

The Wired World: Rethinking the Environment in a Digital Age

Introduction

There were 1.080 million Internet users worldwide by the end of 2006 (Maklin 2007). Although the vast majority of these were in the United States and the rest of the industrialized West, the growth in Internet use during the next five years is expected to be in the developing world (Choucri 2001; Maklin 2007). The World Wide Web enables and mediates transportation and travel planning, utility installation and management, education, buying and selling, entertainment, health and wellness, banking and financial planning, communication and civic participation. This transformation has paralleled a remarkable increase in environmental awareness, concern, and activism, which has established the pursuit of ecological sustainability as a central feature of contemporary thought and political activity (Choucri 2001; Choucri et al. 2007). No doubt, the Internet, as the foremost information and communication technology (ICT), has been instrumental to the worldwide increase in environmental knowledge and organized action (see, for instance, Knauer and Rickard 2001). What we consider here is how ICTs, as both a source of and a potential site for environmental exchange and activism, have contributed to a more complex understanding of the environment, and what the implications of this conceptual tack may be.

Indeed, we argue that ecological sustainability requires an expansion of our understanding of the environment to fully incorporate digital developments. We begin by addressing the genealogy of “the environment,” which has historically been conceived, principally, as natural, even as subsequent definitions of the built environment shifted to

include more of the social elements of lived reality. This development expands the complexity of our understanding of the environment to link lifestyles, habits and human patterns of behavior to the various surroundings that contain them. We then examine the physical orientation across traditional and more recent, sociological, conceptions of the environment and the ways in which these ideational foundations have already been, and might be further, enhanced to include the virtual environment made possible by ICTs. We discuss different forms of online environmental activism to identify, and demonstrate the significance of, this shift to a “wired imaginary,” or imagined global democracy distinguished by the intense and progressive use of ICTs (see Soja 1996; Lipschutz 2006). Our discussion of this virtual environment anticipates a range of political and ecological implications.

The Natural Environment and Environmentalism

The so-called natural environment refers to wilderness, and other landscapes considered untouched or little intruded on by human presence and processes. One way of understanding the environment in this sense is the idea of a world distinct from human construction in any modern sense. The binary of human control towards transformation versus preservation is fundamental in the first perspective. The natural world exists either to be domesticated, harvested, consumed, or otherwise used, or to be protected, enshrined, and revered (McKibben 1989; Peterson del Mar 2006).

That said, natural environments may well be inhabited by human beings - indigenous and nomad peoples as well as the inhabitants of contemporary industrialized societies. Indeed, the second predominant view of the natural environment is holistic in

terms of the relation to human beings. It regards nature and humans as intimately connected, interactive, and, at the extreme, constituting a single organism (Miller 1991, Lovelock 2005). In this case, people are often viewed as living in a primarily symbiotic (horizontal) relationship with their surroundings rather than, in the vein of modernization, a manipulative and controlling (vertical) relationship with them. Environmental activist and journalist George Monbiot (1995) captured this horizontal relationship succinctly in the following illustration as part of a commentary on the banning of fox-hunting in the UK.

For the Asmat people of Irian Jaya, hunting is not just a means of subsistence, but the nub of their existence. They worship the spirits of their prey, to the extent of asking their forgiveness before the kill. To survive, they must hunt not only the animals they eat but also the animals that eat them, the saltwater crocodiles that stalk their canoes. As both predators and prey they are embedded in the ecosystem, and their folklore and daily customs show that wild animals have helped to fashion their image of themselves. At times they are cruel to their quarry, and there is no doubt that they delight in the chase. But their relationship with their prey is rich, complex and suffused with an understanding so deep that, in hunting with them, one could almost believe they can read an animal's thoughts.

In either instance, the human aspect is central to understanding even the natural environment.

Environmental movements and environmentalists have tended to focus their attention on the natural environment. Environmentalism, in the broadest sense, refers to political and ethical movements that seek to improve and protect the quality of the natural environment by modifying or prohibiting human activities deemed likely or certain to harm it. Still there is variation in how various branches of the environmental movement, let alone individual activists, approach the natural environment.

Environmental philosophy and the many branches of the environmental movement all tend to be characterized as either anthropocentric, meaning “human-centered” in orientation, or biocentric – i.e., “life-centred.” Corresponding popular distinctions equate anthropocentric thought and activism with a dependence on “technological fixes” (McKibben 1989) to environmental problems. Anthropocentrism emphasizes the negative effects that environmental degradation has on human beings and their quality of life. It is often characterized by a mechanistic approach to nonhuman life in which individual creatures and species have only an instrumental value for humans. The defining feature of anthropocentrism is that it considers the moral obligations humans have to the environment to derive from obligations that humans have to each other—and, less crucially, to future generations of humans—rather than from any obligation to other living things or to the environment as a whole. Human obligations to the environment are thus indirect. According to Christopher Stone, the environmental lawyer known for championing trees’ rights, environmental ethics from this standpoint amounts to prohibitions on “fouling your own nest” (1993).

In contrast, biocentrism is often associated with deep ecology. Deep ecologists criticize anthropocentrism because it arguably accepts a historically western view of nature as merely a resource to be managed or exploited for human purposes. They are not alone in finding this view chiefly responsible for centuries of environmental destruction. Biocentrism claims that nature has an intrinsic moral worth that does not depend on its usefulness to human beings, and it is this intrinsic worth that gives rise directly to obligations to the environment. Humans are therefore morally bound to protect the environment, as well as individual creatures and species, for their own sake. In this sense, biocentrists view human beings and other elements of the natural environment, both living and often nonliving, as members of a common moral and ecological community (Leopold 1977; Warren 2000).

Nearly any environmentalist position embodies tensions between science or reason and the sacred or emotion (Milton 2002). Historically, these tensions have often played themselves out in conflicts between conservation and preservation as political positions on environmental protection. While conservation establishes sustainable ways of interacting with the natural environment, preservation focuses on the intrinsic value of nature and wilderness as sources of spiritual and national identity. In many national cases, conservation drives wise use and multiple use approaches to environmental policy governing activities such as forestry management and grazing. Preservation is the force behind creation of national parks and wildlife preserves. Clearly, *both* approaches have been simultaneously adopted in many cases. And scholars including David Peterson del Mar (2006) have argued that the environmental problems we face today – including localized questions of access to potable water and global calamities such as climate

change – may be attributable as much to western progress and industrialization as to the contradictions inherent in environmental thought. There can be a tendency among environmental activists to complement rather than challenge the social practices responsible for environmental degradation.

The Built Environment, Technology, and Urbanization

The shift to the built environment is represented by the concepts of urbanization and the urban, most closely associated with today's advanced economies, but increasingly depicting a phenomenon that continues to spread across the world. Monbiot talks about “our estrangement from the ecosystem” associated with a shift in the last five to ten thousand years to a high proportion of humans living by agriculture and more recently in towns. Yet the built environment is not necessarily antithetical to an environmentally conscious approach to protecting and/ or preserving nature.

Popular comprehension of the built environment distinguishes the manmade structures and surroundings that provide the setting for human activity from the natural environment itself. Professional planners, engineers, building designers, and landscape architects recognize that today many outdoor spaces, including central parks and garden cities, look and feel natural but are, nonetheless, constructed spaces. The built environment thus, by definition, blurs the line between the natural and the artificial. The ascendancy of the built environment began in the west following the end of World War II as societies rebuilt with the intention to integrate industrial growth with wilderness preservation in a time of unprecedented affluence (Howard 1965; Louv 2005).

No wonder. The wealthiest economies what are now being championed for preservation are urban (built) environments. Many of these in newer or renewed, progressive parts of the industrialized world deliberately blur the distinction between the natural and the constructed by featuring parks and open spaces, which are definitely part of the built environment as a whole but natural features of it too. Both the upscale park-like suburbs of the 1950s as well as the compact, walkable, mixed-use habitats associated with New Urbanism (Katz 1993; Bohl 2002) embody this blurring of real and imitation nature in the built environment. Drawing on a human history of increasingly complex forms of constructed environments, the emphasis here is on the adaptation of the natural location by harnessing a site as the basis for lived space (Mumford 1938, 1961; Bugliarello 1999).

Consequently, though environmental purists and outdoor enthusiasts – some of whom deify the natural – may cringe, the built environment has emerged in recent years as the “nature” contemporary environmentalists often seek to preserve and protect. That is, we increasingly find that the tree, park, trail, or waterway from our childhood that we sacrificed our time, money, and psyche to save is really a prop in some planner’s or architect’s (sub) urban design. Duly acknowledging that technological mediation of urbanization and urban lifestyles has interrupted humanity’s direct relationship with nature (Monbiot 1995), political theorists such as Leslie Paul Thiele nonetheless argue in favor of an environmentalism that recognizes that “the viability and flourishing of the human species” depends “on our success in preserving the life-sustaining capacities of a diverse biosphere” (1999: xix). From certain perspectives sustainability, in this sense, is associated less with reduced consumption and (economic) growth (Daly 1977), than with

economic development and corresponding technological improvements that may increase consumption by way of raising the standard of living in a given community or region. Thiele (1999) explains that the kerosene lamps used for lighting in developing nations consume fifty times more energy than light bulbs, but poor people cannot afford electricity. Likewise people who lack access to toilets or live in areas without sewage treatment facilities spend much more on medical care than those who live in areas with better sanitation services (Shulte 2007). In such cases, resource conservation is impossible without technological development and higher levels of consumption of goods and services that do not drain the environment as well as those that do.

This potentially contradictory relationship informs the hierarchy of the built environment over the natural environment, with the former identified with advance and the latter with stasis or even backwardness. The man-made, technological character of the urban is intrinsic to its distinctions from the rural or natural world. The urban is the environment that humanity has honed to its own ends, through increasingly complex built settings and infrastructures. It is the site of interaction between human goals and desires and the technologies that help to achieve them and make them real. As such, technologies like automobiles, computers and fax machines, and water heaters and refrigerators become part of daily, lived realities and they also impact directly on human cultures and imaginaries. They become much more than just means to ends, but an integrated part of human reality and experience, part of how the future is conceived and built on the past (Youngs 2007).

Technology thus provides a mechanism for development and economic growth as well as environmental consciousness and protection/ preservation. The United Nations

anticipates that by 2030 a staggering 81 percent of people living in developed nations will inhabit urban centers where the majority of people can expect to enjoy access to schools, recreation, and health care and can afford clean, energy efficient technologies epitomized by the super low emissions automobile (UNDP 2006: 1). What comes to mind here are global cities like Tokyo, New York, London, associated with the expansion of the financial and service sectors as part of globalization from the late 20th century through to current times (Soja 1996, 2000; Scott and Soja 1996; Sassen 2001, 2002). More significantly, however, 56 percent of those residing less developed nations will inhabit urban areas and face the crowding and filth associated with inadequate sanitation, inefficient energy sources, and unfulfilling livelihoods. This statistic is even more dramatic in light of the United Nations' (2006: 1) designation of 1968 as the point at which the less developed world overtook the more developed world in terms of urban population figures. Today, the developing world has more than double the number of urban dwellers than the more developed regions (2.3 billion compared to 0.9 billion). Of the 20 mega-cities (with 10 million residents or more) in the world in 2005, 15 were in the less developed regions and by 2015, 17 of the anticipated 22 mega-cities are expected to be located in these regions (UN 2006: 1).

Although rural populations in developing nations continue to grow – in stark contrast to the more developed regions where such populations continually declined through the second half of the 20th century (UN 2006: 1) – urbanization and migrations from rural areas have been major features of globalization in the latter stages of the 20th century and to date. These developments have been significantly shaped by the expansion of global production and consumption, foreign direct investment and transnational

corporate structures as well as the intra-firm, inter-firm and other forms of trade associated with them and other market actors (UNCTAD 2006; Hutton 2007). The environmental toll of China's massive and rapid economic growth, in particular, is constantly highlighted as one of its own, as well as the world's, toughest challenges. China now contains 20 of the world's 30 most polluted cities (World Bank 2007: 3). Additionally, gaps in inequality driven by the nation's rural-urban divide are another core issue for China. Despite significant reduction in China's poverty levels, at the end of 2006, an estimated eight per cent of the that nation's 105 million people lived on less than a dollar a day, making China the world's second largest home to poor, after India (World Bank 2007: 9).

The Social Environment and ICTs

Comprehending the social environment, or milieu, can be more difficult than understanding the natural or built environments because it is less well-defined and more slippery with respect to geographic location. One way of thinking about the social environment taps into our tendency as humans to band together by identifying who is "us" by a common hometown, level of education, line of work, religion, language, or, collectively - culture. People or societies who share a social environment, like those who share a common culture, often think alike and trust one another more than "others." This approach to social environment is associated in the scholarly literature with work on ideology (Hunt 1998) and culture (Huntington 2002). One's social environment, in this sense, is more often posited as a cause of conflict and war, which obviously deteriorates the environment, than with environmental philosophy.

An alternative view of the social environment focuses on individuals' living and working conditions, educational backgrounds, and the communities in which they move and socialize. Environmental thought in this sense emphasizes public health and well-being. Throughout the world, we repeatedly find wide disparities in the need for and access to health care and participation in healthy life-styles that include: eating whole foods; walking, skating, and bicycling; and ensuring regular rest and recreation. No wonder that in many Western nations, public health agencies were among the first forms of "local" environmental governance to emerge and typically focused on improving personal hygiene and city sanitation (Cousins 2003). Likewise, the World Health Organization was the first "international" environmental body to be established (Haas 1992). Among its initial actions was the inspection of ships upon entry to European ports to ensure there were no plague-carrying rats aboard (Cousins 2003).

Gillian Youngs (2007) extends our conceptualization of the social environment by examining socio-technological interfaces. She notably argues that this dimension may represent a significant reconnection with the environment because it recognizes that people and numerous political, economic, cultural bodies not only facilitate, invent and apply technologies, but also build them into their lives, and their perspectives on life and the possibilities it holds. Cities and other urban environments and their myriad technological infrastructures have contributed to shaping modern and postmodern lives and dreamscapes. The pervasiveness of ICTs, in particular, warrants a view of contemporary geographic environments as simultaneously and functionally virtual. The social spaces made possible by the ease and expansiveness of electronic connectivity associated with the Internet are arguably just as real and integral to modern life as social

spaces defined by geography.

To the extent that we accept that the new, virtual environments associated with ICTs are increasingly relevant to the functioning and envisioning of growing numbers of people and societies around the world, we have clearly moved beyond primacy of the natural/urban binary that has long characterized environmental philosophy and activism. Acknowledging ICTs as a progressively more integrated part of our environments (Youngs 2007: 149-50) is critical conceptually and practically. With respect to transportation and movement, for example, new forms of virtual mobility in cyberspace have dramatically reduced many of the reasons we have previously had to travel physically. The virtual – and clean – mobility that ICTs enable via a vast range of synchronous and asynchronous forms of communication these technologies mediate is a powerful concept in comparison to the very physical – not to mention, dirty – mobility based on fossil-fuelled transport. Simply put, mobility in this space – in the guise of gaming and online expeditions as well as telecommuting and videoconferencing – is far more clean and efficient than playing, traveling, and working in real space, and time.

Geographical versus Virtual Spaces and the Future

The shift away from established geographical conceptions of space to those that are more socially oriented necessarily expands the idea of “the environment.” Geographical space has been *the* fundamental source of environmental philosophy and activism at the individual, organizational, and international levels. According to Rob Kitchin and Mark Blades (2001), our daily lives in which we drive to work or walk to school, shop, and recreate consist of complex spatial decisions and practically countless spatial behaviors -

movements through a spatial environment. To move effectively through geographic space, we rely not only on external information and prompts, such as maps, but also upon learned spatial understandings of the world in which we live. Our mind's spatial representation of the environment, or "cognitive map," is arguably influenced heavily by the feelings we have about the geographic space we inhabit and interact with and that serves as a backdrop and context for our social interactions. (Milton 2002). Alternatively thinking about the social environment is more focused on social groups and communities and the spaces they inhabit, adapt and develop. This focus on individuals' and societies' living and working conditions, educational backgrounds, and the spaces in which they move and socialize has profound implications for how we think about ourselves, our environments, and our capacity to preserve and protect them.

Human Nature and Identity

Edward Wilson's (1989) biophilia¹ hypothesis suggests that there is an instinctive bond between humans and the earth. According to Wilson's argument, human attraction to nonhuman life and natural environments is biologically driven and a source of evolution. Although he does not cite Wilson, Bill McKibben (1989) argues that we are not entirely human without the existence of wilderness, if not also a conscious and positive attachment to the natural environment as a whole or a specific location within it. Ecopsychologists, such as Theodore Roszak (2002; Roszak, Gomes, and Kanner 1995), and anthropologists, including Kay Milton (2002), argue further in general support of Wilson's contention that human evolution depends on our connection to the earth because

¹ The term "biophilia" means "love of life" and was first used by Erich Fromm (1964) to describe psychological attraction to life.

not only our identities as members of geographically distinct cultural groups require the existence of something outside of our control, but also because our senses and the development of our abilities to know require our interaction with the earth. In this sense, it is a very primal connection to the particular bits of earth we inhabit that drives resistance to the technological and social changes that threaten the natural environment. Indeed, according to Milton (2002), environmental activists report that their own experiences in nature – climbing trees as a child, hiking and camping with Scout troops, etc. – prompted them to take the often costly actions necessary to reduce consumption and energy use and, finally, join an environmental group or particular action.

The significance of geographical space to environmentalism is obvious immediately in the sorts of environmental organizations that activists join and take part in. Environmentalists today focus on the spaces where they themselves live, work, and play, including: food consumption, suburban sprawl, toxic contamination, and immigration (Gottlieb 2005). Even national and international environmental organizations tend to have grassroots origins and local foci. For example, the Surfrider Foundation currently has 50,000 American members organized into 60 chapters, with additional chapters and affiliates in many other nations with beaches in Europe, Asia, South America, and Australia. Founded in 1984 by a small group of surfers in Malibu, California, the Surfrider Foundation is dedicated to protecting oceans, waves, and beaches; “Protecting Special Places” is notably among its central activities and campaigns. Campaigns directed at consumers to support the purchase of locally grown or organic produce and dolphin safe tuna likewise link our everyday choices to global environmental concerns. Nutritionist Marion Nestle commented recently on our “phenomenal sense of despair” about global

crises like climate change and economic inequality and suggested that when people “go into the grocery store, they can do something...what they are buying can send a very clear message” (*Economist* 2006, 1).

Environmental Activism: Linking Local and Global Identities

Environmental activism has been extremely successful in regards to alerting people to the individual behaviors that contribute to environmental degradation in their own back yards as well as internationally. “Think globally, act locally” has become the practical basis for many environmental organizations worldwide. Yet it is the development of increasingly sophisticated ICTs – especially the Internet – that has allowed us to regard ourselves as members of communities that are much larger and geographically expansive than ever before. Just as ICTs among other relatively clean and efficient modern technologies arguably deepen our connection to specific, local geographic spaces by enabling us to conserve energy and otherwise reduce our impact on natural environments, ICT’s have very effectively freed individuals to identify with ever larger spaces located physically at increasingly further distances.

Such enlarged place-based communities are often informal, existing primarily as social networks among members who live in specific geographic locations, such as a single city or small number of related municipalities, and those who are connected to them via personal or electronic ties. This manner of social activity has arguably trumped the better understood social movement as a vehicle for environmental change, in particular (Schneider et al. 2003). Post-environmental movement thinkers, such as Michael Shellenberger and Ted Nordhaus (2004), further suggest that the ecological

crises we currently face – including the AIDS epidemic and gross social inequities as well as climate change and the destruction of irreplaceable habitats – are more complex phenomena than previously recognized, and resolving them will require “deeper” social and economic transformations than we as yet can imagine. That said, the potentially more formal and clearly organized environmental movements continue to motivate the visible demonstrations and protests historically associated with social resistance to environmental harm and related social injustices.

Regardless of their formality, environmental organizations are among the 25,000 nongovernmental organizations (NGOs) that are now capable of influencing global environmental politics (Peterson 2000). Matthew Peterson (2000) goes so far as to argue that (left-leaning) social movements *and* structurally powerful transnational capital reduce to NGOs in the context of their impacts on governments and international affairs. By definition, NGOs are nonstate actors in the international realm where their influence in some issue areas approaches that of nation-states (Rosenau and Czempiel 1991). Although their power in international decision-making arenas, such as the negotiation of treaties – including environmental accords – is limited, NGOs have gained access to international summits and conventions, where they have, in some instances, gained consultative status, or the right to speak. One of the most colorful examples of environmental NGOs’ involvement in international environmental activities is the 1992 Earth Summit,² the largest environmental conference ever held, where more than 100 heads of state from nearly 200 nations *and* 2,400 representatives of environmental and development NGOs met in Rio de Janeiro, Brazil to address urgent problems of environmental protection and socio-economic development. Notably, 17,000 of the

² Formally known as the United Nations Conference on Environment and Development (UNCED).

30.000 people in attendance participated in the parallel NGO Forum. Some regard this “shadow assembly” in Flamingo Park on the Guanabara Bay beach front to be more important than the international meetings held under the auspices of the United Nations. Thousands of activists debated, protested, traded information, and built informal networks centered on issues such as the role and rights of women, youth, indigenous peoples, workers, and the poor as well as climate change, sustainable energy, and endangered species covered simultaneously by their nations’ leaders (Environmental Encyclopedia 2005).

This tack undergirds proponents of global civil society (Princen and Finger 1994; Wapner 1996; Lipschutz and Mayer 1996; Lipschutz 2006) as a mediator between state and citizens. According to this body of literature, global civil society is evolving through NGOs and distinct social movements and transnational networks so that, increasingly, the political life of citizens of many nations is integrated at the global level like a nation-state itself. In terms of their practices and activities, that is, the NGOs and like nonstate actors have assumed regulative roles with respect to governing our many and varied natural, built, and social environments. The upshot of this situation is that although NGOs arguably serve as sites of resistance and are theoretically opposed in many cases to geographically defined nation-states (Finger and Manno 1995), they actually can be interpreted as sites for tying individuals and groups more securely to ever larger geographical spaces.

The Persistence of Geopolitics

Despite the increasing presence of individuals and groups in global environmental politics and policy-making, especially through the vehicle of NGOs, environmental problems and conflicts still tend to be defined in terms of the territorial nation-state. This geopolitical frame for the environment is entrenched historically in notions of the man-made world – characterized by technological advancement and, ultimately, the built environment writ large. The resulting emphasis on rational, mechanistic approaches to clearing the air, cleaning our waterways, and reducing energy use is somewhat at odds with the way feeling and emotion interact to connect humans with geographic space at the individual and organizational levels of action. International concerns over common environmental problems are reduced to collective action problems so that the free rider dilemma reigns large. While this objective approach to understanding international conflict and potential for environmental cooperation has its merits. It can miss the value of tailoring solutions to localized understandings of the environment and the ways that individuals and specific social groups, as opposed to nations, confront a given global environmental issue. Current efforts to respond to global warming make this practical and conceptual difficulty clear:

. . . it [global warming] has the potential in many countries to roll back human development gains achieved over generations. Reduced water supplies in areas already marked by chronic water stress, more extreme weather patterns and the melting of glaciers are part of the looming challenge. *Multilateral action* [our emphasis] to mitigate

climate change by reducing carbon emissions is one leg of public policy response for meeting that challenge. The other is a far stronger focus on adaptation strategies (UNDP 2006: vi)

This quote focuses attention on the whole area of public policy, but this is not predominantly configured on a multilateral basis. Public policy is generated within states and it is nation-states that represent people politically at the major international processes such as the UN's Intergovernmental Panel on Climate Change (IPCC). The activities of long-standing environmentalist organizations such as Greenpeace make clear that nation-states are not necessarily the best guardians, and can certainly not be left to be the only, guardians of the environment (Greenpeace International 2007). After all political interests for governments include the aim of being reelected, which means taking account of powerful national constituencies, notably business interests.

According to Monbiot (2007a):

A good source tells me that the British government is well aware that its target for cutting carbon emissions – 60 % by 2050 – is too little, too late, but that it will go no further for one reason: it fears losing the support of the Confederation of British Industry.

Monbiot's blunt assessment of the politics of the esteemed IPCC is that once consensus is achieved among the scientists, which leads to the reports being "extremely conservative –

event timid,” then “the politicians sweep in and seek to excise from the summaries anything which threatens their interests” (Monbiot 2007b). This state of affairs may be catastrophic for the world’s poor, who often rely on their nations’ compliance with international environmental standards to offset any lack of state capacity to improve living conditions and quality of life:

Their situation is threatened further when NGOs fail to mediate successfully and hold nations accountable for their international commitments. For example, Greenpeace has not always managed to fulfill its own stated obligation to the world’s citizens. Greenpeace International’s website explains it exists to expose environmental criminals, and to challenge government and corporations when they fail to live up to *their mandate* [our emphasis] to safeguard our environment and our future (Greenpeace International 2007).

The potential for online environmental activism, which both educates and potentially engages up to 1.2 million people (Internet World Stats 2007), to buttress the work of NGOs, such as Greenpeace, and also directly influence the nature and pace of international efforts to respond to environmental and public health challenges is astounding. ICTs and their virtual connectivity are being harnessed directly by environmental activists to reconnect people to the physical environment and how it is being degraded and might be alternatively sustained. In other words, they are using

virtual means to raise consciousness about environmental problems and to lobby for political and personal change towards more environmentally sustainable policies and lifestyles. Part of this reconnecting is an informational mode. The multimedia informational power of ICTs, particularly the Internet, is being used to disseminate greater amounts of information than ever before about environmental problems and possible solutions to them. This shift in human relationships to the environmental issues is an information-age phenomenon and demonstrates that one of the ways in which politics about the physical environment now works is through the “sociospatial” sphere of virtual networks (Youngs 2007).

One of the chief characteristics of this shift involves the ways in which ICTs are modifying the public sphere to include unmediated as well as a mediated arena. Previously, NGOs and activists were predominantly dependent on traditional media outlets, including radio and television, to broadcast messages to large publics. Such media are subject to their own news agendas and priorities and constraints on space as well as to national restrictions on media content and quantity. Of course, the news media continue to be important, and powerful. But, now that activist organizations can communicate directly with their publics, in an unmediated fashion, they have much more scope to set and maintain their *own* agendas. Permanent web presence, multimedia possibilities, and the flexibility for providing, organizing and archiving extensive amounts of information – e.g., press releases, reports, research data, membership information, newsletters, etc. - in web architectures, positions activist organizations as direct institutional and informational sources on the environment.

Environmental issues have definitely risen on national and mass media agendas in recent years, in part due to UN-organized meetings and programs directed at managing climate change and other environmental challenges. There is a quality about this sphere that matches its nature to the politics of the environment - like many other global issues such as women's rights (Harcourt 1999; Hafkin and Hyer 2006). As a boundary crossing global sphere for the growing number of people around the world who are connected to it, the Internet's reach maps more closely onto the global dimensions of our most pressing environmental challenges, including the threat of pandemics, resource scarcity, and global pollution. Traditional mass media mainly reflects the national framing of state-centred politics and is thereby bounded by multi-layered institutional restrictions that reflect and/or concentrate on competing national debates and interests concerning the natural environment and related issues.

By virtue of their adoption of the Internet itself and online resources, environmental activism has already begun to work towards different kinds of potentially more global, or perhaps less state-centred politics. Specifically, online environmental activists can directly and strategically engage individuals and groups at the local, national, regional, and global levels to address environmental concerns relevant to any one or combination of these levels. Consider the case of global warming, for example:

. . . it [global warming] has the potential in many countries to roll back human development gains achieved over generations. Reduced water supplies in areas already marked by chronic water stress, more extreme weather

patterns and the melting of glaciers are part of the looming challenge. *Multilateral action* [our emphasis] to mitigate climate change by reducing carbon emissions is one leg of public policy response for meeting that challenge. The other is a far stronger focus on adaptation strategies (UNDP 2006: vi)

The above quote refers to public policy in a very broad – yet still not multilateral – sense. Thus it attests to the current situation in which public policy continues to be generated within nation-states. While it is nation-states that represent people politically at the major international processes such as the IPCC, environmentalist organizations do not regard nation-states as model environmental guardians (Greenpeace International 2007). Corporations are even more problematic, because although they do have national identities, their operations are increasingly transnational, and their mandate might be interpreted as primarily on behalf of their shareholders as opposed to wider publics including but not restricted to consumers. (New emphases on corporate social responsibility (CSR) may arguably incorporate social commitments over time; however, according to *Forbes*, “. . . the notion that the corporation should apply its assets for social purposes, rather than for the profit of its owners, the shareholders, is irresponsible” (Atkins 2006)).

Conclusion: Prospects for Environment and Development

The notion of a mandate for environmental protection, or more inclusively, sustainability, is highly problematic in the contemporary geopolitical scenario. As discussed in the preceding section, we are dealing with particularistic national, firm, and like interests; yet we are faced with what can ultimately be argued to be universal environmental concerns. Despite the prevalence of industrialized nations in global environmental politics to date, at the most basic and obvious sense, social inequality and its implications for environmental deprivation and degradation are central to our current situation. Reducing inequality is key to managing, if not resolving, today's most pressing environmental problems. We expect that harnessing the political will of the haves in the interests of the have-nots as much as themselves will require individual activists and relevant NGOs to rely heavily on ICTs. The UNDP (2007) specifically notes that:

The poor are disproportionately affected by environmental degradation and lack of access to clean, affordable energy services. The UN is at the forefront of efforts to advance the environmental agenda in development, recognizing that issues such as climate change, loss of biodiversity and ozone layer depletion cannot be addressed by countries acting alone (33).

By way of acknowledging the potential centrality of ICTs to positively impact the world's natural and social environments, the recent World Summit on Information Society (WSIS) (2003-5) certainly emphasized the importance of ICTs to contemporary

development. Participants recognized, in particular, the leapfrogging possibilities that could enable moves to high-tech ICT development without the intermediary lengthy stages of the linear history of industrialization. WSIS contributed to making it clear that ICTs are key to the economic dynamism and growth in wealthy, industrialized nations and to the future of the world's developing nations (UN ECOSOC 2000). Furthermore, the International Telecommunication Union's (ITU's) Connect the World initiative associated with WSIS to accelerate efforts to bridge the digital divide through to 2015 identifies three building blocks related to ICTs: enabling environment; infrastructure and readiness; applications and services (ITU 2006).

The experiences of China and India provide important examples of how the interactions between environmental protection and economic development have come to embody expansive conceptualizations of the environment. The developmental stories of both nations feature an emphasis on the new economy based on digital developments associated with information and communication technologies (ICTs). While ICTs have been a familiar feature of the linear development of the industrialized and post-industrialized economies such as the United States, Canada, Europe, Australia, and Japan, the penetration of ICTs, including the Internet usage, into China and India suggest something new. Although the development of their economies has, to some extent, progressed in predictable stages through agriculture, manufacturing, and service economies to today's global digital economy, China and India are now experiencing major growth in these related economies simultaneously rather than sequentially. For example, China...In India, ICTs and various forms of outsourcing associated with them, including the establishment of from call centers and off-shore software development,

have been a central feature of recent economic growth. In both cases, technological leap-frogging that juxtaposes modern and traditional economies has facilitated impressive bases for sustaining the natural and social environments of these nations.

China's and India's adoption of ICTs provide disrupt and expand our understanding of the interconnections between environmental protection and economic development. In the advanced service, finance, and information economies characteristic of the United States, Europe, and Japan, new, clean ICTs have replaced old and dirty manufacturing technologies as the drivers of economic growth. Hence, we have expected developing nations to become more capable of environmental protection and social advancement as they develop economically. However, what China and India demonstrate is that is certainly possible, and maybe even preferable, for today's developing nations to improve their environmental policy records while at the same time pursuing more diverse economies well-integrated into the global political economy (Zheng 2004).

Although the China and India represent much larger economies and more economically diverse societies than many other developing nations, they are not exceptional in the sense that their experiences indicate that the arrival of information age and the increasingly integrated role of ICTs in daily life has altered our common definition and comprehension of the world's natural and social environments. ICTs provide a rich and complex social environment constituted by multiple and multifaceted geographical and virtual spaces, which can be accessed and inhabited without physical presence. They represent an entirely new infrastructure of development that extends both actualities and imaginaries into whole new realms compared to the already familiar physical infrastructures.

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