Title: Four Double Binds that Limit the Development of an Eco-Justice Pedagogy

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In previous writings I have highlighted the cultural implications of the ecological crisis by juxtaposing the rising trend line of population growth and world wide levels of consumption with the declining trend line in the viability of natural systems—such as marine ecosystems, forest cover, species diversity, aquifers and river systems. Perhaps, a more useful way, one that clarifies why the diverging trend lines argument has been largely ignored by educators, is the concept of the double bind. The nature of a double bind, as I am using the concept, is summed up in Einstein's observation that problems cannot be solved within the mind set that created them.

The explanatory power of the concept of the double bind became clearer to me when I read Kirkpatrick Sale's description of the kind of individual that the industrial system of production could most easily control as a worker and consumer. Sale summarized in the following way what the Industrial Revolution had to destroy in order to create the new individualism:

> All that 'community' implies—self-sufficiency, mutual aid, morality in the marketplace, stubborn tradition, regulation by custom, organic knowledge instead of mechanistic science—had to be steadily and systematically disrupted and displaced. All the practices that kept the individual from being a consumer had to be done way with so that the cogs and wheels of an unfettered machine called the 'economy' could operate without interference, influenced merely by the invisible hands and inevitable balances and all the rest of that benevolent free-market system… 1995, p. 38

What has gone largely unnoticed is the similarity between the mind set that is changing the chemistry of the Earth's ecosystems by promoting consumerism as the ultimate expression of success and happiness and the mind set of the autonomous, critically reflective individual advocated by such prominent and diverse thinkers as Robert M. Hutchins, John Dewey, Paulo Freire and their

followers. To state Einstein's insight into the nature of the double bind in a way that clarifies the connection between education and the ecological crisis: the ideal of the emancipatory tradition in educational theory is based on the same deep cultural assumptions that gave conceptual direction and moral legitimation to the Industrial Revolution. These assumptions included representing the ideal individual as self-directing and thus free of the network of community traditions, change as linear and progressive, humans as separate from Nature, and the need to use these assumptions as the basis for judging the stage of development of other cultures. The early promoters of the industrial system of production and consumption made these assumptions the basis of the Classical Liberal explanation of how markets operate and the individual's basic motivation to pursue self-interest. Ironically, while contemporary educational proponents of an emancipatory education have criticized the exploitative and colonizing nature of the Industrial Revolution, they have never questioned the deep cultural assumptions they share with the tradition that connects William Cartwright, Henry Ford, and Bill Gates. I know that readers will point out that Dewey's view of the social nature of intelligence should exempt him from this criticism, thus I will address their concerns shortly.

Before addressing how the basic insights contained in the quotation from Sale' book, <u>Rebels Against the Future: The Luddites and Their War on the Industrial Revolution</u>, can be used to articulate the nature of an eco-justice pedagogy, I want to examine briefly four approaches to educational reform mistakenly seen as providing solutions to today's problems. The primary focus of my analysis will be on how these reform proposals and practices reinforce the basic cultural assumptions that underlie the consumer, technology dependent lifestyle now being globalized. To put it another way, I will be examining how the intergenerational knowledge within communities that reduces dependency upon consumerism is being undermined by what are claimed to be emancipatory educational reforms.

Double Bind in Higher Education

Universities are responsible for determining what constitutes high and low-status knowledge by virtue of what is omitted from the curriculum. What is generally not recognized is that high-status knowledge is based on the assumptions that co-evolved with the Industrial Revolution—thus the emphasis on viewing intelligence as the attribute of the individual, the relentless pursuit of new ideas and technologies, the need to encode knowledge in print and other systems of abstract representation that marginalize context and other cultural ways of knowing, and the need to view language as a conduit that supports the myth that objective knowledge can be communicated between individuals. In addition, high-status knowledge privileges reliance on abstract theory, empirical evidence, and the use of an elaborated language code to establish what has authority. It further promotes the development of new technologies to control and exploit nature, Increasingly, high-status knowledge is being justified on the grounds that it contributes to the ability to turn knowledge and relationships into commodities, and that it enables individuals to achieve higher levels of consumption. There is also the messianic expectation that a university education will enable individuals to apply their technical, problem-solving knowledge anywhere in the world. In short, universities are major contributors to the myth that technology and other expert forms of knowledge free humans from all limitations.

Marginalized and distorted by a university education are the forms of knowledge that are the basis of living a less consumer dependent lifestyle. These include (1) understanding the metaphorical nature of language and thus the way in which language reproduces the meta-cognitive schemata derived from the mythopoetic narratives of a culture; (2) the ways in which we are embedded, reenact, empowered, and restricted by traditions; (3) the importance of local context the development and utilization of technologies; (4) the role of intergenerational knowledge in providing skills and patterns of moral reciprocity that are the basis of relatively more self-reliant families and communities; (5) the

importance of face-to-face interaction to the civic life of the community and to its systems of mutual support..

If we compare what universities marginalize and distort with Sale's list of what the industrial system had to destroy in order to create the type of individual who would value personal mobility and consumerism over place, community, and self-sufficiency, the connections between high-status knowledge and the hyper-consumerism now undermining the viability of natural systems become clearer. Similarly, an examination of the characteristics of low-status knowledge, which vary from culture to culture and do not always meet our standards of social justice, will be seen to have a smaller ecological footprint. The double bind is thus further exacerbated by the reality that the institution primarily responsible for legitimating the knowledge that is the basis of everyday life continues to undermine communities that have a more sustainable ecological footprint.

Double Binds in the Use of Computers

Contrary to popular belief, computers are not a culturally neutral technology. While they enable us to do many things, and to do them more effectively, they reinforce the same deep cultural assumptions that were the basis of an earlier phase of the Industrial Revolution. Indeed, the western educated elites in most of the world's cultures are rushing to embrace computers and thus to enter the digital phase of the Industrial Revolution—but few are asking about what is being lost through the use of this technology. That computers commodify both thought and communication should be obvious to any person or institution that must continually purchase the latest system in order to stay online. What is more difficult to recognize is how computers reinforce the conceptual patterns and moral relativism of high-status knowledge—where explicit and decontextualized knowledge is privileged over the tacit and contextual, where language is represented as a conduit thus reducing awareness that different languages encode different cultural epistemologies, and where individuals experience the western sense of temporality that makes the past and

future dependent upon the subjective judgment of individuals who experience a false sense of autonomy when sitting in front of the computer screen. Anthropocentrism, equating change with progress, and the view that technology is culturally neutral are also reinforced by the experience of self in cyberspace.

Computers contribute to the ecological crisis and the loss of cultural diversity by globalizing the corporate agenda of transforming non-consumer centered cultures into modern societies where individuals, in being freed from intergenerational knowledge and responsibilities, become dependent upon the industrial mode of production and consumption. Computers facilitate the existence of cyberspace communities centered on shared interests, but they cannot replace critically important aspects of face-to-face communities. They cannot, for example, replace mentoring relationships, and they cannot reproduce the stories told face-to-face that form identities and pass on the values of the family and community. Nor can they be used as a substitute for embodied experiences that bond people to a physical environment in ways where there is a sense of connectedness to a greater whole. And they cannot provide virtual substitutes for participating in ceremonies, and for the moral accountability that accompanies most face-to-face interactions.

While computers are being used to model changes in ecosystems and to create less environmentally destructive technologies, computer proponents and futuristic thinkers continue to take-for-granted the cultural assumptions that equate experimenting with the symbolic foundations of the world's cultures, and now experimenting with genetic basis of life itself, with progress. They are also reviving the late nineteenth century myth that represented progress as the outcome of natural selection and thus of an evolutionary process. Instead of addressing the double bind inherent in the use of computers, proponents are now writing with unqualified optimism about entering the "postbiological phase of evolution"—to quote Han Moravec (1988, pp. 4-5). Gregory Stock's claim that we are witnessing the merging of humans and machines into a global superorganism (to cite the subtitle of his 1993 book, Metaman), has now been surpassed by Ray

Kurzweil's prediction that not only will computers take on human personalities but will also have spiritual experiences (1999, pp. 152-153). These predictions are being made by highly, yet narrowly educated people who do not understand where their areas of actual expertise end and where ideology based on an ecologically problematic set of cultural assumptions takes over. It is also important to note that their pronouncements have both a racist and colonizing ring to them.

One additional point needs to be made about why the double bind inherent in the cultural mediating characteristics of computers has largely gone unrecognized by the guardians of high-status knowledge. The embrace of computers within the academic community, which is leading to the further commodification of the educational process, can be accounted for in terms of the difficulty people have in recognizing their own taken for granted assumptions. As computers reinforce the same cultural assumptions that underlie most academic disciplines, faculty treat them as an indispensable tool for conducting research, transmitting information to students., and communication with colleagues in distant places.

Double Bind in Emancipatory Educational Theories

The challenge today is to use criteria dictated by the rapid changes in the Earth's ecosystems as the basis for assessing the ideas of emancipatory educational theorists such as John Dewey and Paulo Freire—and their many followers. What must be asked of these emancipatory educational theorists include the following: Do their proposals for reform perpetuate the western tradition of anthropocentric thinking? Do they equate change with progress? Do they assume that each generation should overturn the traditions of previous generations and that critical reflection is the only legitimate source of knowledge? While there are minor differences between how Dewey and Freire interpret the nature of critical reflection, they both agree that other sources of knowledge and values must be rejected—which leads to a host of other concerns that I shall examine more closely;

Freire's philosophical anthropology, which he articulates in <u>Pedagogy of the Oppressed</u> (1974), represents individuals as realizing the fullest potential of their human nature when they speak a "true word" which transforms the world (p. 75). As he put it, "To exist, humanly, is to <u>name</u> the world, to change it. Once named, the world in its turn reappears to the namers as a problem and requires of them a new <u>naming</u> (p. 76). What separates Freire's view of the self-determining individual from the autonomous individual required by the Industrial Revolution is Freire's emphasis on the individual's capacity for critical reflection. Before we accept this as a fundamental and defining difference, however, we need to keep in mind that the early industrialists, as well as the entrepreneurs of Silicon Valley, were driven to create new products that over turned the traditions of daily life. In effect, they were, and continue to be, motivated by the same assumption that underlies Freire's proposal "to understand life, not necessarily as the daily repetition of things, but as the effort to create and re-create, and thus as an effort to rebel as well" (1985, p. 199). While industrialists embraced this view of replacing traditions with new products that would enhance profits, and Freire embraced it as an Enlightenment thinker, their ideas lead to the same colonizing relationship with cultures that do not share their formulaic way of equating change with progress.

At first glance Dewey's ideas would appear to differ radically from the assumptions that lead to thinking of individual autonomy as the primary goal of education. He continually states that intelligence is social, and that its effectiveness in solving problems is enlarged to the degree it becomes a participatory activity within the community. Even the obvious criticism of the anthropocentric nature of his ideas is being challenged by philosophers who claim "that Dewey's naturalism is capable of supporting Leopold's land ethic" (Hickman, 1996, p. 66). While there is much in Dewey's thinking that is relevant today, I find that, on the whole, he does not overcome the sources of the double bind inherent in a cultural approach to progress that degrades the environment we all depend upon.

Briefly, my concerns go beyond Dewey's emphasis on the use of the scientific method of inquiry as the only valid approach to knowledge (or to resolving problematic situations—to use a phrase he would be more comfortable with). They even go beyond his instrumental approach to determining which values should guide action, and his view of education as the ongoing process of reconstructing experience. The more problematic part of Dewey's thinking, which increases my concern about the above, can be traced to his failure to follow his own recommendations about grounding inquiry within the context of ongoing experience. As most of his followers share the same assumptions upon which his world view rests, they have not noticed that Dewey's contacts with the cultural groups flooding into Chicago and New York during his most productive academic years did not lead him to modify his own ideas in ways that took account of the positive aspects of the diverse range of cultural epistemologies and the forms of community they sustained.   I find it especially telling that the lectures he gave in 1919 at the Imperial University of Japan, which became the basis of Reconstruction in Philosophy, were arguments for adopting a western way of thinking. For example, his statement that "change becomes significant of new possibilities and ends to be attained; it becomes prophetic of a better future. Change is associated with progress rather than with lapse and fall" (1957 edition, p. 116) must have sounded foreign and even deeply arrogant to most of the Japanese in his audience.

A careful examination of the deep cultural assumptions (root metaphors) underlying Dewey's epistemology—anthropocentrism, the progressive nature of change (i.e., the reconstruction of experience), and that there is one method of intelligence that should be universalized—yields another disturbing limitation in his thinking—and in the thinking of his current followers. This limitation is rooted in his failure to understand how the metaphorical nature of language encodes earlier ways of thinking and carries forward these cognitive maps as a taken for granted part of thinking and acting ("problem solving," as Dewey would put it). In short, his emphasis on explaining how the method of intelligence could be freed from the limitations of a spectator view of knowledge and from

the absolutes of earlier times did not take account of how language influences thought and moral behavior —a key relationship that his contemporary, Edward Sapir, was writing about in the late nineteen twenties. Dewey's failure to understand how language reproduces a culture's epistemology led him to make the astonishing naïve recommendation in <u>Knowing and the Known (1949</u>, p. 49) to empty words of previous meanings that might inhibit ongoing observations. His misunderstanding of the constitutive role of language also accounts for his reductionist view of tradition.

While Dewey appears to be arguing for schools to teach a mode of inquiry that strengthens the capacity of communities to engage in participatory decision making, he is in fact promoting a form of community that would require different cultural groups to give up their traditions —including the mythopoetic narratives that are the basis of their self identity and moral values. Other traditions that would be displaced by learning to apply his method of intelligence to community problem solving include the varied intergenerational ways in which cultural groups encode and share knowledge—which even in his day represented alternatives to meeting daily needs through consumerism. The double bind in Dewey's thinking is that his vision of educating people to live in more democratic communities, and of learning how to apply the scientific method of inquiry to daily problems, also involves colonizing other cultural groups. Indeed, if Dewey's ideas were to become the basis of education, in the broadest sense of the term, they would lead to a monoculture that would have many of the characteristics required by an industrial system bent on transforming non-commodified traditions into new markets. While Dewey was a critic of capitalism, his emphasis on the need to continually reconstruct experience is echoed today in corporate slogans about the "significance of new possibilities" and the progressive nature of experimental thinking. Both are hallmarks of his episetemology. A case can even be made that Dewey shares with today's corporate culture the view that traditions represent impediments to progress. That is, both Dewey and the current ethos of corporations ignore the complex role that traditions play in the daily life of individuals, and in the patterns of moral reciprocity and support that are at the core of viable communities. Dewey's proclivity of equating traditions with habits, which he describes as "routine ways of acting or degenerate into

ways of action to which we are enslaved just in the degree intelligence is disconnected from them (1916, p. 58) represents a serious limitation. It is a limitation, as I will subsequently explain, that prevents his ideas from being used to address eco-justice issues.

Double Bind in Science Education. Environmental education, it would seem, is free of the double binds that characterize high-status knowledge, computers, and emancipatory theories of education. Unfortunately, this is not the case. In order to understand how environmental education in public schools, as well as science based environmental studies courses at the university level, reinforce the more ecologically problematic aspects of the western mind set even as they contribute to restoring local habitats and identifying sources of environmental abuse, we have to understand the Janus face of science. That is, we have to understand how science contributed to the Industrial Revolution, including how science is now making it possible to industrialize and market the genetic re-engineering of life processes. We also need to understand the influence of culture, particularly western cultural assumptions, on how scientists think—particularly how they frame and justify their research, as well as the futuristic extrapolations they make from it.

As an epistemology, science has contributed to a more accurate understanding of natural processes, and to the development of many useful technologies. But scientists are continually going beyond the limits of their epistemology to make claims based on cultural assumptions they largely take for granted. This failure to understand differences in cultural ways of knowing has recently been carried to the extreme where culture itself is being explained as having a genetic basis and thus under the control of natural selection (Dawkins, 1976; Wilson, 1998a). A list of cultural assumptions taken for granted by most scientists turns out to be nearly identical with the assumptions upon which the Industrial Revolution was based: an anthropocentric view of Nature, equating new understandings and technologies with progress, representing intelligence as an attribute of the autonomous individual—and now the electro-chemical

processes in the brain, a conduit view of language, and the expectation that Third World cultures will adopt the western model of development and mind set.

The failure among scientists to understand the complex nature of culture, and its diverse forms of expression, is particularly apparent in the claims now being made by leading scientists. E. O. Wilson, for example, claims that moral values are genetically hardwired (1998b). He further claims that as soon as the cultures of the world understand recent discoveries in evolutionary biology they will abandon the superstitions upon which their religions are based and embrace science as the basis of a new universal religion (1998a, pp. 255-265). The assertion by Carl Sagan that science is the only legitimate source of knowledge (1997, p. 30) and the prediction by Lee Silver, a molecular biologist at Princeton University, that biotechnology is on the verge of creating a separate GenRich class of humans who will control future symbolic developments and will evolve into a separate species (1997, pp. 4-7) are equally troubling. These scientists are not on the fringe, but are representative of what has become the most high-status fields of scientific inquiry—and the most integrated into corporate culture.

The widespread ignorance about the nature of the world's cultures, as well as the cultural changes that must be made if we are to have a sustainable future, carries over to environmental education and environmental studies. This has led to reinforcing in the thinking of the next generation an management approach to the environment and a continuing disregard of the cultural beliefs and practices that have an adverse impact on the environment. It has also contributed to disregarding the importance of including in environmental education and studies an understanding of sustainable cultural traditions and how they are being undermined by new technologies and the extrapolations of scientific findings.

The double bind in the western approach to science, that is how it has contributed to the ecological crisis even as it contributes to reversing the degraded state of natural systems, can be seen in the following description of a popular environmental education software program. According its the designers,

SimLife prepares the next generation to be more ecologically informed citizens by learning to think about the environment in the following way:

> SimLife is the first genetic engineering game available for personal computers. It lets players manipulate the very fabric of existence, giving life to creatures that defy the wildest imaginations. Players create exotic plants and animals of various shapes, sizes, and temperaments, turn them loose into a custom-designed environment in which only the best-adapted species survive! With SimLife the budding mad scientist can people the landscape with mutagens (agents that cause mutation and, indirectly, evolution). Or change the individual genetics of one creature and see what effects its offspring have on the long-term survival of its species and on the ecosystem as a whole (1995, p. 1).

A culturally specific set of assumptions frame the decisions that students are to make, as well as how they are to understand their relationship with natural systems. Yet, I seriously doubt that many environmental educators would be aware of them. As these assumptions are also the basis of thinking in the sciences that underlie developments in biotechnology, it is also doubtful that many scientists would recognize these assumptions as ecologically problematic—or make the connection between these assumptions and the conceptual foundations of the Industrial Revolution.

The double bind can be seen in other aspects of environmental education, such as the increasing reliance upon a "constructivist" theory of learning and the efforts on the part of some environmental educators to embed their curriculum within the ideological framework of an emancipatory theory of education. To reiterate a key point: both constructivist and emancipatory theories of learning are based on the same family of ideas and values that undermine community., cultural diversity, and ecological sustainability.

How Language Reproduces Earlier Forms of Cultural Intelligence

Destroying the natural systems we are dependent upon, and globalizing a mind set and consumer dependent lifestyle that diminishes the quality of relationships, could be attributed to a lack of intelligence—and even to such characteristics as greed, hubris, and the pursuit of self-interest. I think this would be the wrong conclusion to draw. These problems are not due to a lack of intelligence or good intentions. Each of the areas of education that I have identified as caught in a double bind has had leaders who were working to improve the human condition. The problem, or at least one dimension of it, is that they unknowingly have relied upon earlier patterns of thinking, That is, they based their thinking on meta-cognitive schemata learned in the process of language acquisition both as children and as they progressed through graduate school. To put this another way, the metaphorical nature of language—the root metaphors that frame the process of analogic thinking that, in turn, are encoded in the iconic metaphors that are such a taken-for-granted part of thought and communication that they go largely unnoticed—reproduces earlier patterns of thinking—even as new understandings are being achieved. I could use patriarchy, individualism, progress, anthropocentrism, and, now evolution, to demonstrate how these deep and unconsciously held root metaphors have influenced thought and the creation of material culture over hundreds, even thousands of years. Instead, I will use the example of mechanism, which is a root metaphor that is especially prominent in the thinking of scientists. The use of this root metaphor can be traced back over four hundred years of scientific discovery, and has influenced other areas of cultural development such as political theory, architecture, agriculture, medicine, and education.

Johannes Kepler (1571-1630), for example wrote that "my aim is to show that the celestial machine is to be likened not to a divine organism but to a clockwork" (Merchant, 1980, pp. 128-129). Marvin Minsky, an early leader in the field of artificial intelligence, utilizes the same root metaphor to explain how our "conscious thoughts use signal-signs to steer the engines in our mind, controlling countless processes of which we'er never much aware" (1985, p. 56). In addition

to describing the body as a "survival machine," Richard Dawkins states that "brains may be regarded as analogous in function to computers. They are analogous in that both types of machines generate complex patterns of output, after analysis of complex patterns of input, and after reference to stored information" (1976, p. 52). The prevalence of the machine root metaphor can be seen in the scientific writings of Antonio R. Damasio (1994), Francis Crick (1994), and E. O. Wilson (1998) –to name just a few of the more prominent scientists. The root metaphor of mechanism can also be seen the university classroom explanation of the cell where the mitochondrion is labeled as the "powerhouse," the Golgi apparatus as the "storage plant," and the lysosome as the "recycling center."

The metaphorical nature of language, as well as the metanarratives of different cultures that are the source of their root metaphors, need to be understood if we are to address the double binds that are putting our future into question. There is also the need to understand the cultural beliefs and practices both within the dominant culture as well as within minority cultures that contribute to community and to a less consumer dependent lifestyle. As I have written elsewhere about why educational reforms based on an understanding of how earlier ways of thinking are reproduced in the languaging processes in the classroom (1990, 1993a, 1993b, 1995, 1997, 2000), I will focus now on how an eco-justice oriented curriculum contributes to regenerating community based alternatives to a work and consumer-centered lifestyle that is harming the environment, increasing the health risks of marginalized cultural groups, and becoming the latest model for western colonialism.

Educational Implications of Eco-Justice

First, it is necessary to identify three aspects of eco-justice that have particular relevance to educational reform. It is also necessary to explain why the phrase eco-justice rather than social justice is being used here. Social justice issues of class, race, and gender are often understood in terms of providing equal opportunity within an individualistic, work and

consumer dependent society. While various forms of discrimination remain unresolved, I think it makes more sense to frame these issues as well as a number of other issues ignored in the social justice discourse in terms of the root metaphor of an ecology rather than in terms of the root metaphor of the autonomous, self-directing individual.

The original Greek word "oikos," which Ernst Haekel turned into "Ooecologie" (later shortened to "ecology") referred to the family household and its daily maintenance. As a root metaphor (cognitive schemata) it foregrounds the relational and interdependent nature of existence—both within human and natural communities. It thus provides a far more accurate way of understanding the nature of human communities than the metaphor of individualism which, as Sale's quotation brings out, suggests that the fullest expression of our individuality can be achieved only as we separate ourselves from the interdependent networks of a community. Ecology is also the most accurate metaphor for highlighting how human ecology (communities) influence, and are influenced by, natural ecosystems. This brief overview of the origins and explanatory power of ecology as a root metaphor is directly related to the current discourse on how educators can address social justice issues. In effect, I am proposing that the unresolved issues of class, race, and gender be addressed within a conceptual and moral framework that takes account of the multiple ecologies—both cultural and natural—we are dependent upon—and which are being undermined in ways that can no longer be hidden by the technologies and mythic thinking associated with high-status knowledge. The rate and scale of changes in the environment, such as the melting of the polar icecaps and the disappearance of a significant percentage of the earth's species of plants and animals, brings into question the myth that science and technology will ensure the continuation of human progress.

The three aspects of eco-justice that have the most direct implications for educators include: (1) the right of economically and politically marginalized groups to live and work in environments that are free of toxic contamination; (2) the need to recover the non-commodified aspects of community, including the right of minority cultures to renew what remains of their non-commodified traditions rather than be pressured to assimilate fully into

the dominant culture of consumerism, technological dependency, and self-centered individualism; (3) the right of unborn generations to live in a viable environment that can sustain morally coherent, community-centered lives. Providing the conceptual basis for addressing the vast differences in the distribution of wealth—within American society and between the North and South should also be part of an eco-justice pedagogy. Unless the curriculum also addresses the need to help students within mainstream culture learn about community-centered alternatives to hyper consumerism that reduce the environmentally destructive cycle, little progress can be made in the other areas of eco-justice.

An eco-justice orientated curriculum that takes seriously differences in cultural ways of knowing and approaches to community cannot be based on the root metaphors that supported the Industrial Revolution, and the digital phase we are now entering. Thinking of ourselves as autonomous individuals, change as inherently progressive in nature, a human-centered relationship with nature, mechanism as a model for understanding life forming and sustaining processes, and so forth, have always misrepresented how we are embedded in, re-enact, and transform the complex symbolic systems we call culture. Of the many misrepresentations that can be attributed to these root metaphors is the idea that as rational, self-determining individuals we can separate ourselves from traditions. Representing tradition as undermining individual empowerment and impeding scientific and technological innovations has been as essential to the spread of the industrial system of production and consumption as it has been fundamentally erroneous.

Contrary to current thinking, an eco-justice pedagogy that contributes to renewing community and educating responsible ecological citizens is dependent upon a more complex and accurate understanding of tradition. Thus, before any meaningful discussion of what constitutes an eco-justice pedagogy can take place, the following characteristics of tradition need to be understood: (1) that all the patterns, practices, and technologies that are sustained over four generations or cohorts are examples of a tradition; (2) that some traditions were wrongly constituted in the first place and represent cruel and unjust treatment of others;

(3) that some traditions change too slowly, while others undergo change and disappear entirely before we are fully aware of their value to our lives; (4) that lost traditions cannot be re-established, while attenuated traditions can be renewed: (5) that traditions change from within, and from the external influences; (6) that ideas, technologies, and practices that appear new actually represent a further refinement of traditions that extend well into the past; (7) that many new forms of expression never become traditions because they are not sustained by people over the four generations it takes to adopt a taken-for-granted attitude toward them; and (8) that there are many aspects of high-status knowledge that can best be described, to use Edward Shils' phrase, as "antitradition traditions" (19881, pp. 235-239). There are many implications of this more complex view of tradition, which is made even more complex when we recognize the vast range of differences between cultures—even as they come under the influence of the West., But the most obvious implication, which has been ignored by emancipatory educational theorists, it that specific traditions rather than a generalized view of tradition should be singled out for reform. To reject all traditions, as Freire does in his recommendation that each generation must re-name the world, and in his statement that equates traditions with the "alienating daily routine that repeats itself," indicates a basic misunderstanding of his own taken-for-granted patterns as well as the patterns other people depend upon.

Both critical reflection and the political infrastructure that too often resists changes that would eliminate eco-racism are examples of tradition. Critical reflection has a particularly long history and has been articulated in many different ways—and has had led to genuine benefits as well as failures that resulted from good intentions. The tradition of critical reflection has a key role to play in an eco-justice oriented curriculum. However, it must be balanced by helping students understand that some traditions are sources of empowerment, basic to a civil society, and represent alternatives to the environmentally destructive pathways that globalization has put us on. As these traditions are understood within the context of a multicultural world, students are more likely to recognize the many different ways knowledge and values are encoded and

renewed over generations—including those that have contributed to racist and sexist based traditions. They are also more likely to recognize that their relationships within the processes of intergenerational renewal should not always be described as a "banking" process of learning (to quote Freire again), and that there are some processes of intergenerational learning where critical reflection becomes isolating, reductionist, and even destructive. These relationships and activities include mentoring in a wide range of skills, participating in family and community ceremonies, musical and arts centered activities, storytelling, games, everyday conversations—and other activities and relationships where learning, community, and intergenerational renewal come together as alternatives to a consumer dependent existence. One further observation is in order before sketching the outlines of an eco-justice oriented curriculum. That is, it is important to keep in mind that while a recommendation may appear relevant to one set of eco-justice issues, such as helping to renew the non-commodified traditions within minority cultures, it will also have implications for the other two main foci of an eco-justice pedagogy: eco-racism and the rights of future generations. As in all ecological systems, changes occurring in one part of the system lead to changes in other parts.

Recommendation # 1

If we take account of the amount of environmental destruction that accompanies the spread of the consumer dependent lifestyle, as well as its adverse impact on communities, it becomes clearer that educational efforts to promote recycling and the knowledge of local ecosystems do not address the core problem. The reductionist thinking that equates being a responsible environmental citizen with recycling may actually have the unintended effect of reinforcing the belief that they can continue or even raise their level of consumption. The media also plays a destructive role by connecting images of the success and happiness with consumerism, while also reinforcing the myth that science and technology will ensure that environmental disasters will not have a lasting impact. Parents who model for their children the relentless pursuit of

materialist values also contribute to the problem. Simply stated: most students have encountered so many cultural messages that reinforce consumerism that they do not know what the alternatives are.

The starting point for learning the community-centered alternatives to consumerism is to address the taken-for granted status of the student's daily life. This will have different foci, depending upon the students' economic and ethnic situation. But even for students coming from impoverished backgrounds, and especially for students from the middle class, documenting the many ways the students' personal relationships and activities involve consumerism will provide a framework for understanding the degree of personal dependency on a market place mentality that has no self-limiting principle to guide it. It also provides a curricular point of departure for examining where products come from, and where they go as waste. Where were the basic resources extracted? How far were the resources transported before reaching the manufacturing stage? What were the wages and living conditions of the workers who assembled the products? What were the media costs associated with selling the products? Which consumer products are genuinely beneficial and which are acquired for reasons of status and conformity to what is fashionable? Where are the wastes disposed of, who is adversely affected, and what are the health problems connected with toxic contamination? These questions will bring out the network of destructive relationships that many students will recognize themselves as being caught up in.

This part of an eco-justice curriculum should also enable students to recognize the non-commodified alternatives within mainstream culture, and within minority cultural groups that have not been totally assimilated. This area of curriculum reform requires taking seriously what universities have relegated to the status of low-status knowledge. Just as making explicit the daily patterns of consumer dependent relationships and activities is an important starting place for examining other taken-for-granted aspects of the students' embeddedness in the global system of production, consumption, and environmental destruction,

making explicit the non-commodified activities and relationships that go largely unnoticed within the students' community is essential to recognizing the activities and relationships they can participate in. To put this another way, the curriculum should provide students an understanding of the non-commodified resources of their neighborhood, including the networks of support and intergenerational learning that bond people together as a community. Who are the mentors in the neighborhood, and what skills and previously unrecognized interests and talents will emerge from the mentoring relationship? What other face-to-face activities are being carried on in the neighborhood that have not been recognized because they are not represented in the chat room or discovered by surfing the internet—or have not been discovered because of the way Nintendo and other computer games narrow the students' awareness to the dimensions of the screen? These non-commodified activities might range from gardening, local theatre, musical groups, poetry and chess clubs, various dance groups, community organized sports, volunteer work, and so forth.

Learning about the patterns of minority cultures not totally overwhelmed by assimilation pressures should also be part of an eco-justice curriculum. Understanding the ability of these cultural groups to retain a sense of identity as well as the traditions of intergenerational responsibility and mutual aid, which may range from the connections between food, ceremony, and community to healing practices and performing arts, have two educational benefits. First, it provides students from the dominant culture with a more complex understanding of how the various expressions of community, as well as the importance of intergenerational relationships, contribute to a deeper sense of connectedness and personal identity. Consumerism is too often used to fill the void that accompanies the lack of connectedness with others--as though identity and connectedness can be acquired in the depersonalized marketplace. The double bind is that it leads to further isolation from community building relationships.

The second benefit from studying the non-commodified traditions of cultural groups still centered on face-to-face, intergenerational knowledge, and networks of mutual aid, is

that it overcomes stereotypical thinking of them as backward. While not all minority cultural groups meet today's standards of social justice, students can still learn a great deal from them about how to live less materialistic lives. A case can even be made that many of the patterns of interdependency within their communities and with the natural environment will suggest approaches that can be taken within mainstream culture of how to live when the myth of unlimited resources is finally recognized as unsustainable. But again it needs to be emphasized that learning from them the art of living less consumer dependent lives has to be balanced with overcoming the poverty that many members of these cultures experience on a daily basis—in meeting basic levels of health care, diet, housing, and education. Unless learning what they have to teach us about moral reciprocity and intergenerational responsibility (which is different than borrowing from them), is accompanied by basic reforms in the distribution of wealth, this part of an eco-justice curriculum will represent yet another form of appropriation.

Recommendation # 2

An eco-justice centered curriculum should engage students in the examination of two characteristics of the dominant culture that are at the center of the double bind where technology based approaches to progress undermine what remains of self-sufficient communities and cultural groups. The first has to do with the mythic view of language perpetuated by the keepers of high-status knowledge. The sender/receiver model of communication (what Michael Reddy calls the "conduit view of language" (1979) supports a number of other key myths: that data and knowledge are objective, that intelligence is an activity and attribute of the autonomous individual (now, the electro-chemical process occurring in the individual's brain), and that the rational process—including critical reflection and scientific approaches to inquiry transcend cultural ways of knowing. That is, the sender/receiver view of communication reinforces the idea that "objective" knowledge can be taken as the standard of how to think and live by the members of all cultures—and failing this, it can be imposed upon them in the name of progress.

Students need to learn how the metaphorical nature of language carries forward earlier ways of thinking, thus influencing present understandings in ways

not often recognized. They also need to learn how the languaging processes in everyday life influence what they understand as real and important, and how their personal identities are influenced not only by the languaging of others but also by the ways of thinking and values encoded and communicated through the material expressions of the culture. Learning that words have a history and carry forward earlier culturally specific assumptions that may be the source of destructive relationships, or may, in other cases, contain wisdom refined over generations, is critical to making informed decisions about the cultural forces that threaten our future ecological survival. That is, learning to put the layers of metaphorical thinking in historical and cross cultural perspective is as essential to participating in a democratic society as it is to recognizing how language is being used to legitimate new forms of colonization.

This brings us to the second characteristic of the dominant culture that students need to understand. What now exerts the most influence in shaping our lives and ecological future is the least studied in terms of its cultural roots and current influence. The educational process should provide students with a knowledge of the history of science and technology. This would include examining their genuine contributions as well as their adverse influence on the diverse cultural traditions of self-sufficiency. Students should also be able to recognize when scientists and technologists are proposing changes in areas of cultural life where they have no special expertise or democratic mandate. The patenting of genes, the efforts to translate scientific knowledge into technologies that create further dependencies upon drugs and experts, the cloning of animals and the goal of extending this technology to humans, the promise of extending life hundreds of years, and so forth, represent decisions that should be debated by an informed public. Democratizing decisions now being made by scientists and technologists, corporations, and venture capitalists is one of the most essential and difficult challenges we now face. When students encounter a continual listing of scientific achievements, and promises of even greater break throughs, with no mention of unanticipated consequences that people are still struggling to deal with, there is a sense that science and technology are so integral to sustaining human progress that there is now need to bring it under democratic control. Similarly, an eco-justice curriculum needs to include the study of technology as a

cultural phenomena. This would go a long way toward overturning the myth that it is both culturally neutral (that is, a tool) and the expression of progress. Students need to understand the difference between traditional (indigenous) and modern technologies, how modern technologies influence thought patterns and language, what skills are undermined by different technologies, how modern technology is ideologically embedded in the corporate agenda of globalization, how technologies both separate and connect people. The influences of technology on communities should also be considered, with cultural differences being part of the discussion. The primary purpose in studying what is the most dominant aspect of contemporary life is to provide the conceptual understandings necessary for people to make decisions about which technologies add to the quality of life, support cultural diversity, and have the least adverse impact on natural systems. That the development of new technologies is largely driven by the relentless quest to create new markets, with little regard for its human and environmental consequences, make it especially imperative that our educational institutions provide a curriculum that engages students in an in-depth examination of technology.

In her book, ThePoisonwood Bible, Barbara Klingslover observes that "we construct our lives around basic misunderstandings." She goes on to say that "illusions mistaken for truth are the pavement under our feet" (1999 edition p. 532). As ecological systems become increasingly stressed, it becomes clearer that our materialistic and individually centered approach to progress is an illusion that must be seen, regardless of how painful, for what it is. Giving up this illusion, however, does not mean we must return to the past (which would be impossible), or borrow from cultures that have taken a less environmentally destructive path. Rather, it means taking up the task of evaluating which of our traditions contribute to cultural diversity and living less consumer dependent lives. The major reference point for assessing this renewal and reform process is the viability of natural systems. Modern consciousness is so focused on the future, and the relentless pursuit of realizing even more conveniences, happiness, and power to control the environment that it has lost sight of a fundamental fact of cultural existence: namely, that all aspects of human life involve a mix of short-lived fashions, innovations that may survive as new traditions, and individualized and group interpretations of how to reenact and extend the traditions of our cultural group. This generalization takes

account of such areas as new scientific discoveries and technologies, art forms that proclaim themselves to be against all traditions, and messianic ideologies that are too often mistakenly seen as going beyond the constraints of tradition when they are, in fact, extensions of multiple traditions. The focus of educational reform should be centered on sorting out the illusions from the life enhancing traditions. This will lead to a more viable democracy and a greater sense of eco-justice than what is achieved by basing educational reform on the need to discover new ideas, technologies, and forms of individual expression that are, as the illusion holds, free of ecological accountability.

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