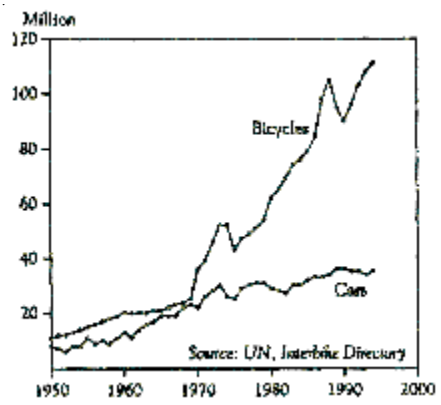

Figure 3: Comparison of worldwide bicycle and automobile production from 1950 to 1994. (Brown, 1996)

Electric Bikes

For short distance travel there is no real substitute for the bicycle. Furthermore, the advent of the electric bicycle makes traveling easier and also appears to produce less CO_2 emissions than a conventional bicycle. They also provide an affordable means of getting around. For trips up to thirty miles electric bicycles create zero pollution, run near silently, provide high efficiency, and offer a safer form of low speed transport than horses.

There are several different configurations for electric bikes. Although most bikes have the ability to be either propelled by the rider or by an electric motor, some have only the capability to operate in the "power assist" mode. The Charger Electric Bicycle uses this mechanism alone

Table 1

CO_2 Production Comparison for Bicycles and Automobiles

Lbs. of CO_2/20mile trip	
Automobile 12mpg	16.0 Lbs
Human Powered Bike	0.303 Lbs
Electric Bike Charged By:	
Coal Plant	0.142 Lbs
Petroleum Plant	0.137 Lbs
Natural Gas Plant	0.029 Lbs
Solar	0.0 Lbs
Hydroelectric	0.0 Lbs
Wind	0.0 Lbs
Nuclear	0.0 Lbs

for its propulsion. By forcing the human to pedal the bike it can travel much farther on a single charge. Furthermore, because the Charger cannot self propel the Department of Transportation has classified it as a bicycle and not a motor vehicle. Other bikes operate by human power or are self propelled. Although the rider sacrifices mileage there is something to be said for not having to pedal in most situations.

As a generalization most electric bikes have the capacity to travel about 15 miles per hour and have a range of about 20 to 30 miles on a single charge. Lee Iacocca and Evglobal's (http://www.evglobal.com)

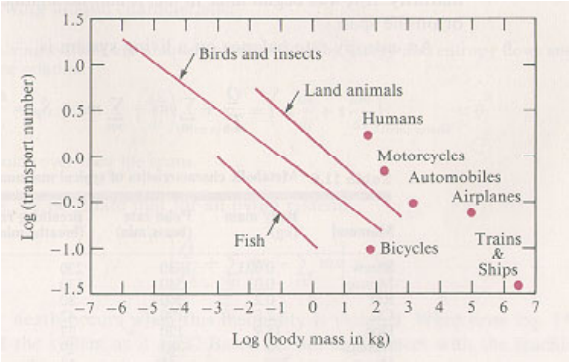

Figure 4: The average locomotion transport number versus the mass of different animals and machines (Balmer,1990)

electric bicycle represent the midrange bike, traveling at 15mph and having a range of up to 20 miles. Although this may not seem too impressive, the need to travel at high speeds and for distances longer than fifteen or twenty miles is really nonexistent when viewed in the long context of the history of human transport. Additionally, an automobile traveling at the in-town speed limit of thirty miles per hour will emit a larger quantity of greenhouse gasses per mile than the automobile traveling at highway speeds. For this reason alone one could consider the viability of conventional of electric bikes for city transport.

Conclusion

Although the development of renewable energy sources is progressing quickly, the technology needed to harness something like solar energy makes it more expensive than using nonrenewable fuels. Still, one shouldn't feel too bad about using a nonrenewable source of electricity to recharge an electric bicycle after considering the impact of an automobile. The authors hope that these findings will encourage the growth in the use of both conventional and electric bicycles in the transportation system. The best reason for staying with self-powered bicycles in the United States would be that we need the exercise.

Article

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Promoting Civil Society's Participation in International Environmental Activities

William H. Mansfield III

Text of a speech presented at

Environmental Alliance for Senior Involvement

International Conference & Senior Watershed Summit

North East, Maryland

October 29, 2002

I. Introduction

I am pleased to be with you today to take part in the EASI conference and to participate in this segment on "Programs with Proven Impact." The United Nations Environment Program (UNEP), in particular, and the United Nations system, generally, increasingly have come to appreciate the importance and value of civil society's direct involvement in the UN's many programs.

Consequently, we are seeking new ways to incorporate representatives of non-governmental organizations, the academic and scientific communities, business, industry and commerce, volunteers and other in partnership arrangements in our programs and activities.

Today, I would like to outline for you some of the issue areas and partnership approaches we and some of the other members of the UN community of organizations

are employing to foster this active interchange with civil society.

II. A Word About UNEP

Let me first give you a brief description of the United Nations Environment Programme, or UNEP, as it is commonly called. UNEP was created in 1972 to serve as the environmental conscience of the UN system. Its job is to encourage other UN organizations and governments to be aware of their impact on the environment and to help them take action to minimize any harmful impacts.

Our mission is to assess scientifically the state of the world's environment and to help formulate policies, programs and activities to protect and enhance the environment. We help governments formulate international environmental agreements. We work to strengthen the environmental management capacity of developing countries, in particular, and we promote implementation of the environmental dimension of sustainable development worldwide.

We try to help countries to solve problems they cannot solve by themselves. We provide a forum to bring them to the table for negotiations, build consensus and forge international accord. We nurture partnerships with other UN agencies and encourage participation of civil society, businesses, the scientific and academic communities, non-governmental organizations and others in achieving sustainable development.

We are a small organization—about 800 employees worldwide—and have a limited operating budget—approximately $100 million annually. Our headquarters are in Nairobi, Kenya and we have regional and outlying specialized offices on all continents. We are governed by a 58-member council of governments.

III. The Global Environmental Situation

The United Nations Environment Programme and others in the world environmental community are increasingly concerned that we are gradually undermining the environment and natural resource support systems, which are the foundations of the economy.

As the human population has grown from 2.5 billion people in 1950 to 6.2 billion today—and going on to over 9 billion in 2050—and as the global economy has expanded seven times in the same period, rising from an output of $6 trillion of goods and services to $43 trillion in 2000, the forests, grasslands, fisheries and croplands that sustain the economy has begun to deteriorate.

We see this deterioration almost everywhere in the world—in collapsing fisheries, shrinking forests, eroding soils, degrading rangelands, expanding deserts and falling water tables. We see it in rising carbon dioxide levels and atmospheric temperatures, more destructive storms, melting glaciers, rising sea levels, dying coral reefs and disappearing species. We see it in vast quantities of solid, hazardous and toxic wastes.

UNEP's recent scientific *Global Environmental Assessment 3* chronicles the deterioration of our world's natural resource base. These natural systems function like an endowment. The interest income from an endowment will continue in perpetuity as long as the endowment is maintained. If the endowment is drawn down, income declines. If the endowment is eventually depleted, the interest income disappears. And so it is with these natural systems. The economy is slowly undermining its support system. What we have to do is work to make the world economy more efficient and less wasteful.

And water scarcity—a major subject of this conference—may be one of the most underestimated resource issues facing the world today. As world water demand has more than tripled over the last half-century, signs of water scarcity are becoming commonplace. Among the more widespread indicators are rivers running dry, wells going dry and lakes disappearing. The Colorado in this country, the Amu Darya in Central Asia, the Yellow River in China all run dry now part of the year. Asia's Aral Sea and Africa's Lake Chad are disappearing. Water tables in food producing countries, such as China, India and, even, the United States are being pumped down.

The availability and quality of fresh water is one of the most critical environmental and security issues of the 21st century. Predictions are that by 2025 two-thirds of the world's population will live in water stressed countries.

UNEP's Water Programs: Helping the world address its water needs is a UNEP priority. Our Water Policy and Strategy is central to our program. We focus heavily on river basin and watershed management, working on all continents, as two-thirds of the world's major rivers are shared by several countries. Our International Environmental Technology Centre in Japan facilitates the transfer

Continued p. 36

"UNEP's recent scientific *Global Environmental Assessment 3* chronicles the deterioration of our world's natural resource base. These natural systems function like an endowment. The interest income from an endowment will continue in perpetuity as long as the endowment is maintained. If the endowment is drawn down, income declines. If the endowment is eventually depleted, the interest income disappears. And so it is with these natural systems. The economy is slowly undermining its support system. What we have to do is work to make the world economy more efficient and less wasteful."

of knowledge and environmentally sound technologies for water management. Our current Global International Water Assessment (GIWA) is producing a comprehensive and integrated assessment of the condition of global marine and freshwaters.

IV. Developing Partnerships to Address Environmental Issues

And increasingly as we address these and the many other environmental and sustainable development issues facing the world community, we have come to realize how essential it is to partner with civil society and the business community in our programs.

For a number of years now UNEP has sought to include civil society, the business community' youth, women, athletes and others in our programs and activities.

Remember, it was the prodding and pushing of the NGO community, which put environment on the national and international agendas in the first place. The private sector, too, has a critical impact on the world economy and the environment. It consumes natural resources and generates pollution that are the source of many of the world's environmental problems. But it also creates jobs and wealth, offers management skills, competencies and technologies that can help us address our environmental problems.

I must mention to this audience that one of UNEP's major annual public events is the celebration of World Environment Day on June 5. One of the highlights of that festivity is the presentation of the UNEP Global 500 Awards, which recognize individuals and organizations for their outstanding contributions to environmental protection.

Among the laureates have been Jacques Cousteau, Jane Goodall, Nigeria's Ken Saro Wiwa and Brazil's Chico Mendez—the latter two having been martyred for their environmental work. But happily I can say that one of the Global 500 winners in 1999 was EASI's Pennsylvania Senior Environmental Corps, a group of senior citizens who are using skills and experience acquired during their lifetimes to protect the environment.

To strengthen our work with civil society, in February a year ago UNEP invited over 100 civil society representatives to a workshop entitled *UNEP Today and Tomorrow*. The recommendations of the workshop were provided to UNEP's Governing Council, which called for a broadening of civil society's participation in the organization's work. The Council also requested that a strategy on civil society engagement be prepared for our use.

Additionally, over the years we have conducted major world international conferences to involve civil society and business in our work. We engaged chemical industry representatives, for example, in the negotiations to protect the stratospheric ozone layer as they had the know-how and technological solutions to find alternatives to the harmful products creating the atmospheric ozone hole. We have annual consultative meetings with almost 100 industrial and civil society representatives to gain better knowledge and understanding of challenges and opportunities. UNEP supported NGO and private sector contributions to the preparatory process for the Johannesburg Summit. We recently sponsored an International Children's Conference on the environment in Vancouver.

These efforts to foster more civil society involvement were strongly reinforced this year in the UN's World Summit on Sustainable Development in Johannesburg, South Africa—a meeting of some 40,000 government and civil society representatives, among them 100 heads of State or Government and 120 CEOs and Board Chairmen from around the world—at which the international community sought to map out a global strategy for sustainable development. The conference pointed to partnerships between governments and civil society and business as a main vehicle for implementing the program. Some 280 partnerships initiatives were identified.

V. UNEP/DTIE Partnerships with Industry

UNEP's partnerships with business and industry are expanding rapidly and are promising. Let me illustrate. We strongly support UN Secretary General Kofi Annan's Global Compact proposal, an initiative to enlist corporate leaders in embracing and implementing in their business activities a set of nine universally agreed principles in environment, labor and human rights.

To assist in furthering the Compact, UNEP is actively promoting the Global Reporting Initiative. The Initiative provides a framework to enable the corporate sector to report within globally acceptable guidelines on their economic, social and environmental performance. The aim is to enhance corporate social responsibility and accountability.

Since 1988 we have been promoting a program to help cities develop their own plans for disaster and emergency prevention, preparedness and response planning for industrial accidents and oil and hazardous material spills. The plans are now used in 100 communities in 30 countries. They are partnerships of national and local governments, industry associations, companies and citizen groups, in which participants map and carry out their own plans for handling these potential hazards.

In the chemicals field we help developing country governments, in collaboration with their national industries, to develop their capacity to manage chemicals and toxic substances. We aid them in assessing the hazards of toxic substances and provide an information clearing-house on chemical and persistent organic pollutants.

Among the most successful partnerships are those we call industry voluntary initiatives. In 1992 we partnered with companies from the international banking sector and later with the financial services sector to assist them to develop, agree on and implement sustainability guidelines for their industries. Later we worked together to shape a program to implement them, and then meet annually with them to review progress and next steps.

We now have similar voluntary environmental improvement initiative with tour industry operators, with the major information and communications technology companies, with members of offshore oil and gas environmental firms, and with mining and automobile companies.

Another area of activity is energy. To try to bring efficient and environmentally sound electricity to the two billion people in the developing world who still lack it, we have several new partnership programs underway. In one, the African Rural Energy Enterprise Development Initiative, we seek to provide start up services and financing for local energy entrepreneurs in African countries, and now in Brazil and China as well.

In another, the Solar and Wind Energy Resource Assessment program helps some 13 developing countries shape new information tools to aid energy planners and project developers to put together renewable energy projects.

And finally, we sponsor an Investment Advisory Facility, which helps developing country financiers of energy efficiency and renewable energy projects evaluate first time investments in sustainable energy.

VI. Other Environmental Partnerships

There are, as well, a wide-range of other opportunities to work as partners on environmental issues, many of which link as well with development and poverty eradication. At the same time, they include employment creation, small and micro-enterprise development, technology transfer and innovation, infrastructure development, better labor standards and improved access to crucial services, such as water, energy, education and health care.

Such cooperation helps address important global environmental concerns, as well, including climate change and stratospheric ozone depletion, promoting cleaner productions and eco-efficiency, developing and transfer-

Continued p. 38

ring environmentally sound technologies, encouraging renewable energy and sustainable water use, and supporting capacity building in developing countries.

Some of the opportunities focus on harnessing the power of the market to promote sustainable development; others on developing voluntary actions, principles or standards for corporate environmental management; still others on creating joint public-private funding mechanisms and collaborative project frameworks.

UNEP's Division of Technology, Industry and Economics in Paris, as I mentioned, builds voluntary industry initiatives and spreads good practices. The UN's New York-based Commission on Sustainable Development fosters multi-stakeholder dialogues. The Global Environment Facility, located in Washington, promotes collaborative sustainability projects in developing countries.

On the issue of climate change, the International Petroleum Industry Environmental Conservation Association (www.ipieca.org), the E7 Group (www.e7.org), and the Pew Center on Climate Change (www.pewclimate.org) are very active. As are the Greenhouse Gas Protocol Initiative (www.ghgprotocol.org) and the World Bank's Prototype Carbon Fund (www.worldbank.org).

In water the World Water Council's "World Water Vision" (www.watercouncil.org), the Global Water Partnership (www.gwpforum.org) and the World Commission on Dams (www.dams.org) are likely collaborators.

In the fields of conservation and biodiversity, we can look to the Alliance for Forest Conversation and Sustainable Use between the World Bank and the Worldwide Fund for Nature (www.worldbank.org), the UN Conference on Trade and Development's Biotrade Initiative to stimulate trade in biological resources (www.unctad.org) as well as the International Coral Reefs Action Network (www.icran.org) and the Marine Stewardship Council's certification scheme for sustainable fisheries (www.marinestewardship.org) and the Rainforest Alliance (www.rainforest-alliance.org).

In the area of environmental management capacity, I have mentioned the Global Reporting Initiative (www.globalreporting.org), and cite as well the UN's Division for Sustainable Development Expert Working Group on Environmental Management Accounting, (www.un.org/desa) and the World Business Council on Sustainable Development (www.wbcsd.org).

IV. Other UN Areas of Partnership Activity

But environment is only one field of the UN's partnership activity.

Other fields include:

- Peace, security and disarmament;
- Development and poverty eradication;
- Human rights, democracy and good governance;
- Protection of the vulnerable; and
- Meeting the needs of Africa.

Of interest here, I believe, would be some of the mechanisms for mobilizing skilled volunteers to support United Nations objectives and activities. Among them is the United Nations Volunteers program (UNV), created in 1970 to serve as an operations partner in development cooperation. The program supports human development globally by promoting volunteerism and by mobilizing volunteers. The UN Development Programme (UNDP) administers it through its country offices around the world. UN volunteers promote peace and sustainable development in a broad range of activities, including initiatives to reduce poverty, provide humanitarian relief, support human rights and protect the environment. (www.unvolunteers.org and www.unites.org).

Similarly, the Food and Agriculture Organization mobilizes voluntary experts from research and academic institutions to work within its programs (www.fao.org).

Still other organizations, such as the UN Development Programme (www.undp.org) and the World Bank (www.worldbank.org) work on development and poverty alleviation. The UNDP's and UNCTAD's EMPRETEC Program assists small and medium-scale enterprises in developing and transition economies(www.unctad.org and www.undp.org/business).

In the health field, the World Health Organization's Global Fund to Fight AIDS, Tuberculosis and Malaria was initiative in 2001 to mobilize public and private funds and expertise to support national programs tackling AIDS, TB and malaria(www.who.org). Other WHO programs deal with leprosy, polio and other diseases. UNICEF has a number of programs aimed to help

children. UNIFEM undertakes initiatives to help empower women (www.unifem.org). The Program for Human Settlements—Habitat works to provide healthy and sustainable cities (www.habitat.org). And so on. There are an abundance of cooperative programs where volunteers can contribute to world issues and needs.

If you are interested in these and other areas of potential cooperation, I would encourage you to go to the organizational websites or the UN's business website (www.un.org/partners/business) and the World Bank's business website (www.worldbank.org/business. The Global Compact site (www.unglobal.compact.org) and the UN Fund for International Partnerships (www.unfip.org) are still others.

VII. Benefits of Partnerships

The potential benefits of these cooperative partnerships among international organizations, governments, and civil society are many. They help to promote international norms and standards desired by governments and civil society. They assist in shaping a better enabling environment, promote a level competitive playing field and foster improved governance.

Other direct benefits include identifying new market opportunities, enhancing public relations and improving risk management and risk reduction. For the countries involved, collaboration attracts foreign investment and harnesses resources and competencies needed to alleviate poverty. It foster new ideas, encourages technology transfer, develops employee skills and expertise, and fosters awareness of environmental values.

VIII. Challenges and Lessons

But with the benefits come challenges. Partnerships between different entities and cultures can be difficult work, and they don't always solve all the problems. Civil society organizations often have different goals, operating procedures and expectations from those of governments and international organizations. NGOs can be very single issue oriented. Businesses, by necessity, focus principally on making a profit. Governments have to take into account a much wider range of goals, including social, political, economic, environmental, even, cultural ones. So it is important to recognize the challenges of cooperation and have realistic expectations.

A recent World Bank study of partnerships emphasized the importance of selecting partners with compatible goals. Roles, responsibilities, procedures and resource needs, it said, must be clearly specified. All stakeholders should be involved in decisions from the planning process through implementation and evaluation. Decision-making procedures should be agreed in advance. And building skills and capacity, especially at the local level and in developing countries, should be a major part of each partnership.

"Civil society can play a valuable helping role in promoting economic growth, social justice, environmental sustainability and, even, peace in our world today."

IX. Conclusion

To conclude, I can say with no hesitation that UNEP and the UN system sees a vital role for civil society to play in supporting more sustainable patterns of development, in partnership with international organizations, governments and the private sector. Civil society can play a valuable helping role in promoting economic growth, social justice, environmental sustainability and, even, peace in our world today.

Operating within a framework of openness, of clear and fair rules and procedures, of innovative economic instruments, of market mechanisms and voluntary initiatives, civil society is a valuable partner with us in sustainable development and environmental protection. In spite of the operational and strategic hurdles to new types of partnership, civil society's approaches to problem solving offers one of the greatest hopes for meeting together the challenges of the 21st century.

I wish you all the very best in your work toward this end, this week and in the future. And we look forward to the possibility of working with you in this important effort.

News

Mexico/Texas Alliance: An Update on Successes Toward Sustainability

Stan Ingman and Iftekhar Amin

In May of 2002, UNT graduate students went to Chapala to assist our colleagues at the BIOECO Corazon de la Tierra and Sociedad de Amigo del Lago de Chapala active in the western Lerma-Chapala watershed. We visited such cities as Barca, Ajijic, Atotonilco, and Chapala. We met various local and state government officials to discuss strategies to make their areas more sustainable—ecologically, socially and economically. Our students, who came from Bangladesh, India, Mexico, Columbia, and the United States, assisted with some local service projects such as clean up on an island in Lake Chapala, a park in Atotonilco, a hill side trail in Ajijic, and a tree nursery in Chapala. We also learned about drip irrigation organic farming near Ajijic, simplified hydroponics near a hacienda in Huejotitan that had been converted into an orphanage, fishing farming in the extremely polluted Lake Chapala, and a flower cooperative in mountains above Mazamitla in Dos Aguas. We also learned about the limited pollution controls around Lake Chapala, despite the many people in Gaudalajara who depend on water from the lake. BIOECO, with their local partners, took us to a small mountain with a dense forest between Ocotlan, Barca, and Atotonilco, and we discussed how to save this valuable forest so that the acquifers would not continue to dry up. In Atotonilco, we discussed with the Mayor about how to preserve a major spring and watershed area. One issue involved determining how local small farmers could develop a more economically viable living, so they do not have to abandon their farms and homes and travel north for work.

At the end of our stay in Chapala in May, we all traveled to Manzanillo to attend an Ecotourism and Sustainable Communities conference, which was cosponsored by Universidad de Colima, the City of Manzanillo, and the University of North Texas. We visited various ecotourism enterprises in the region and the Universidad de Colima, where we developed a strong working relationship with faculty in economics, tourism and languages, and environmental management.

In June, UNT undergraduates stayed in Mazamitla to strengthen our long term cooperation with local citizens and government officials, and we assisted with building a local park, reroofing various homes, putting cement floors into some homes, and conducting research on the use of the Internet to improve local schools.

In the Fall of 2002, we received the Charm International Award for $7000 with an equal match from locals in Mexico. The purpose of the award was to fund efforts to improve our alliance with our colleagues near Chapala and Mazamitla in the State of Jalisco and in the State of Colima. Our first effort in January 2003 was to sponsor a six-day workshop and conference in Denton that would expand our capacity to assist sustainable development in the State of Jalisco. The Mexican participants funded their trip north and we covered their local expenses. Many stayed in the homes of local citizens to reduce the costs. For example, Carriage House Assisted Living provided some meals and lodging, and Flower Mound provided a major lunch and a symposium on sustainable city planning. Some ten partners from our target region in Mexico arrived in Denton to participate in the conference. They included

five from Colima, two from Mazamitla, and two from the Chapala region. In addition, two other visitors from Mexico participated: Peggy Bradley, Director of Mexican Simplified Hydroponics Institute from Tehuacan, Mexico, and Julio Calderon, Director, Office of Biodiversity for the Caribbean and Latin America, United Nations Environment Program (UNEP) in Mexico City. One keynote speaker, Professor Ricardo Rozzi, came from many miles to the south, the Universidad de Magallantes Punta Arenas in southern Chile.

Significant new partners were added to our development network in Mexico. Terri Morgan, President of Partnership for the Environment introduced us to Julio Calderon from UNEP, five colleagues from the Baylor University Watershed Program, and Mitch Mathis from the Houston Institute of Watershed Research. Professors Owen and Laura Lind from Baylor University have some twenty years of research on the status of Lake Chapala to share with our visitors. Dr. Mathis outlined how his institute is addressing pollution and water use issues in the Rio Bravo/Rio Grande River.

Both prior to and after the main conference, participants from Mexico attended workshops at the Denton Water Treatment plant, Tammy Barry's black fly/grub worm garbage eating project at West Hall, the UNT Elm Fork environmental education center, a federal program designed to attack unwanted plant species in various watersheds near Lake Lewisville, a sustainable ranch near Hico, Texas, and, finally, the newly created habitat watershed and a micro-community farm near Waco. Conference presentations are up on the web at www.unt.cps.edu/; just click on *News*.

After the conference in Denton, Alejandro Juarez from Gaudalajara learned that BIOECO/Corazon de Tierra had received an award for their work to save Lake Chapala at the International Water conference in Japan in March, as did Tom Benjamin, President of EASI, for their volunteer water monitoring project in Pennsylvania. We also learned that the Living Lakes International Association had visited Joe DeLeon in Chapala and decided to provide Sociedad de Amigo del Lago de Chapala with full membership after a one year probationary period.

After our conference in January, some colleagues in Colima visited Peggy Bradley in Tehuacan to learn more about hydroponics, and Joe DeLeon has recently visited Mazamitla to assist Christina Martinez to establish a site for hydroponics. Dr. DeLeon also visited the Flower Cooperative to help the ladies in Dos Aguas improve their production process and possibly do hydroponics. Locally, we have started an experiment with hydroponic production at the Luminary School, Denton, that Joe DeLeon and I visited in April. The school is moving forward with microfarming and may become our local training site in Denton.

On July 10–12, we met in Chapala for a follow-up workshop to review and develop new projects for the area. City officials, farmers, retirees from abroad, and visitors from Israel and the US participated in the events. Students and faculty from UNT and from universities in Guadalajara and Colima also attended the workshop.

More locally, the southern part of Dallas County is moving to embrace the sustainable communities banner with their recent conference we cosponsored on June 10th , entitled Building Sustainable Communities. The main sponsor was Operation Clean Sweep, a group that represents the five cities of Desoto, Duncanville, Lancaster, Cedar Hill, and Oakcliff in south Dallas. From a national planner, John Fregonese , we heard about urban renewal in Chicago, Portland, Austin, and Denton, and from James Keene, a city manager, we learned about holistic planning in Berkeley and Tucson. Former Mayor Jon Kinsey told us about how Chattanooga adopted sustainable strategies. Finally, Bill Gietema, a lecturer for the Urban Land Institute, Congress of New Urbanism, and the Seaside Institute explained how to pay for more creative pocket parks and open spaces in mixed use communities, and how to fight to change traditional thinking on city property and code committees in Texas. The day ended with a speech from former Mayor Rudy Giuliani. He explained how he addressed social, economic, and crime problems of New York City. While there was a heavy focus on traditional economic renewal, some notions of neighborhood creation and preservation were also discussed. We are optimistic for a full partnership between Operation Clean Sweep and UNT to implement the sustainable communities philosophy. The team should be congratulated on its great effort.

Latvia's Environmental Policy—Post Cold War

Courtney Queen

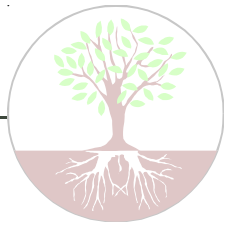
Latvia is a country located on the Baltic Sea and is slightly larger in size than West Virginia, with approximately 2.3 million inhibits. Latvia is an independent state that is open to civil sector development and community-based organizations and initiatives. The movement has grown immensely since 1990, and behavior has changed and is beginning to change regarding the roles and responsibilities of the individual in the decision-making capacity. Environmental groups are no longer the front for resistance movements and are now more involved in activities to help with initiatives for cleaning the Baltic Sea, local water sources, rivers, and lakes.

During my two years living in the eastern, border-region part of Latvia as a "Small and Medium Sized Enterprise and Non-Governmental Organization Development Consultant" for the United States Peace Corps, I worked on many projects pertaining to the environment. All initiatives were initiated at the grassroots level and many were also supported by the Latvian Ministry for the Environment and Regional Affairs, other Baltic governments, both the Danish and the Dutch governments, the European Union, and the United States Environmental Protection Agency. International organizations also played a large role in the implementation of programs to assist Latvia and the Newly Independent States (NIS) with the transition to the free-market economic system brought on by independence of the early 1990s.

Among the largest environmental priorities are for the improvements of drinking water and the sewage system, household and hazardous waste management, and reduction of air pollution. Poor and deteriorating infrastructure, corroding pipes, and Soviet military ordnance cause harm to the water supply and land. The country also lacks a household waste management system and is only now beginning to develop both short- and long-term plans for managing such waste.

Environmentally motivated projects drew much interest on behalf of the community, including projects designed to provide insulation for windows, the conversion of an oil-burning boiler system to one that burns biomass. In conjunction with the EPA, and with funding from the Northern European Initiative of the United States Department of State, one of my major projects was to work with people and governments on a project to begin gathering water quality data on the area lakes, since there is currently no data on water quality for the area. And, with a history of industries, hospitals, and individuals using the area lakes and rivers for dumping grounds, a program is necessary. The project, 3 Countries, 3 Lakes, 3 Rivers engaged local residents to work on a voluntary basis to play an active role in their daily lives and the environment. Another one of many components of the project was to hold an International Summer Camp. Junior High and High School age young people from Latvia, Estonia, Norway, and Russia came together for ten days on a small lake in Elizavoro, Russia, to devise problem-solving techniques and learn about our delicate ecosystem.

Latvia's environment has benefited in the shift to service industries since independence. Latvia and her people still have many obstacles to overcome, however, and, environmentally, face many challenges, such as the decline in environmental community-based organizations. Civil sector development and community-based organizations and initiatives have grown immensely since independence, while the evidence of active environmental organizations has shown a decrease. But, with European Union membership in the future, and funds to support such efforts, the people of Latvia will overcome their obstacles and be enabled to make changes that will help the environment.



The Academy for Educational Development Is Working for a More Stable World

For a more stable world, providing education and knowledge is perhaps the best investment. The Academy for Educational Development (AED), an independent nonprofit organization, is working toward this goal through efforts to increase access to quality education, improve nutrition and health, and strengthen skills that can foster development. AED believes that education provides the means with which to improve skills and make informed decisions, which enhances productivity, understanding, and tolerance. Since its founding in 1961, AED has worked in collaboration with governments, foundations, corporations, community groups, and NGOs to provide assistance to prevent HIV/AIDS, foster strong democracies, prepare new leaders, and train workforce for the new global marketplace.

Among the numerous projects AED is working on, the GreenCOM II is specially targeted to improve environmental quality. The USAID-funded GreenCom II provides strategic environmental education and communication support to biodiversity conservation, agriculture, ecotourism, water resource management, environmental policy, and urban initiatives, including solid waste management and energy efficiency. AED's GreenCom II staff work side-by-side with local environmentalists, policy makers, technicians, engineers, civic and municipal leaders, and development professionals, helping them to identify and solve environmental problems with strategic environmental communication methods and products that can be replicated. AED is working in a number of developing countries. In Panama, GreenCOM II's work focuses on the wise use of management of the Panama Canal watershed; in South Africa, global climate change; and in Indonesia, sustainable forest management. In Egypt, GreenCOM II assists government ministries, NGOs, and private sector entities in addressing solid waste management, energy efficiency, and environmental policy issues.

AED seems to be hyperactive in Africa, has some programs in South America, but nothing that is specific to Mexico, although some of their general programs (e.g., educational leadership) may include individuals.

Mercury concentrations in the air are usually low and of little direct concern. Exposure to high doses of mercury, however, can cause learning disabilities, tumors, birth defects, attention deficits, mental retardation and even death. Young children and developing babies are at higher risks to harmful impacts of mercury exposure. The EPA has documented that once mercury enters water—either directly or through dispositions from the air—biological processes transform it into methylmercury, a highly toxic form of mercury that bioaccumulates in fish and other animals that eat fish. When a substance bioaccumulates, its concentration increases as it moves through the food chain.

The Sustainable Energy and Economic Development Coalition (SEED Coalition) is advocating sustainable energy strategies for Texas and works with the full spectrum of air quality issues in Texas. The SEED Coalition is an alliance of individuals, businesses, and organizations concerned with educating the public about the economic, environmental, and health benefits of a sustainable energy strategy. Texas power plants emit over 9,300 pounds of mercury into the air each year, among which the coal-burning power plants contribute the largest amount of airborne mercury pollution, 34%. The mercury and other pollutants are making some fish unsafe to eat; however, Texas has no routine testing of fish for mercury or other pollutants. To protect fishing and public health, the SEED Coalition is working to mobilize citizens to raise their voices and to create pressure on the policy makers. Major areas of focus include the environment; health, safety, and public welfare; energy efficiency and sustainable energy; transportation; and telecommunication and information services.

Institute of Simplified Hydroponics Completes Its First Year in Mexico

The Institute of Simplified Hydroponics just completed its first year of operation of its training center in Tehuacan Puebla Mexico. Simplified hydroponics is the technology of growing plants without soil, using only hand labor.

Tehuacan is a town of at least 250,000 people in Central Mexico. It lies in the heart of Mexico´s worst poverty area, the three states of Puebla, Oaxaxa, and Chiapas. In this state 660,000 men have migrated to the US to find work to feed their families.

The training center in Tehuacan has a 3000m2 area of demonstration gardens. The two basic gardens are a commercial garden of 40m2 that can produce $10.00 worth of vegetables a day for sale, and a Home Garden that can produce 5 kilos of food every day. These gardens show people how they can grow their own food at home or raise food for income. The property was donated rent free and includes a large home that has been converted to classrooms and offices.

In the first year about 100 people were trained at the center in simplified hydroponic technology. Many of these people have gone on to build their own gardens and are continuing to learn the technology through personal experience. Some are already producing food for sale.

The first year required both money and labor to set up the demonstration gardens, translate training materials from English to Spanish, and begin the process of publicity for the center. It was also a year of making presentations to various potential funders, some successful, others not.

Altogether, in its first year of operation, about $50,000 US were raised, which meant the first year was a struggle, but the training center was created.

Now the gardens have been established, the classrooms are completed, and regular classes for communities have started at the center. As the second year began, there were plans to train 400 people and establish 100 more gardens. Many communities are requesting the center's help in planning a reformation of the local family-based agriculture to increase income and reduce environmental impacts.

The center now offers a 3-day Home Garden Course to teach a family to build and operate a simplified hydroponic garden of 40m2 that will bring in an average daily income of $10.00 a day. In communities where whole families make as little as $2.00 a day, this is really the difference between life and death.

Did you know?

One Sunday edition of the *New York Times* consumes 62,000 trees. Currently, only about 20 percent of all paper used in North America is recycled.

The United States imports 91% of its aluminum and throws away over $400 million worth of aluminum annually. It has been calculated that making new aluminum from scrap aluminum uses 95% less energy than extracting it from the ground and processing it. It also reduces the air and water pollution associated with aluminum production by 95%.

There are no sources of tin within the United States; however, 2.7 kilograms of ultra pure tin can be reclaimed from each 900 kilograms of metal food cans.

Crushed glass (cullet) reduces the energy required to manufacture new glass by 50 percent. Cullet lowers the temperature requirements of the glass-making process, thus conserving energy and reducing air pollution.

Book Reviews

Reviewed in this Issue:

Introduction

Hiram Friedsam, Book Review Editor

Despite an array of titles that suggest extreme diversity, all of the books reviewed for this issue have a core unity in the "politics" of sustainability. It is, however, a kaleidoscopic unity, in which each one contributes a different "color" to the overall pattern. One book, for example, provides a detailed analysis of empowerment through local political action, while another analyzes Western political thought at an abstract level. One seeks to invigorate past political philosophy as a guide to the future, but another places its hope on a fundamental change in educational philosophy. Environmental degradation is viewed from several perspectives: among them, a result of misguided agricultural policy and practice, the negative impact on health, and the need for a new approach to the role of consumption. The importance of population growth is examined in terms of the presumed consequences of population aging, which are sharply criticized by the reviewer, and in terms of the pressure of growth on resources that could lead (has led?) to increased global poverty and conflict. Most of the authors, however, look upon their scenarios as warnings, and they tell us that we still have time to avoid the abyss, if we have the intelligence and the will to act.

Urban Livelihoods: A People-Centered Approach to Reducing Poverty, edited by Carole Rakodi. Earthscan Publications Ltd., London and Sterling, VA, 2002, 306 pp.

Considering the rapid escalation of urbanization around the world along with the ongoing economic polarization of the global economy, this anthology is a welcome contribution to the literature on the ever worsening problem of urban poverty. *Urban Livelihoods* presents and critiques a new framework— "the sustainable livelihoods approach"—for ameliorating urban poverty in low- and middle-income nations. This approach distinguishes itself from earlier more conventional strategies for promoting "development" because of its relatively micro-level focus on addressing the needs of poor households as well as on "grass-roots" community empowerment for assisting such households.

This book undertakes to conceptually describe the "sustainable livelihoods approach" and to explain its applicability for assessing the needs of poor people in urban centers and for formulating poverty reduction strategies. The "sustainable livelihoods" concept and the necessity for empowering the poor so as to achieve a sustainable future were clearly articulated in the 1987 *Brundtland Report.* The "livelihoods approach" as applied

to urban settings is a good faith effort toward meeting that challenge; however, the task is enormous, and the framework, as described in the book *Urban Livelihoods*, has some shortcomings.

Most importantly, the urban "livelihoods approach" tends not to satisfactorily address protection of the natural environment. This shortcoming is touched upon by David Satterthwaite in his chapter on "Lessons from the Experience of Some Urban Poverty-reduction Programmes" when he points out that the distinction between environmental hazards and environmental degradation is commonly not made in applications of the model within urban settings. To give an example, the goal of improving households' access to natural capital nearly always emphasizes access to conventional resources and waste disposal systems rather than on promoting the development of more sustainable (and potentially more available) alternatives, such as the harnessing of solar energy and the composting of waste products. Another shortcoming of the urban "livelihoods approach" is that it does not deal directly with macro-level discrepancies in economic, political, and social power which contribute to urban poverty and which hinder poor people's abilities to change the conditions in which they live.

Despite such criticisms, the "livelihoods approach" is commendable as a framework for addressing urban poverty, and this book is an excellent resource for learning about the model and for identifying ways that the approach might be improved. By focusing on household access to financial capital, physical capital, natural capital, social capital, and human capital, the approach targets what all development projects should emphasize, and that is meeting poor people's critical needs for capital. All too often, so-called "development" projects make infrastructure changes (such as the destruction of affordable housing in the name of "urban renewal") which actually diminish rather than increase poor people's access to vital resources.

The urban "livelihoods approach" is also commendable because of its efforts to be transdisciplinary and holistic in scope. The book's chapters are authored by scholars from a wide-array of disciplines. Most are attached to British universities, while others have worked for governmental and nongovernmental organizations which are actually applying the "livelihoods approach," including CARE International, Oxfam, the Canadian International Development Agency, the Swedish International Development Agency, and the United Nations Development Programme. This book is also valuable in that succinct case studies are provided which illustrate the usefulness as well as shortcomings of the urban "livelihoods approach" within a wide array of nations, including Argentina, Colombia, Guatemala, India, Jamaica, Nicaragua, Pakistan, and Zambia.

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Ecology of Everyday Life: Rethinking the Desire for Nature, by Chaia Heller. Black Rose Books, Montreal, 1999, 174pp.

The Ecology of Everyday Life is a new lens with which to view the nexus of man, social institutions and nature. The word "everyday" in the title may be misleading; it does not refer to daily actions one can take to cultivate nature, such as recycling or reusing resources, as it may seem to suggest. This book, instead, points to a much more difficult solution as it encourages humanity to seek change in our political and ecological spheres to create institutions that promote sustainability and equality. In order to do this, Heller argues, we must rethink our definition of nature. Nature can no longer be viewed as separate from man, man-made structures and institutions. Only then will we realize the sources of environmental destruction and how this destruction in turn affects man. Heller discusses several groups and movements that have tried to make this argument such as anarchists, feminists and social ecologists and the shortcomings of each. Ultimately, Heller points to capitalism as the root of this degradation, which must be challenged specifically on a local level to be effective.

Heller challenges traditional ideas of evolution from the perspective that survival of the fittest and the competition that is involved takes place as well as interspecies mutual cooperation. This mutual cooperation is often not a focus of the topic of evolution, but it is a phenomenon that we should rely on today. Mutual

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cooperation relies upon living beings taking an active role in their own evolution in the name of creativity and diversification. In this way humans have strived to find new ways to relate to nature. Although natural evolution and social evolution are related on a continuum, the former has given way to the latter and is manipulated by it. For Heller, however, the destruction of nature is not done by all of humanity, but by a small portion who are in a position to exploit it. Thus, capitalism is at the heart of the destruction through its quest for raw materials and wealth for its own sake. Finally Heller focuses on ways by which change can be accomplished. She gives examples of actions taken by groups in which she has been involved and the results of those actions. She demonstrates that one can be committed to the theoretical pursuit of change but must also have the tenacity and patience to participate in the practical pursuits that are required.

Nicoley Schwab
University of North Texas

Fatal Harvest: The Tragedy of Industrial Agriculture, edited by Andrew Kimbrell. Island Press, Washington, DC, 2002, 396 pp.

This is an extraordinary book. It is a large, beautifully illustrated, persuasively argued alert to the dangers of continued indifference to the long-term consequences of current agricultural policies and practices in developed countries. These policies and practices promote industrial agriculture as a global strategy. The underlying argument of 40 credentialed and credible authors challenge in almost 400 pages the casual assumption that indifference to increasing industrialization of agriculture is a good thing. The book's title, *Fatal Harvest*, suggests a different conclusion.

Andrew Kimbrell, the editor, is a public interest attorney, activist, and author who directs the Center for Food Safety in Washington, DC. He is described as having been in the forefront of legal and grassroots campaigns on testing and labeling genetically engineered foods, opposing the patenting of life, and advocating maintenance of standards for organic products. He is joined by 40 "leading environmentalists" whose essays document the history of the industrialization of agriculture in developed countries and challenge the casual, relatively unreflective acceptance of the "myths" that this development ensures better, more healthful living through food biotechnology; avoids homogenization of food options; avoids the reduction of biodiversity; and counters the "growing epidemic of hunger in a world of plenty." These are matters of consequence for everyone, so everyone has a stake in reviewing the evidence presented in this volume.

A final section proposes a "revisioning" of agricultural polices and practices in the new century. More than outrage with the corporate welfare in the extravagant subsidizing of corporate agriculture in the United States and the European Union is at stake. Such subsidies and global pricing policies both ensure that developing countries cannot compete in the marketplace; worse, the potential for development of self-sustaining food production in developing countries is undermined. The result is that the promise industrial agriculture will feed the world is worse than a sham. This policy misses the point that the problem is not one of production of food but a political issue of access to food. The current political protests against the consequences of globalization have mobilized a large number of people who apparently understand this better and care about this more than most citizens.

When asked to review this book, I at first demurred, noting that being a gentleman farmer with 20 acres of pasture, an orchard, and a kitchen garden did not make me an expert on agricultural policy and the implications of industrial agriculture. But this caution missed the essential point of this persuasive book. The unreflectiveness of ordinary citizens at the breakfast table regarding what they eat and how what they eat makes its way to their tables appears to be profound and common.

The final essay of the volume longs for the triumph of hope for corrective action over the continued unreflective self-interest of proponents of industrial agriculture. One often hears that the unreflective life is not worth living. We may be on the way to discovering that an unreflective life regarding current agricultural policy and practice may produce an environment that is increasingly not livable.

This is a remarkably provocative and instructive book. Exposure yourself to its argument if you dare.

George L. Maddox
Professor Emeritus of Medical Sociology
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Life Support: The Environment and Human Health, edited by Michael McCally. The MIT Press, Cambridge, MA, 312 pp.

This edited volume is an update of the previous book by the same editor, *Critical Condition: Human Health and the Environment*, published in 1993_. This new edition contains ten new chapters. Chapters published in the previous edition are substantially revised. All of the authors of the book's 17 chapters are health professionals. The major theme of the book is that the earth is in a global environmental crisis of man's own making, and that this crisis has profound negative implications for the health of humankind. Each chapter addresses a specific aspect of this crisis and concludes with a discussion of possible remedies that may ameliorate or eliminate the environmental problem. Specific issues addressed include the impact on health of by-products of industrial production, including urban air pollution, water pollution, heavy metals introduced in to the environment; consequent global climate changes; ozone depletion; and loss of plant and animal species. Effects on human health considered in detail include the effects of the burden of industrial chemicals on the body, cancer, and, new to this edition, endocrine disruption, or interference with the functioning of hormones in the body.

In an innovative analysis of the environmental impact of war, Jennifer Leaning, MD, SMH, of the Harvard School of Public Health, explores the effects of the "production and testing of nuclear weapons, aerial and naval bombardment of terrain, dispersal and persistence of land mines and buried ordinance, and use or storage of military despoliants, toxins and waste" (p. 274).

Populations of the consuming countries of Europe and North America have the greatest negative impact on the earth's environment, through the exploitation of the earth's natural resources in order to sustain their ever higher standards of consumption. In the last and most controversial chapter in the book, Andrew Jameton, Ph.D., of the University of the Department of Preventive and Societal Medicine at Nebraska Medical Center, and Jessica Pierce, Ph.D., of the Center for Values and Social Policy at University of Colorado at Boulder, explore the ethical responsibilities of health care professionals in the expanding high-tech health care systems used by these consuming nations. Health care is not only unequally distributed among the earth's people, but the health care system itself is a source of negative environmental impact both through the waste by-products of the system, including infectious human tissues, bioharzardous materials such as radioactive isotopes, and carcinogenic dioxins released when plastic medical equipment is incinerated; and through the volume of natural resources needed to produce the health care products, including rare metals, rubber, petroleum, water, and biomass. The authors argue that consumer nations need to begin to develop "sustainable health care systems," systems that balance individual health needs with environmental impact. This is an argument for limiting the development and availability of lifesaving technology, an argument that will certainly be hard, and probably impossible, to sell politically to the consumer nations.

Each chapter of the book could stand alone as an authoritative overview of a particular issue related to the environment. It is easily readable by the general college-educated public. Chemical names and processes as generally kept to a minimum and explained sufficiently when necessary that it is possible to follow the main argument of the chapter. The book would have benefited from more integrative material for the editor. The introductory chapter does a good job of preparing the reader for the general arguments to follow in the substantive chapters, but connecting material and a general overview of suggested solutions and their political, social, and environmental feasibility is lacking.

Susan Brown Eve
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Meeting the Challenge of Global Aging: A Report from the CSIS Commission on Global Aging, Center for Strategic & International Studies, Washington, DC, 2002, 78 pp.

Economic development using competitive market mechanisms has been spectacularly successful in many countries. A major problem with the "market approach," however, is the uncertainty this approach brings to bear on people's livelihood and welfare—especially with regard to employment. With market incentives that promote economic efficiency, innovation, and growth also come many negative results: such as worker skill obsolescence and job loss from technological change and shifting demand for products. Also, there is the widespread phenomenon of pushing workers out of the labor force with early retirement incentives. And, finally, there is the unemployment associated with business cycles, global competition, and bankruptcy. The result of these many problems is often financial chaos, community decay, social disruption, and individual degradation.

But market economies (contrary to Karl Marx's prediction) have survived by developing social mechanisms to mitigate the problems. One very important set of mechanisms is retirement, disability, unemployment, and survivor programs. Social Security and other types of pensions have been formidable instruments over the years in helping market economies thrive—"buffering"—changing employment needs in industrializing countries. That is, public and private pensions are one important way market economies deal with the growing problems individuals have in finding work as they age. More generally, pensions have effectively responded to the social strains in market economies created by ever-changing employment needs and chronic unemployment problems.

But times are changing. Population aging (more elderly; fewer workers) is occurring around the world. Can we still have economic growth and simultaneously provide adequate economic security for workers and their families when they reach old age? *Meeting the Challenge of Global Aging* is one of many recent publications that argue we cannot have both. The report, therefore, calls for fundamental changes in retirement policy and our economic treatment of people in old age.

The publication represents the views of a majority of members on a "commission" organized by the Center for Strategic & International Studies, a conservative Washington think-tank. This Commission (chosen by the Center) was composed of "85 leading voices in politics, government, business, academia, and the nongovernmental sector from three continents." Half of the Commission, however, was from the business sector!

Here are some of the report's conclusions about the future impact of demographic aging in the United States:

- There will be a government fiscal crisis as the health and pension costs of older people grow to consume most of the government's budget.
- Social Security will become unsustainable.
- Economic growth will decline and standards of living will fall.

These conclusions are basically assertions made by the Commission. The analysis that supports the report's conclusions and recommendations is minimal and most of the conclusions are not supported by economic research. Moreover, the report's conclusions are based on a highly selective partial equilibrium analysis. Its discussion focuses exclusively on older people without mentioning the impact of other tax and revenue streams on the future fiscal crisis of the federal budget. For example, it makes no mention of the huge impact of the Reagan and Bush tax cuts on the ability of the federal government to spend in future years, ignoring this major part of the declining revenue picture. Social Security in the United States is paid for, dollar for dollar, by a payroll tax. In contrast, defense expenditures, programs for children, subsidies for mass transit, etc., are paid for largely by general revenue from the income tax.

Viewing government revenue sources as a whole, it is clear that it is not population aging (and pension costs) that will cause the fiscal crisis. Rather the fiscal crisis will arise out of politicians telling people that government can cut taxes, fight wars, and keep deficits low—all at the same time. In this kind of a "read my lips" political environment, people are encouraged to view public sector spending as an act of the enemy. Viewing revenue and tax policy in this way also makes it impossible to talk about raising Social Security payroll taxes if we want to keep benefits at current levels. Instead, we are confronted with no option other than to cut benefits (one of the Commission's main recommendations).

What about the fear that population aging will cause a decline in future economic growth? Economic research tells us that growth is a product of many factors and that demography is only a minor determinant. Rather, growth depends fundamentally on promoting knowledge, education, technological change, and entrepreneurship. These are the most important factors influencing the growth process. Economic research shows that they account for 60 to 80 percent of economic growth over the long run.

But in the literature that talks about population aging in relation to slowing economic growth, Social Security unsustainability, and declining standards of living, *the roles of technology, risk-taking, and entrepreneurship are virtually ignored*. This is certainly true for the Commission's report. The report makes no mention of the fact that our future welfare depends mainly on our ability to harness the riches of technological improvements in the years to come (just as we have done in the past). Instead, the report blames the growing number of people entering old age for the predicted economic ills of future years.

The Commission report has a long list of recommendations. Among them, one core set of recommendations supersedes all the others. The Commission calls on developed nations to cut public pensions levels, move away from pay-as-you-go systems to fully funded schemes, and expand fully funded private pensions.

Again, there is no mention of the problems around the world associated with "privatization" of pensions—huge transitional costs, high fees for administration and marketing, lack of income redistribution to low income families, investment product mis-selling and fraud, and the long period of pension plan maturation with no significant help for anyone in the short run.

This publication seems to be another self-serving treatise designed to promote the expansion of the financial investment industries (mutual funds, insurance instruments, and brokerage services) and thereby to raise the incomes of financial managers who would benefit from privately managed pension schemes. Also, it supports the agenda of those people ideologically hostile to government programs, especially those groups that have opposed Social Security programs from the beginning.

Today, as in the past, the most important determinants of the future economic welfare of people (of all ages) are the many factors we have alluded to that influence the rate of growth: technological change, entrepreneurial initiatives and risk-taking, managerial skills, government provision of infrastructure, saving, investment in human and business capital, labor-force participation levels, a facilitating culture, and so on. The debate over how best to run an economic system is not primarily an aging (or Social Security) discussion. In fact, the aging of populations (and Social Security) has relatively little to do with the outcome.

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Political Nature: Environmentalism and the Interpretation of Western Thought, by John M. Meyer, Cambridge, MA, MIT Press, 2001, 210 pp.

Western political thought, Meyer contends, has been dominated by two apparently mutually exclusive and equally inadequate premises. One, labeled "dualistic," is that political thought is completely independent of "nature" and the other, called "derivative," is that Western thought contains theories in which nature is accepted as the authority for proper political decision-making.

Meyer asks if it is possible to link politics, or anthropocentrism, with nature, or ecocentrism, without insisting that nature is the underlying authority. He quickly responds that it is not only possible but, under current conditions, necessary to link the two.

However, before he explains and illustrates this necessity, Meyer employs a deconstructionist style to critique the efforts of Aristotle and Thomas Hobbes, as well as others, to deal with the politics/nature issue. In this segment the reader is confronted with ambiguities, inconsistencies, contradictions, and repeated obscurantism. Examples: "*(F)or Aristotle singular 'nature' exists only as the aggregation of the particular natures of particular kinds of particular insights"* (p. 92), and, "*Politics is indeed natural for Aristotle, but political answers are not natural ones*" (p. 116).

Eventually, the tedious display of erudition segues into a tempered commentary on "sustainable development." The context for this discussion is that the quest for "pure"

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theory, exemplified by Aristotle, Hobbes, and many others, is in process of being replaced by "dialectic" reasoning, in which political dialogue is grounded, not in absolutist positions of anthropocentrism or ecocentrism, but in the actual experiences of participants within particular cultural conditions and the "*particularities of place*" (p. 134). Use of "dialectic discourse" is of value in considering such issues as social planning, land use patterns, and the impact of new technologies on communities, both human and nonhuman.

Issues of what are to be sustained call for the dialectic method. Is a single species, a forest, or an ecosystem to be sustained? When is private or public ownership to be supported?

Meyer concludes with three cases that illustrate the significance of his recommendations: The American "environmental justice" movement, ecological resistance movements in various underdeveloped nations, and the land rights movement in the Western United States.

Missing, surprisingly, from this important book is the concern for long-range goals. Focus is on the proximate rather than the sustaining of environment and institutions for future generations. Does adoption of Meyer's "dialectic" discount any effort to offer guidance toward achievement of long-range objectives? Promoters of sustainable communities may need to consider construction of theory after all.

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Confronting Consumption, edited by Thomas Princen, Michael Maniates, and Ken Conca. The MIT Press, Cambridge, MA, 2002, 374 pp.

Edited by professors of Natural Resource and Environmental Policy, Environmental Science, Government, and Political Science, and framed by authors from the business world to grassroots movements, this insightful reader addresses the failure of popular environmental conservation approaches to acknowledge the relationship between environment and modern trends of individual consumption. As a remedy, the book offers a framework for studying sustainable development from a "consumption angle" that takes into consideration "social, political, and economic cost," rather than from the traditional "production angle" that emphasizes continuous growth and distancing of costs. Divided into three parts, it presents analytical methods for studying consumption, reveals facets of consumption, and terminates in forward-thinking about effective environmental activism.

In Chapter 2, coeditor Thomas Princen argues that the current economic approach to environment and ecology fails to question the role of behavioral consumption trends. He calls for an active, reworked vocabulary that can be utilized by both policy makers and activists to move beyond short-term environmental improvement goals, and provide direction for concern about insufficient production to support population growth. In the following chapter, Michael Maniates, also a coeditor, reinforces the argument. He points out that buying "eco-friendly" products is hailed as protection of the environment, but it does not confront consumption, just as recycling fails to confront "institutional arrangements that drive a pervasive consumerism." Thus, "individualization of responsibility" for eco-systemic problems limits consumers to existing models for "green consumption" centered on claims of ecologically friendly production.

In his chapter, Jack Manno, director of a research consortium and an Environmental Studies faculty member, analyzes environmental commoditization by classifying consumption/production techniques in terms of low, medium, and high commodity potentials (LCP, MCP, HCP), each with social interrelationships, the high-end of being the most abstract, distant relationship between the producer and consumer in terms of sustainable development and the LCP having the most direct or cooperative involvement of production and consumption. Using an agricultural model, he graphs consumption/production techniques against relationships such as production efficiency vs. consumption efficiency, product oriented vs. process oriented, and embedded energy (energy intense production, i.e., packaging, transportation, promotion) vs. dispersed energy (used or dissipated at the site of exchange/consumption).

Part Two, Chains of Consumption, offers the concept of distancing as a politico-economic consequence of viewing the environment from the production angle. Here, Princen focuses on the obscuring the cost generation and

externalization that ultimately "impede(s) ecological and social feedback," such as the negligible impact on the corporate headquarters of foreign investment in places where production directly contributes to environmental and social degradation. If effect, Conca, the third coeditor, extends the argument by viewing the impact of distancing in a context of over consumption and marginalization of resources under the impact of globalization. Another chapter provides an assessment the environmental impact of waste distancing, followed by a chapter on the effects of 20th century American hardwood markets on tropical ecosystems by Richard Tucker, who is a faculty member at Oakland University and at the University of Michigan.

Part Three introduces grassroots movements that have challenged consumerism, such as the informal and effective Voluntary Simplicity Movement and Adbuster's accounts of satirical plays on modern commercialism. Also described are Green political economy and home power-based movements that create voluntary exclusion from global transactions and strengthen regional social ties, and "Eco-Certification," a forest certification plan and measurement system that rates forest producers and publicizes the information.

Despite sustainable development advocates' concern about the socioeconomic and environmental effects of consumption, these authors confront the lack of questioning about the relationship in policy and academic arenas. In their opinion the corollary is "modes of thinking that neither question nor respond to the underlying forces driving the escalation of needs and desires around the world." For them, confronting consumption can and should be, "a driving force of contemporary environmental scholarship and activism," that leads to a different kind of environmental politics that is both individual and collective (p. 317).

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Sustainable Education: Revisioning Learning and Change, by Stephen Sterling. Schumacher Briefing No. 6. Green Books, Ltd., Foxhole, UK, 2001, 96 pp.

Portentous specters are haunting the world—the specters of poverty, hunger, disease, ignorance, illiteracy, innumeracy, religious and political fanaticism, terrorism, ecological Armageddon, barbarous political disintegration, and mindless capitalist global expansion. With its images of disorder and chaos, the paraphrase from the Communist Manifesto forms the backdrop of this short book's concerns. Everyone believes that Education is a solution, but few ask: What kind of education? With antecedents rooted in John Dewey's *Democracy and Education* and *How We Learn* and William James's *Pragmatism*, Stephen Sterling's *Sustainable Education* puts forth a neo-progressive educational solution to some of the world's problems.

While none of this is new, in 96 pages Sterling summarizes a revolutionary educational vision that stands in sharp contrast to the modern market model now dominating schools and colleges in the developed world. For those unfamiliar with progressive education, the piece is an excellent primer; for those who know the text, it is a first-rate review. In making the case, Sterling asks basic questions: What is education for? What are its goals? Socialization, vocational and professional training, self-actualization, social reconstruction? What is its methodology? Is it Transmissive or Transformative? Whose education? How should it be directed? Authoritarian or Democratic?

In his answers Sterling contends persuasively that the goals of modern educational systems in the developed West are dominated by an instrumental "marketization," the thrusts of which are limited to narrow socialization and training (literacy and numeracy) as consumers and workers, achieving those goals via a transmissive methodology, authoritarian direction, and narrow quantitative measures of outputs. In this context, we ask why Johnny can't read or calculate without asking why he can't think clearly, can't create, can't breathe, can't cope with anxiety, aggression, or envy, can't express trust, tenderness, or love. Let's admit that basic skills indeed have something to do with Johnny's happiness, health, sanity, or survival.

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But not everything. Marketization makes whole populations insensate—indifferent—to the foreboding specters that threaten civilization as we know it.

On the other hand, there exists the possibility of achieving a sustainable world through the radical implementation of a sustainable education, characterized by democratic direction upholding the rights of equality, opportunity, and capacity. Sustainable education would broaden the socialization and vocational functions to include behaviors best described as participative, democratic, collaborative, dialogic, systemic, integrative, connective, active, creative, synergistic, holistic—in short, a transformative, not transmissive, methodology. A sustainable educational system would also add two additional goals to socialization and vocational skills: self-actualization and social reconstruction, moving us toward a world that is "farseeing enough, flexible enough, and wise enough not to undermine either its physical or social system of support." Such a system would be marked by accentuating life skills and lifelong learning, hybrid and multidisciplinary subjects, cooperation instead of competition, distance and open learning, information technology as a learning and delivery tool, and the transitory nature of knowledge.

What is the prospect for change, given the emphasis on vocational and consumer outcomes (literacy and numeracy) exemplified by the current educational "reform" programs based upon top-down (government and corporate) ownership of curriculum and method, transmissive methodology, and total commitment to the notion that all achievement is quantifiable? I think the chances are wraithlike. But I do not think that this is a reason to change our goal of creating a sustainable, classless, casteless, egalitarian society. A sustainable education, free from destructive competition, may not change the world, but it will help bring us together by realizing that trust, cooperation, and hope are the beginnings and ends of our humanity.

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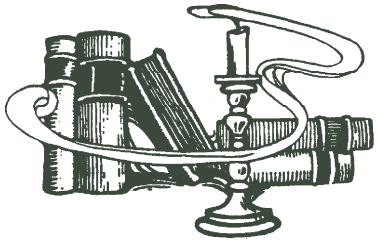

Conference Addresses Community and Economic Development

The Center for Public Service at the University of North Texas, together with the Institute of Applied Sciences, hosted a conference on October 25, 2003, on Green Building and Resource Conservation in the Residential Sector. The conference addressed the concerns of builders, developers, municipal officials, and citizens involved in community and economic development. Sessions dealt with alternative building methods and ways to achieve efficient water and energy use, and included reports from groups active in the North Texas region.

Three Approaches to Community Sustainability

review essay

by

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The Creative City: A Toolkit for Urban Innovators, by Charles Landry. Earthscan Publications, London, 2000, 300 pp.

Sustainable Communities: The Potential for Eco-Neighborhoods, edited by Hugh Barton. Earthscan Publications, London,, 2000, 305 pp.

Designing Sustainable Communities: Learning from Village Homes, by Judy Corbett and Michael Corbett. Island Press, Washington, DC & Covelo, CA, 2000, 235 pp.

How to get from where we are to where we would like to be is the critical issue in discussions of community sustainability. Because it is an issue that has many dimensions, it invites a variety of discussants, each of whom tends to place emphasis on the particular dimension that reflects his or her professional background or ideological commitment. If there is consensus among them, it rests on the belief that we will never reach our goal in the short run and possibly not in the long run, but that we can and should take whatever steps we can with the tools at hand. In taking that approach, each of the books reviewed here describes a different set of tools. By doing so they demonstrate the utility of the approach, and at the same time they illustrate its weaknesses.

Charles Landry is a cultural planning consultant and founder of the Comedia firm, based in Europe. He has written *The Creative City* almost as a reference book for urban managers. Every chapter can stand on its own because the writing is accessible, the case studies boxed, the key points bulleted. Despite the wealth of rich examples and the length of the book, Landry has two consistent and principal themes: Encouraging, creative, out-of-the-box thinking about cities, and nourishing each city's unique cultural resources. Drawing on his experiences as a consultant, Landry offers helpful, innovative ideas for fostering paradigmatic transformations in stovepiped bureaucracies. These ideas include brainstorming, drawing on best practices, finding new metaphors, valuing varied kinds of intelligence, drawing in underrepresented people such as women, children, and radicals, blurring boundaries, being interdisciplinary, enriching narrative icons for communication, and turning tired notions (like waste is not an asset but a cost) upside down. Creativity can foster such innovations as converting an ammunition dump into a horse park, using hawks to frighten pigeons in community banks, paving textured streets for the blind, employing tricycle-riding poor children as rag pickers, pricing menus more cheaply during off-hours, recycling older industrial buildings, helping artists to stay in place and regenerate a neighborhood, and organizing a personal development group in Dublin for women travelers who embroidered a quilt with the design for their new campsite. Old people figure large—as "pearls of wisdom," or unpaid "substitute grandparents," and community gerontologists. Landry shies away from deep change; for example, in discussing automobiles, he suggests many gimmicks to dissuade people from driving. His very last suggestion is for the very brave, but may be the only one to work: imposing a gasoline tax. I am glad he wrote this book before September 11th, because his book might be persuasive to people who will now argue that cities should be less lively, less public, and more fortified.

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I found Landry's vision of culture problematic; raising the specter that to be interdisciplinary is to be shallow. He defines culture as shared values, using a structural-functionalist stance long gone in anthropology, and in fact argues for seeing the city as an organism and uses organic metaphors to address shared problems (gridlock is a heart attack; uncontrolled population is a tumor!). He believes that the built environment testifies to what we treasure culturally, rather than to the movements of capital. He is not interested in capital accumulation, investment and abandonment, power, or inequality. Even when he appears to touch on actual social relations—building on indigenous health practices or mutual aid traditions or the passions of youth—he is not clear about how one studies or understands the "shared culture" of a place, "the panoply of resources that show that a place in unique and distinctive." He does not read anthropology. Does one need to learn the language and do field work? Presumably not, one "scans" history and traditions for the resources that show a place is distinctive. One discovers a typical Roman or New Yorker who typifies a unique place. But cities of course are much more complex, their cultures much less shared. His quasi-inclusive vision would not accommodate or account for political protest or transgressive or maligned traditions: runaway, go-go, ACT UP, Animal House, rave, or drag.

Moreover, his purpose is mainly to commodify culture: to hasten urban renewal, attract tourists, or appeal to corporations seeking a "vibrant cultural life for their employees." Landry urges urban innovators to seek a unique marketing niche and exploit it, for example, to "design an urban narrative into signage," promote unique foods, festivals, crafts, music, design, and dress. Again, he ciates many successful examples, including the book towns of Hay-on-Wye and Mantua, Glasgow music and film, Helsinki's Night of the Arts and Forces of Light. Occasionally he touches on act social relations, such as social networks among booksellers. But for the most part his vision of culture is that the hegemonic is shared and that culture is shallow. City residents seem doomed to pose as historical or ethnical or regional—others for low wages in the tourist sector.

The most serious problem in the book is that Landry does not adequately deal with power or poverty. He draws on the old Chicago School's ecological vision of cities as concentric circles with the ring immediately around the hub, a vital incubation zone, a frontier for urban pioneers. Globalization is a benign project of mobile people, ideas, skills, and knowledge industries to which cities must adapt. The relation of a city to its hinterland, the core to the periphery, elude his analysis.

His cosmetic ideas for cities do not seriously address inequalities there or even the deep quality of life expressed in, for example, the pollution of common resources. This may be because his examples tend to come from European cities, where perhaps inequality is less harsh and a better safety net in health care and education is in place. But employing child rag pickers as recyclers, for example, does not satisfactorily address child poverty. In fact, far too often in this book, one finds poor people collecting, selling, or recycling trash as though there were no other work they could do. And some of what he considers best practices—artist-driven gentrification or public-private partnerships around the new urbanism have had devastating consequences for poor people of color, at least in the United States.

Hugh Barton's edited collection on *Sustainable Communities* is also an Earthscan publication, but a much weightier book. The writers includes a laudable interdisciplinary mix of town planners, a community worker, a social worker, an architect, several environmental scientists, and environmental planners debating the importance of neighborhoods, current practices, principles, and possibilities for sustainability. (Because of their emphasis on issues like community, social networks, and making a city home they could have used an anthropologist.) In their descriptions of current city policy, their insistence on environmental and social perspectives, their unwavering focus on equity, they offer a different portrait of English cities than does Landry. The chapters can stand on their own, and their serious research, accessible writing, and many charts, diagrams, tables, and boxes make it a promising book for course adoption.

The book has four parts. The articles in Part One provide a sobering context. Barton includes a nice checklist for sustainability, which includes issues such as health, job opportunities, and access to affordable housing. These authors point to the ways that developers, planners, and policy-makers have worked at cross

purposes to this checklist, following provide-and-predict models to create settlements that are impermeable at every level, from asphalt surfaces through houses and enclaves that turn their backs on each other. They document the environmental consequences of such practices in the depletion of resources and degradation of water. Unlike Landry, all point to the primal importance of the car: as a force for the development of motorways and suburbs, for more individualized consumption, more travel on one's daily round, big centralized malls, and more airborne particulates that cause respiratory diseases.

The articles in Part Two, all written by Barton (with one co-authored) are more empirical and technical, grounding, pressing, and delineating the political and philosophical principles and historical contours of Part One. Barton zeroes in on schooling as a measure of neighborhood decline and traces its knock-on effects in traffic, pollution, and the loss of physical activity. He offers the reasons for strengthening neighborhoods, which include cutting greenhouse gas emissions, closing resource loops, increasing work opportunities and social inclusion, and helping people to be healthier. He proposes that we throw out metaphors for urban life such as machines and organisms (favored by Landry) and that we use the concept of ecosystem instead, to capture the complexity of an open system with living and non-living elements, cyclic processes, and complicated natural and social relationships. Neighborhoods true to this concept should provide local autonomy, choice, diversity, flexibility, connectivity, and responsiveness to physical place. Barton argues for a social mix in such neighborhoods, for several reasons. Most important is equity: people of different means should be able to afford houses there. But he also argues the mix will make the neighborhood healthier. For example, a generational mix of people provides more balanced demands in goods and services on small businesses and the public sector. If all members of a community are families with small children, they may stress the infrastructure too much or leave a certain sector that has adapted to their needs dangling when the children grow up and move away. Ecocommunities also need varied people to do different kinds of jobs. Barton argues that people may more commonly work alone and at home in the future, and that more people will also live alone, so lively neighborhoods will serve them better when they seek company in public spaces. Like Jane Jacobs years ago, Barton favors a dense, walking neighborhood, with mixed uses to promote shorter trips to get more done and safe, lively streets that attract eyes.

Perhaps the book's most original chapter examines the possibility of designing neighborhoods with strong, legible identities and the permeability currently favored by planners but bowdlerized by developers, who produce safe, isolated homes for drivers rather than walkers or cyclists. These neighborhoods should include several housing types and be open, visible, and connected to other neighborhoods through high streets where people meet and exchange goods and services and places like bus stops generate activity. Among his more provocative ideas is that people do need safe home zones with other people like them in a *cul de sac* or a block. This proposal raises interesting questions about identity and difference, since most of us claim many shifting, blurry identities—what features make people feel safe and the same? Barton and Kleiner track vibrant fertile projects around the world, a task that is augmented by a complete list of eco-neighborhoods and several well-described cases studies in the Appendix. This interesting collection includes a range of eco-neighborhoods from rural settlements through urban eco-projects such as cohousing, and televillages, which foster home/locally based work, geared toward freelancing, out-sourcing, and "remote management." They are rightly reserved about the new urbanism in the United States, "islands of relative transport-efficiency in a sea of wastefulness."

Part Three problematizes the concept of community and provides case studies of local community change in the west of England. People appear to understand what community might mean—something between strangers and kin, public and private—and to want it in their lives. It takes on almost mythic importance, although in today's world we might be more likely to find it on a soccer field, in a union, or on the Internet than where we live or work. The authors of Part Three ground community in the networks, associations, and consciousness that emerge ultimately from public exchange and interaction, and ask how the built environment can foster community.

Alison Gilchrist writes that the "separate strands of community are spun from incidents of conversations, the

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web is suspended from fixed points in the social landscape" such as school at a mosque, or a youth club. Lively local shopping, more walking, calmed traffic, public places to encourage people to linger and sometimes free them from the supervision of children promote the interactions that help build social networks and hence, community. Other authors in Part Three tackle the important political questions of community-based initiatives and community governance, how to empower communities, tackle the tensions that spring from inequality and diversity, and promote equity and sustainability in all areas of life, including institutions and culture.

The last part of this book offers clear schemes for community utilities, food production, local movement systems, and freedom from crime. The authors appropriately criticize huge, monopolistic companies that overprice consumers for food and energy miles and position control far away from use. They push for the principles of volume: locality, closing resource loops, equity, participation, life support and the quality of life. Community stakeholding in utilities is less expensive, protects the indebted and those unable to pay, provides jobs, and connects people to resource use and the incentive to conserve. Neighborhoods that produce their own food through permaculture save on food miles, make available to everybody affordable, organic, ethically sourced produce, fight food poverty, and feel connected to the land. Local movement systems that encourage walking, cycling, public and shared transport also enliven the landscape, and reduce assault on all our senses from lights, horns, grease, fumes, grit, and intimidation. Finally, a community needs a strong sense of place, mixed uses, varied housing, seamed edges, and political participation that reduces crime and makes people safe. Thus, without being repetitive, these authors' arguments reinforce each other clearly and persuasively.

The third book under consideration is Judy and Michael Corbett's *Designing Sustainable Communities*, which is based on Village Homes, where they live in Davis, California. They have helped design and govern Village Homes since its founding in 1972. The book provides a history of garden city planning, case studies of successful sustainable communities, and the lessons that can be learned from the striking successes of Village Homes, which is based on fundamental ecological principles about the relationship between humans and the natural environment. Village Homes rests on many of the same principles and designs as those proposed in the Barton collection: natural drainage through creeks and ponds stocked with mosquito-eating fish, narrow streets to promote safety, coolness, and interaction, small lots, energy-efficient houses that face south and use solar power augmented by skylights, drought-tolerant plants, courtyards rather than lawns, paths that encourage cycling and walking, an edible landscape that includes personal vegetable gardens, grapevines, beehives, flowers, and a lovely eastern border of almond trees. The Corbetts take pride in the community center, which hosts small businesses.

Tranquilizing and inspiring as this book is, I found a number of problems with it. First, the Corbetts draw on very old, popular anthropological texts to make unsustainable claims about human genetics and sociobiology. Second, their historical perspective is distorted. Their anti-urban bias is grating, and their white, middle-class, privileged worldview is maddening.

The Corbetts cite Dubos (1974) and Sales (1980) to argue that the kind of community they prefer is embedded in our genetic code. Communities in harmony with nature, they argue, are biologically preferable. We can escape from boredom only by direct sensory experiences of primitive life. We have an innate desire to own a home, and the innate need to live in communities of 500 people. "The need for these experiences persists in the modern world for the simple reason that it is indelibly inscribed in the genetic code of the human species" (citing Dubos, 1974).

Noise causes stress, cardiovascular problems, high cholesterol, and mental illness. The Corbetts make these almost irresponsible claims without reading more up to date physical anthropology, any cultural anthropology that might offer less ethnocentric perspectives, or even thinking very hard about diversity in their own society. To take just the noise example, scientists argue today for a chemical, organic basis to mental illness, some people might find silence more frightening and stressful than noise, there is noise and noise (consider music and radios) and

to some people even sirens might provide the comforting reassurance that help is nearby, that the public infrastructure is in place.

Similarly, in looking at urban planning historically, the Corbetts make the outrageous claim that the planning of inner cities and suburbs in days past was more integrated and thoughtful than today's piecemeal approach. Tell that to the thousands of people displaced by the urban renewal schemes of the 1960s, locked out of suburbs by restrictive covenants and the discriminatory practices of the GI Bill, or to those who see that suburbs expressed and hastened our dependence on cars. Or to those whose dense urban neighborhoods are skewered by freeways transporting suburban commuters to work downtown.

Some people, as Landry notes, love cities. They find a buzz, a delight there. But consider the collection of small businesses the Corbetts praise: A massage therapist, a psychiatrist, several attorneys, a corporate telecommuter, an exercise studio, an organic restaurant, a dietician, a child care center, and the offices of an environmental engineer, an architect, and an advocacy group. Is this really a community where everybody would want to live?

In addition to making claims about human nature without looking at real human communities around the world where women do laundry in community wells, or gardens are commonplace, the Corbetts do not look at the lives of poor people, especially black people, in their own society. They tried to promote diversity at Village Homes through including low-rent apartments and offering construction jobs to migrant farm workers and Pakistani immigrants. The original owner-builders could not afford not to sell as property values rose, and now only affluent people can afford to live there.

This might be because the Corbetts write from the perspective of northern California. But to do so would enrich their perspective enormously, because as it is it seems almost spoiled. To do so they mights revise their claims in several ways. The principles of the Environmental Justice movement make environmental sustainability key yet link it to equity and equality, to the issue of who pays the price for the development enjoyed by others. People who live on brownfields or next to degraded urban rivers suffer assaults on their health far beyond those who are bothered by the noise of cars. Poor people also live sustainably in ways unseen by the Corbetts in their critique of modern life: No manicured lawns, no cars, shared rides from the grocery store, traditional medicines, community gardens and pooled resources, extended families sharing a house. They probably suffer a decaying infrastructure and combined sewer outlets in ways unimaginable to people who are more fortunate. The Corbetts argue that poor people in ghettos depend too much on the federal government, missing the creative ways that those people find to survive, and missing the much greater dependence of the wealthy (remember Enron?) on the government for subsidies and support.

It wouldn't be that hard for researchers writing the next set of books like these to learn something about the lives of poor people. They could read the pioneering works of Robert Bulla and Barbara Rose Johnson, or the newer work of Krista Harper and Melissa Checker, who document environmental justice problems in Chicago and along the Danube. Or read Eric Kleinenberg's new book *Heat Wave*, which documents the social failure that killed 200 people in Chicago in 1995. They could visit the Ohio River where it flows through Louisville and note the pollution in the black neighborhoods. Or while in Washington, visit Anacostia Park, where urban anglers supplement their groceries with fish that are lesioned from toxins in the river and the Anacostia Garden Club fights Metro to preserve a wetland. Or Fort Dupont Park, where organic community gardens feed hundreds, and gardeners use traditional techniques to can and freeze vegetables for the winter. Or just look at the website of the Anacostia Watershed Society and see how hard grassroots activists have fought for environmental justice in the nation's capital.

Paying serious attention to urban nature, how real people live, suffer, make do, and organize for social change could only enrich these accounts and proposals. Without them we run the risk, not just of fiddling while Rome burns, but of erecting gated sustainable communities in a toxic world.

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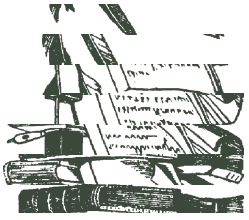

SUSTAINABLE COMMUNITIES REVIEW

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