Toward a Rationale for Negotiating a Deeper Green ESD Agenda: Brokering collaboration between developing and overdeveloped worlds

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Abstract: *In this paper, both the empirical insufficiency and political necessity of ESD are presented, taking a deep-green approach to understanding the severity of ecological crises, specifically addressing a convergence of environmental urgencies currently facing humanity. Simultaneously, rigorous revision is recommended to remedy ESD inadequacies. ESD's rhetorical inferiority to Environmental Education is addressed, noting social issues that have attached themselves as riders on the ESD agenda. Yet, despite the green-washed incoherencies of ESD, adoption is recommended on pragmatic grounds, because the sustainability we all hope for depends on global cooperation, which duly substantiates the need for global social justice issues on the agenda. Finally, rigorous revision of ESD is recommended to incorporate strong calls for both the decreasing of consumption and the humane reduction of the global human population.*

1. Introduction

We are in a race between tipping points in nature and our political systems. Can we phase out coal-fired power plants before the melting of the Greenland ice sheet becomes irreversible? Can we gather the political will to halt deforestation in the Amazon before its growing vulnerability to fire takes it to the point of no return? Can we help countries stabilize population before they become failing states?

Lester Brown, *Plan B: 3.0*

A worldwide, massive-scale mobilization of human technological and political resources to restore and preserve the ecosphere is most likely a necessary, yet insufficient, condition for the survival of human civilization through the end of the twenty-first century. A precondition for mobilization on the requisite scale is the acquisition among an entire global generation of young people of the knowledge, skills, and behaviors that facilitate such mobilization technologically, ethically and politically. An educational discourse emerging to address these objectives is Education

for Sustainable Development (ESD). UNESCO, which has become a leadership nerve center for ESD, states its aims:

> to help people to develop the attitudes, skills and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions. (UNESCO, 2010)

Moreover, both aspects of ESD (its necessity and its insufficiency) need to be clarified for effective implementation to take place on a requisite scale. The *necessity* for ESD lies in its potential for bringing about critical awareness and understanding regarding environmental problems in coming generations of the world's population, which is needed to produce the political will to carry out requisite environmental interventions globally and to bring about the innovation needed for addressing crises in the interim.[1] ESD should function as a curricular movement for teaching the skills, providing the knowledge base, and inculcating the attitudes and conscience needed for future corporations, governments and mass populations to carry out—globally and locally—the regulations ultimately adopted.

The *insufficiency* of ESD for ensuring human survival is rooted in the severity of the currently growing spate of environmental crises, and this insufficiency should be clarified forthrightly on both ethical and pragmatic grounds. Ethically, neglecting to teach young people that sustainability cannot be assured is neglecting to tell the truth and could lead to disastrous complacency. Pragmatically, the sorts of measures that humanity must take under the perilous conditions of significant risk we now face differ from a less risky scenario. This difference lies particularly in the approach that it should take toward the "development" of society. Education for Sustainable *Development* under current global risk conditions must first and foremost address the amelioration of risk factors, related primarily to environmentally disastrous consumerism, to which the path of modern "development" has led us hitherto.

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[1] One could argue that mass media constitute another avenue for raising awareness, but not for inculcating the level of understanding crucial for joint action on the scale demanded by the growing crisis.

Yet, a pedagogy of hopelessness would serve the cause of ESD no more effectively than uninformed optimism. Freire wrote: "Hope is an ontological need. Hopelessness is but hope that has lost its bearings, and become a distortion of that ontological need" (2006, p. 2). The mission of ESD, then, is situated precariously between the need to inculcate gravity and to fan the flames of hopeful action touching the ecologically hazardous spot upon which humanity now collectively roosts. "Sustainable development" is defined within the ESD discourse as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 43), and ESD pedagogy, to be successful, must be carried out with the reflective, grave, yet hopeful, coordination of a worldwide community of educators.

Short of a dramatic series of globally coordinated interventions on the part of human societies, doom is significantly plausible as will be outlined shortly. This global coordination is not currently possible, politically or technologically. Moreover, short of a concerted, well-defined, and widely implemented curriculum for teaching sustainability to the world's populations, thus producing both the political will and the technical expertise to achieve such coordination, it will not be possible in the future either.

One of the problems in defining such necessary efforts is that of curricular "green-washing" or cloaking the curriculum with a vacuous "green sheen" when in fact it does not truly address the cause of global sustainability. Green-washing has become a topic of discussion for many environmentalists, who frequently point to the disingenuous actions of corporations falsely touting their "green" credentials to gain the business of a more environmentally conscious population of modern consumers. A curricular example of green-washing might be an upper elementary level lesson that emphasizes small behavioral changes such as garbage separation practices without any intent of addressing more serious dumping issues, such as the practice among developed countries of exporting used PCs

and other electronic waste to China, India and elsewhere to dispose of them.[1]

Moving further into the heart of environmentalism, one discovers Deep Green theory. As environmentalism has become the new orthodoxy, this conscientious sub-movement has emerged, typically described adjectivally as "deep green" or referred to as Deep Green theory (Sessions, 1995; Sylvan, 2003; Heinberg, 2007). Deep Green theory takes mainstream environmentalism to be inadequate for addressing the scale of environmental degradation resulting from modern human civilization. Reliance on lifestyle changes for ecological solutions is seen as a gross miscalculation of the global environmental predicament (McKay, 2009). "Technological innovations" to overcome environmental challenges are seen as intensifying the threat, as more resources are consumed more quickly (Fertile Ground, 2010). Deep Green theorists emphasize the fundamentally political nature of both the causes of environmental degradation and all viable solutions (Jensen, 2009).

Deep Green theory is widely attributed to Richard Sylvan (formerly Richard Routley), who from 1980 (Routley & Routley, in Grey, 2000, p. 55) went beyond Naess' more mystical philosophy of "deep ecology" (1973 in Katz et al, 2000, p. xxii) to develop what he saw as a more coherent, yet deeply reflective, environmentalism. What distinguishes Sylvan's version from previous environmentalist theories is its de-centering of human interests to mandate nature preservation. To date, mainstream environmentalism draws its rationales largely from anthropocentric arguments, which, Deep Green theorists counter, inherently fails to achieve the sort of rationale necessary for conservation that only reverence for nature can. Sylvan argued that if a catastrophic event occurred and only one human remained on the earth, an anthropocentric environmentalism would fail to provide any moral reason for not destroying all that remained of the natural world (in Curry, 2006).

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[1] China is followed by India as the largest exporters of electronic waste (BAN, 2000, in Vasudev, 2005, p. 25).

Regardless of whether one takes a mainstream environmentalist stance, whether one conscientiously resists green-washing within the environmentalist rhetoric, or whether one embraces Deep Green theory and espouses a return to pre-modern lifestyles, the need for global coordination to resolve environmental issues remains. Even were the advanced world to disestablish most of its resource-degrading technology, the developing world is determined to acquire it. The Chinese government, for example, has recently and noticeably emphasized "cumulative carbon emissions" in its diplomatic efforts to justify its consumption of resources on a scale that Western counterparts have hitherto.

What seems necessary to advance the cause of environmental responsibility, then, is an ongoing dialogue among individuals, organizations, corporations, and governance bodies to arrive at mutual agreements and compromises that would optimally meet the interests of each without failing to protect the future of all. Here, ESD will be examined for its merits as a curricular area that seeks to facilitate such dialogue in younger generations of global actors. In thus examining ESD, a "deep green theory" approach is taken to understanding current ecological crises, but the discussion of education's role in preserving the environment centers on the needed global coordination of actors, most of whom underestimate the problem. Thus the necessity of recruiting education for the cause of bringing about the social justice requisite for global environmental coordination will underpin the defense of ESD, despite its inherent flaws, while an embrace of deep green theory will underpin a call for redefinition of ESD. Aside from the mounting evidence of global environmental degradation, a Deep Green approach to examining the utility of ESD is justified additionally because it speaks to the ideological community most suspicious of mainstream environmentalism and simultaneously the community with the greatest energy for changing the status quo—clearly a prerequisite for ESD success.

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2.1 The Crisis, the Consensus, and the Controversies

Over the past fifty years a consensus has solidified among scientists that the global spread of modern models of a "developed society" is unsustainable. Individuals with access to the information superhighway need not travel far to understand the ominous possibilities of near- to mid-range future disasters worldwide, including global warming,[1] farmland salinization,[2] topsoil depletion, deterioration of water tables,[3] ocean acidification,[4] peak oil,[5] overpopulation,[6] and other ecological limits to global human subsistence capabilities.

This consensus within the discourse of non-sustainability has risen to the level of international geopolitics, resulting in a worldwide dialogue regarding how to deal with the problem of a globally degrading environment.[7] While a small, robust contingent of global warming denial continues to voice itself

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[1] Aspects of global warming in the scientific literature include: "abrupt climate change" (Alley et al, 2004), sea level rise (Douglas, 1992), infectious diseases (Khasnis & Nettleman, 2005), and drought occurrence projections (Sheffield & Wood, 2008), potential warming acceleration due to arctic methane release (Ho, 2009).

[2] Aspects of farmland salinization in the scientific literature include: the mass conversion of grasslands to cropland and salinized wasteland in Western China (Wang et al, 2009) and the short-sighted economic policies producing agriculture-damaging saltwater intrusion into coastal aquifers in NW Mexico and Cuba (Mayer, 1999).

[3] Aspects of water table deterioration in the scientific literature include: water stress effects on soybean yield (Paz et al, 1998), increasingly necessary food importation in Mediterranean countries and global economic implications (Yang & Zehnder, 2002), predictions of increasing water-related conflict this century (Swain, 2004), and the need for small-scale, multifunctional farms to improve water management and productivity (Bossio et al, In Press).

[4] Aspects of ocean acidification in the scientific literature include: CO_2 emissions as a cause independent of climate change (Zeebe et al, 2008), anthropogenic CO_2 influx effects on future coral distributions (Guinotte et al, 2006), and declines in mussel and oyster calcification and future economic and coastal ecological implications (Gazeau et al, 2007).

[5] Aspects of peak oil in the scientific literature include: implications of the decline in newly discovered oil field sizes (Robelius, 2007), the inevitability of a transition away from oil dependence within one or two decades (Hirsch, 2005), and impact scenarios of advance versus emergency mitigation policies for peak oil (Hirsch et al, 2006).

[6] Aspects of overpopulation in the social science literature include: political ramifications of approaches to human carrying capacity (Manners, 2009; Lee, 2009) and clergy's otherworldly reticence to address overpopulation threats (Buys et al, 1977).

[7] Emblematic of this is the International Carbon Action Partnership, formed in 2007 primarily by EU national members, secondarily by North American provincial and state members; see web site at: http://www.icapcarbonaction.com/

in political debate, the global media present the world with profound images of environmental disasters out of control.[1] Within this dialogue the ESD discourse has emerged, viewing education as the primary means of influencing future political behaviors by raising both awareness and understanding in the next generation.

However, ESD as of yet remains a neophyte discourse. It has not crystallized as clearly as has consensus regarding the crisis itself. That is, while recognition of global environmental problems is gradually approaching international unanimity,[2] ideas regarding solutions remain scattered, and ESD is far from universally embraced. The rhetorical incoherence of ESD, together with the questionable prospects of global 'sustainable development' itself, remains a formidable obstacle to dissemination and implementation. Researchers from various fields find the term a conceptual stumbling block (e.g., Bonnett, 1999; Karmel, 2009), and some question the intentions of its supporters (e.g., Pérez & Llorente, 2005; Gonzalez-Gaudiano, 2005).

ESD's vulnerabilities lie within the conflict between the empirical and political interests of its promoters, as well as in the potentially false expectations engendered within the term 'ESD', which is itself arguably green-washed. After all, one could easily ask, what is credibly "sustainable" about modern "development" on a global scale? However, such criticisms, though perhaps well placed, fail to substitute the ESD discourse with an equally powerful uniting alternative—critical for mobilizing global action. Conversely, the lack of a logically coherent definition hampers research on ESD. What is needed is a rationale to bridge: the ecological need for a politically mobilizing global discourse with the empirical

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[1] For example, *Extreme Ice*, created by NOVA and National Geographic is simultaneously scientific, apocalyptic, and credible; see web site at: http://www.pbs.org/wgbh/nova/extremeice/

[2] Brand and Reusswig (2006) argue that while conventional notions, influenced by the work of Inglehart (1977 & 1990, in Brand and Reusswig, 2006), hold that environmental crisis is largely an advanced world concern, evidence (Dunlap et al, 1993 in Brand and Reusswig, 2006) sides with the understanding that public opinion worldwide reflects deep environmental concern, with local issues viewed more importantly in developing countries.

need for theoretically rigorous improvements over the current politically prescribed version. Nor should such a rationale ignore ethical aspects of the discourse.

ESD may have potential, as discussed below, to become a conceptually and empirically satisfactory discourse addressing a feasible niche for humanity within the natural world and, simultaneously, one capable of mobilizing the worldwide coordination necessary to achieve it through mass education. In these respects, the basic tenets of ESD provide a nexus for precisely the political actions that appear necessary for addressing the composite of problems of the current scale. However, certain qualifications are imperative and the rhetorical challenge is daunting. To understand ESD's potential and its vulnerabilities, we must first review the larger dialogic circumstances of its inception.

2.1 Background of the Consensus

Since the 1970s there has been a growing worldwide consensus among numerous scientists and scholars that human civilization is in danger of environmental calamity. Earth watchers have certainly differed in their risk perception, as well as the environmental and social factors they have deemed most threatening. Among environmentalists one can easily encounter optimists believing that continued innovation holds indefinite promise of resolving whatever environmental challenges emerge (e.g. Friedman, 2008). Others warn of ongoing "environmental scarcity" and social upheaval in the developing world if the advanced world—or, to take Curry's term, "overdeveloped world" (2006)—does not change course quickly (e.g. Homer-Dixon, 1999). Yet others, while choosing to believe in humanity's willingness to solve environmental problems, make compelling cases for potential civilization-wide disaster feasibly precipitating massive human die-off or even extinction (not to mention expanding the already grim fate of other living beings and natural wonders) should innovators and policymakers fail to take sufficiently decisive action (e.g. Diamond, 2005; Brown, 2008).

Regardless, leaders and experts in many fields have intensified warnings against inaction since the latter 20th century. In 1972 the Club of Rome warned that:

> Many people believe that the future course of human society, perhaps even the survival of human society, depends on the speed and effectiveness with which the world responds to these issues. And yet only a small fraction of the world's population is actively concerned with understanding these problems or seeking their solutions (Meadows et al, 1974, p. 17).

Public awareness of environmental crisis has since waxed and waned, impacted by economic and political movements and the accessing of new resources, such as oil in the Middle East, improved energy and pollution control technologies, and the "Green (agricultural) Revolution." Nevertheless, problems such as global warming, resource depletion, water wars, overpopulation, widespread famine, and resultantly rampant genocide have worsened, heightening global human awareness of crisis.[1] Consequently, we have seen a global consensus emerge that unless decisive collective actions are taken to alter global lifestyles civilization will plummet into increasingly unmanageable disaster, taking much of the ecosphere down with it.

This consensus has emerged within dialogues among scholars, politicians, international organizations, and individuals worldwide. In these dialogues we have seen a bifurcation of problem sets across the developing and overdeveloped regions of the world. In the developing world, better hygiene, population control and improving farming practices are often pointed out as necessary solutions. In the overdeveloped world curbing mass consumption, CO_2 emissions and other pollutants are commonly mentioned. Moreover, at a brisk pace, CO_2 emissions and other pollutants are becoming developing world issues as well, especially with, in many cases, the absence of advanced-

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[1] On October 29th, 2008, the World Wildlife Fund, together with the Zoological Society of London and the Global Footprint Network, released the *Living Planet Report* (Hails et al, 2008), in announcing that within thirty years humanity will be using the ecological equivalent of two sustainable planets worth of resources. Since we have only one planet, this is unsustainable, an ecological debt is accruing against which current economic turmoil pales in comparison.

world-level emission restrictions. Both geo-economic sets of problems, however, have impacts affecting Earth's ecology. The problem is a shared, earth-wide dilemma of colossal proportions—a disastrous convergence of environmental stresses threatening not only current developmental goals, but ultimately human livelihood. The consensus is that the peoples of the world must collaboratively address global warming and other global environmental challenges in order to successfully manage them. What has come to be considered a crucial component of this management is education of environmental users—that is, the entire community of earth's human denizens.

In 2002 the UN General Assembly formally instituted a "Decade of Education for Sustainable Development" (DESD), reflecting its fundamental concern for Millennium Development Goals (MDGs) such as "eradicating extreme poverty," "ensuring environmental sustainability" and "achieving universal primary education" (UN, 2010). One of the main stated endeavors of the DESD is to:

> "reorient the curricula: from pre-school to university, education must be rethought and reformed to be a vehicle of knowledge, thought patterns and values needed to build a sustainable world." (UNESCO, 2005b).

The UN delegated the leadership of DESD to UNESCO, and the recruitment and organization of global participation of governments and non-governmental entities is ongoing. The DESD initiative has been coordinated, or "linked," with other global initiatives including education for all (EFA) and the UN Literacy Decade (2003-2012) (UNESCO, 2005a).

However, the ESD discourse is of an unsettled and unsettling nature, laden as it is with both political entanglements and empirical contradictions. Those who veer toward addressing the political challenges may emphasize the "integrative aspects" of "biological ecology" and risk posing just the "right question" but producing a "useless answer" (Holling, 1998), whereas those who favor the empirical challenges may emphasize the more "analytical aspects" and ultimately risk providing "exactly the right answer to the wrong question" (ibid). What is needed is

reconciliation between reliable science and relevant policy, but the ESD agenda still has some explaining to do.

3. The Controversies: ESD's "Social Equity" Agenda and the Gross Underestimate of Urgency Implied by "Sustainable Development"

The conceptual base underpinning efforts to implement the DESD have been criticized on numerous, mostly valid, logical, empirical and ethical grounds. Nevertheless, if there are scientific reasons for worldwide action; and if the UN System is currently the most relevant nerve center for supranational governance; then, despite valid theoretical misgivings, ESD might constitute a crucial linchpin for human survival, and DESD may be an important means of launching it. At least it is the only relevant, widely accepted discourse. However, inasmuch as important theoretical qualms remain, they must be addressed. These come in two assortments, roughly, qualms about "development" and qualms about "sustainability." They come from both the "Environmental Education" camp and from Deep Green theorists.

3.1 Environmental Educators' Critique: Definitional Problems

Scholars such as Bonnett (1999) have argued compellingly that the term "sustainable development" is filled with seductive half truths, including a conflation of ecological issues with "democratic culture," when the two agendas do not necessarily call for the same measures. Burdened with a slate of social issues that have attached themselves to ESD, the agenda fails to clarify "*what* is to be sustained," clouding the distinction between *anthropocentric* and *biocentric* goals (p. 315).

More sharply, Perez and Llorente (2005, p. 297) decry DESD's incoherence and even attribute to it the "diluting and blurring" of "decades" of environmental consciousness-raising, affording bedfellows as disparate as

"environmentalists and real estate agents, entrepreneurs and conservationists, politicians and managers" the opportunity to disingenuously claim common ground with political impunity and little authentically shared concern for the degenerating global environment (ibid, p. 298). Likewise, Gonzalez-Gaudiano (2005) portrays ESD itself as "an elusive thematic group of issues" (p. 245) used by numerous actors to overshadow the better defined discourse of Environmental Education, which even some DESD supporters had resisted during the thirty years of its existence prior to DESD. The list of issues Gonzalez-Gaudiano provides (Table 1) is verifiably in accord with objectives stated in core DESD documents (e.g. ICES, 1997, p. 1; UN, 2002; UNESCO, 2010).

In contrast, the Environmental Education paradigm has made a coherent discourse for itself, albeit always in need of further upgrading. It grew and improved from the 1980s emphasis on promptly changing lifestyles and policy regarding local and regional ecological issues such as pollution and deforestation; to a more global emphasis on a sustainable world environment, addressing greenhouse gases and other broad-scale issues (Tilbury, 1995). What it did not do was coherently address the need for enlisting third-world cooperation and going the extra financial (i.e., *development*) assistance mile to make it worth their while.

Table 1. Ten Emerging Fields Comprising UNESCO's Vision for ESD

1. Reduction of poverty

2. Gender equality

3. Promotion of health

4. Environmental conservation and protection

5. Rural transformation

6. Human rights

7. Intercultural understanding and peace

8. Sustainable production and consumption

9. Cultural diversity

10. Information and communication technologies

(UNESCO, 2002; taken from Gonzalez-Gaudiano, 2005, pp. 245, 249).

Gonzalez-Gaudiano's point regarding the hodgepodge forum that ESD has become has immediately recognizable merit, as its political derivation is obvious. Notwithstanding, no case has been effectively made that any given ESD issue, including Gonzalez-Gaudiano's full list of 10, is unrelated to sustainability. Social stability is a prerequisite for coordinating to preserve the global environment, because void of global governance, the environment suffers the "tragedy of the commons" (Diamond, 2005, p. 10; attributed to Hardin, 1968 in Curry, 2006), that is, the propensity of competing groups of people to raid the few remaining pristine resources to enrich themselves before other groups are able to do so. To protect the world's resources, therefore, most of which are held in common, global environmental governance is imperative, and the "Environmental Education" discourse is not designed to politically give rise to this, as ESD is.

3.2 The Deep-Green Critique: Understanding the Problem

The other camp of resistance toward ESD sees garden-variety environmentalism as itself problematic. Massive ethical and empirical support for this deeper-green vision can be derived within the self-destructive patterns of human

activity observable in the natural world. The biological phenomenon of a species consuming the vital resources within its habitat, leading to large-scale die-off or "overshoot" (Catton, 1980), has been abundantly demonstrated in the biotic world, and by archeological evidence in the human race (e.g., Diamond, 2005). Whether it could or would happen on a global scale to a globally interdependent civilization of humanity has a theoretically trivial biological answer: it will if and when the circumstances arise. This answer is trivial in biology because it happens commonly among species, of which we, humanity, are but one.[1] The sorts of circumstances that could lead to human overshoot are those in which we as a species consume our own habitat, leaving no more capacity for all of us to exist. This sort of consumption could occur either through overpopulation (the more common scenario in nature) or overconsumption or both (Homer-Dixon, 1999). Currently both processes are active.

Fundamental to our own demise is the modernist disregard for nature beyond its resource value. Richard Sylvan argued for the value that is intrinsic in all of nature, irrespective of human valuers. He placed the classical notion of "natural right" as naturally extended to *nature*, on which the notion is based (2003, p. 51). George Sessions argued against the anthropocentrism that drives modern environmental ("green") discourse (1995). Until humanity rediscovers the intrinsic value of nature, apart from its resource value to humans, we will continue on the same road that many other species have tread toward overshoot, and a small group of conscientious humans will be incapable of stopping the rushing global heard. Moreover, a great deal of nature will be destroyed along with us, especially when we consider the violence that accompanies scarcity (Homer-Dixon, 1999).

In totality, the message of deep green theory is: there are simply too many members of our species to sustain our global habitat indefinitely, especially with lifestyles observed in the *developed* countries. Thus, if overpopulation is half of the problem, development is the other half. Any talk of

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[1] That is not to understate the heinous destruction we bring upon many thousands of other living species on our own path of ecological decline.

globally equalizing opportunity that lacks a grave recognition of ecological limits is either an illusive dream or an apocalyptic nightmare. The time for decline has come, as our current population level was reached by consuming nonrenewable resources whose production has peaked and promises to dramatically dwindle this century (Heinberg, 2007). Moreover, repairing ecological damage is resource-intensive.

In light of these realities Deep Green ecologists call for a new ethic (Curry, 2006; Sylvan, 2003) and dramatically altered lifestyles (Holmgren, 2008). Seeing such deeply troubling signs of overshoot in our own race, how could a true environmentalist espouse something called, "sustainable development"? Certainly, "Education for Sustainable Contraction" (Selby, 2007) would seem far more sensible. Supporting any movement for further development is, to the ecologically enlightened mind, grandly sui-genocidal.

However, it is a narrow strait we must tread, because current ecological crises cannot be resolved without global cooperation from the teaming masses thirsty for "development." The Earth Charter is an example of a global agreement on environmental commitments that was the product of years of vigorous negotiation on the part of numerous world leaders ("A Short History…," 2008). This Charter has been criticized in the deep-green community as an overambitious, anthropocentric, and hence coherently weak, ethic (Curry, 2006, p. 94). That it is. But it was never intended as an "ethic." It is a "charter" and thus intrinsically political. Likewise, ESD should be seen as "pure" on neither empirical nor ethical terms, yet pragmatically crucial for mobilization.

It is for these reasons that the "sustainable development" discourse must be recruited in service of gaining needed cooperation; subsequently its definition must be rigorously revised, and it is education that is needed to make implementation possible. Transformation *within* the movement is needed *as it launches* or no pathway to abating catastrophe exists.

3.3 Avoiding the Vicious Cycle

Homer-Dixon (1999) has demonstrated a reciprocally negative relationship potentially occurring between social stability and environmental stability when a society has passed a certain threshold of environmental degradation. According to the analyses his work is based on, ecological thresholds exist which, when crossed, change the effect of scarcity on innovation and policymaking from positive to negative, resulting in a vicious cycle. That is, when the overall environment is stable, some scarcity leads to more innovation and better policy to overcome effects of scarcity. But when an environment destabilizes sufficiently (as scientists warn it soon may with little forewarning, globally), the resultantly profound level of scarcity begins to *impede* innovation, leading to elite competition for relative advantage, policymaking paralysis, and ever more scarcity (Homer-Dixon, 1999, p. 36). Consequences include increased violence and widespread human distress.

While Homer-Dixon argues this case as a warning for developing regions, particularly Africa and parts of Asia, it might behoove us to remember how quickly Russia moved from "advanced superpower" to "developing country" status as recently as the 1990s. In the event that countries like China and India, both beneficiaries of a deregulated global free market yet both with severe environmental (and, alas, economic) challenges, pass certain environmental degradation thresholds, the overall effects of Asian disaster on overdeveloped countries could plausibly plunge parts of the overdeveloped world into "developing world" status, as occurred in the recent past in Russia.

Taking as an example water scarcity (a currently common cause of war) and applying this to China and India, glaciers in the Himalayas, which supply water to both, are steadily receding, due to warming temperatures (Parry et al, 2007).[1]

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[1] In a January 20, 2010 statement the Intergovernmental Panel on Climate Change both retracted a paragraph in their 2007 report on the recession rate and confirmed that indeed "widespread mass losses from glaciers and reductions in snow cover over recent decades are projected to accelerate throughout the 21st century, reducing water availability, hydropower potential, and changing seasonality of flows in regions supplied by

Neither China nor India are prepared for this resource loss, and clearly we neglect to consider the economic implications of the impending conditions, as well as potential political destabilization across vast regions, at our own peril. At such a critical point all bets are off how humanity copes.

Conversely, from an ethical perspective, the usual practice of blaming developing countries for ecological degradation, for which they must incessantly be bailed out, serves only to create artificial distance from real problems. Meanwhile overdeveloped nations get portrayed as equipped with superior scoping capabilities and environmental policies, and such rhetoric shields some of the worst offenders (neoliberal global monetary organizations, transnational corporations fleeing to tax-haven countries with cheap labor, advanced world consumerism, etc.) from the harshest criticism. What is needed for promoting ecological cooperation between the developing and overdeveloped worlds is an understanding of, and a will to act on, "the links between environmental scarcity and its negative social effects, including impoverishment, migrations, and the like" (Homer-Dixon, 1999, p. 107).

Yet despite the emerging scientific consensus regarding global environmental risk, a major challenge remains: it is difficult to pursue the issues that will really matter to the world community, while remaining objectively poised to rigorously discover scientifically useful answers, and this tension underpins the yet weak definitional quality of ESD. The UN system's embracing of ESD has been achieved politically, not empirically. This means the ESD nomenclature is by necessity one that minimally offends any given nation, not one that maximally reflects the scientifically ascertained reality of global environmental degradation. Yet without the political achievement, environmentally satisfactory solutions are out of managerial reach. It is thus necessary to negotiate meanings between science and global polity. To that end, a rationale is proposed for managing the balance between ongoing

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meltwater from major mountain ranges (e.g. Hindu-Kush, Himalaya, Andes), where more than one-sixth of the world population currently lives."

scientific and theoretical pursuits in understanding ESD and negotiating for global, ethical cooperation.

4. Conclusion: Negotiating Empirical Theory and Pragmatic Politics

The ESD agenda, replete as it is with issues of economic justice, arguably gives appropriate attention to the symbiotic dynamics between elements of social and environmental stability which actually occur in the real world and impact the prospects for sustainability: environmental stability is required for social and economic stability, and socioeconomic stability is required for mobilizing to rescue the environment. Social stability hinges on both social equality and a modicum of economic well-being, and if the risk is global, it is the global economy and social structure which must be attended to, in tandem with the global environment. Nevertheless, regardless of the degree to which humanity rises competently to this perilous occasion in a coordinated way, we have no means of ensuring that regional or sector-wide disaster will not occur, ultimately resulting in a global vicious circle, given the already considerable global risks. This is precisely the risk that education must be directed toward addressing. As a definition that accounts for the above described realities, then, "Education for Sustainable Development," could rightfully be seen as:

4.1 A Draft Redefinition of "Education for Sustainable Development"

> *Education directed toward the development of the human race into civilizations that, for their part, work jointly to dismantle structures of overdevelopment, humanely depopulate to more sustainable demographic levels, and protect and sustain the rich diversity of life on, and integrity of, Earth by broadly recruiting cooperation of humanity through the establishment of satisfactory global means to achieve greater social justice and economic well-being.*

4.2 The Need to Adopt and Revise

Based on the severity of ecological urgency of the current complex of environmental crises, coupled with the deep sense of disenfranchisement, felt by many of the world's poorer regions, without whose cooperation sustainability is illusive, embracing the ESD discourse seems politically necessary for the survival of the cause of sustainability, in which we all have a profound interest. Nevertheless, ESD in its current form is far from empirically adequate to live up to its own mission. Thus, while adoption of ESD seems the most expedient next step, this must be followed by rigorous improvements.

A widespread understanding of environmental risks and the lifestyle requirements of sustainability will be needed on a global scale to avert global disaster. Homer-Dixon writes that:

> "resource substitution and conservation tasks will be more urgent, complex, and unpredictable, boosting the need for many kinds of ingenuity. In other words these societies will have to be smarter—technically and socially—in order to maintain or increase their well-being in the face of rising scarcities." (1999, p. 26)

We can only assume that the ongoing trends of globalization will ensure that what applies to societies of the world will increasingly apply to global society. Whether one's bent is toward innovative technological solutions to environmental problems or altering lifestyle behaviors to avert disaster, the need for dramatic worldwide improvement of human understanding regarding global environmental challenges is clear. It is also clear that the international agencies that now exist for promoting education worldwide strongly espouse global egalitarian principles, and the needed cooperation for global ESD must necessarily be integrated into a discourse of enfranchisement of all peoples.

Conversely, if particularly acute problems such as global warming and petroleum dependence are not addressed with sufficient vigor, then, barring the near-total depletion of energy sources needed for governance operations, totalitarian governments are precisely what may result (Holmgren, 2008). This all suggests that preserving the very democratic freedoms that most of the overdeveloped world

enjoys is tied to environmental responsibility heretofore. Unless we succeed in crafting means of international collaboration for addressing shared risks—a means based on democratic equality and resource allocation equality across nations (which cooperation demands) and that includes both the developing and overdeveloped regions of the world, but which also incorporates strong and shared regulatory structures and ecological awareness—the future of our own freedoms, and ultimately our livelihood, will be at continually increased risk. Whether we still have sufficient time to accomplish this global task is already in the zone of reasonable doubt.

Currently the educational discourse on ecological preservation that carries the greatest worldwide credibility is ESD, whose agenda thus enjoys a significant benefit while it suffers a notable liability. The benefit, derived from its international credence, is that it serves crucially as a means of mobilizing educators worldwide to address impending environmental issues that only education can address, particularly the dissemination of knowledge about complex environmental interactions and the lifestyle responsibilities of all earth's residents. The liability of its political character is that the ESD discourse moves ahead driven by powerful international political forces that operate on grounds other than purely empirical. Because the ESD discourse is subject to international negotiation processes, interpretations of empirical evidence are subject to equal time among nations and regions, and the commitment to empirical knowledge is itself non-universal among stakeholders. The implications of such potentially gross disregard for evidence, both in the developing and overdeveloped parts of the world, are nowhere more clearly manifest than in the crudely inflated assessments of sustainability prospects. To the degree that a group of people are disenfranchised or blinded by consumerist greed, their commitment to an empirically sound science is not to be expected.

In addition, one of the weightiest lingering empirical problems in the ESD discourse is addressing whether such cooperation can suffice for such prevention and indeed, whether global disaster is still avertable. This is particularly

a problem because the plausible future reality of a collapsing global civilization, together with the profound suffering such a collapse will certainly bring, is somewhat hidden from the term "Education *for* Sustainable Development." "Sustainable development" is a positive, optimistic way to view the cause of ecological and social awareness, but some would argue it is an oxymoron. Jared Diamond (2005, p. 495) has pointed out that one of the reasons our current modern lifestyle has been sustainable for so long is precisely because poverty remains in the developing world. If the developing world actually joined the overdeveloped world and "developed" into full modernity, replete with automobiles, cinnamon lattés and a consumerist lifestyle,[1] there is good reason to believe environmental collapse would fall upon all 6.8~7 billion[2] of us in short order.

This contradiction might be rhetorically sidestepped (and the political elegance of ESD preserved) by defining "development" as something the whole world must engage in, changing both poverty and consumerism into more plausibly sustainable societal lifestyles with manageable populations using renewable energy and smart technology, but generally "powering down,"[3] to reduce its environmental footprint while working for more global equality.

It is precisely Perez and Llorente's (2005, p. 297) "environmentalists and real estate agents, entrepreneurs and conservationists, politicians and managers" who must be held accountable for their ecological actions, and ESD should be directed at creating the social environment needed for such accountability. However, considerable theoretical work is needed to construct a workable, internationally recognizable, and empirically "sustainable" definition of "development" that meets this challenge, and the current paper has submitted one rational suggestion to this end.

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[1] For a concise tutorial on how ecologically destructive consumerism is driven by the externalization of costs, see Annie Leonard's "The Story of Stuff" online at: http://www.storyofstuff.com/

[2] Numbers retrieved on May 19, 2009 from the *US Census Bureau* at: http://www.census.gov/ipc/www/popclockworld.html and from *ibiblio* at: http://www.ibiblio.org/lunarbin/worldpop

[3] A term aptly coined and popularized by Richard Heinberg (2004).

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Thus, more in the interest of sustainability prospects than of empirical purism, educators, public officials and theorists need to strive energetically and collaboratively, yet cautiously and reflexively, to improve on the common discourse of ESD, as of the current moment, and work to infuse it with common, empirical, and ethical, sense.

What the foregoing implies for the ESD discourse is that ESD educators should work to lay out a coherent curricular agenda for five areas of learning that can generally be depicted as:
1. Fostering deep environmental problem awareness,
2. Fostering societal transformation to sustainable lifestyles,
3. Fostering awareness of, and determination to redress, global social inequities,
4. Fostering values conducive to decreasing global human population, and
5. Fostering remedial technological innovation and policymaking capacity.

This deeper-green scheme for an ESD curricular and instructional agenda should be hammered out by its broad-based and growing constituency, as was accomplished with the Earth Charter ("A Short History…," 2008). To obtain cooperation for implementing ESD, its proponents must also advocate measures to promote the enfranchisement of the excluded masses of earth's denizens without whose informed (i.e. *educated*) cooperation, the goals of sustainability will not be realized.

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