

TOWARD AN ECO-JUSTICE PEDAGOGY

One of the dominant features of our times is the failure of scientific studies of rapidly degraded ecosystems to create doubt in the public's mind about the messages of unending material progress communicated through the media and shopping malls. Within this context of rapid environmental change and the illusions of global plenitude that technology is able to sustain, the following three questions need to be addressed by educational reformers: (1) What is the nature of an eco-justice pedagogy, and how does it address the twin problems of environmental racism and the need to regenerate community alternatives to an increasingly consumer dependent lifestyle? (2) Why have critical pedagogy theorists ignored the environmental crisis and the double binds inherent in their approach to social justice issues? (3) What curricular reforms need to be undertaken in order for teachers to practice an eco-justice pedagogy? As all three questions deserve chapter length treatment, only the most essential issues will be considered here.

In order to clarify why intelligent and well intentioned critical pedagogy theorists, as well as the educators who actually control the direction of reform in teacher education, have not only ignored the underlying cultural roots of the ecological crisis but are complicit in reinforcing the patterns of thinking that further exacerbate it, I will base my discussion on a theory of the metaphorical nature of language that, in turn, challenges the widely held assumption that autonomous individuals exercise rational thought when reaching conclusions about societal conditions and how to improve them through education. In effect, this theory of language, which was first articulated by Friedrich Nietzsche (1968 edition), Edward Sapir (1970), Martin Heidegger (1962), and more recently by Richard Brown (1978), George Lakoff (1987) and Mark Johnson (1987), explains how current educational reform agendas are based on taken-for-granted cultural assumptions (root metaphors) encoded in the language that allows for the conceptualization of certain relationships while hiding others. While sharing many root metaphors in common, it is the difference in several key root metaphors that separate the reform agendas of critical pedagogy theorists from that of the techno-bureaucrats who now control educational reform. Ironically, both groups view themselves as progressive and enlightened thinkers--even as their reform agendas contribute to environmentally destructive cultural practices. An eco-justice pedagogy is

also based on root metaphors, but ones that have been long under attack by the ideologues of the Industrial Revolution and of the Western Enlightenment project.

Two entries in Nietzsche's notebook indicate his understanding that thought is metaphorical in nature. In 1885, he entered the following observation: "In our thought, the essential feature is fitting new material to old schemas" (Kaufmann, 1968, p. 273). And in 1886, he noted that "rational thought is an interpretation according to a scheme we cannot throw off" (p. 283). Heidegger also understood that language carries forward the dominant metaphorical constructions of the cultural group. In Being and Time (English edition, 1962), he wrote that "When an assertion is made, some fore-conception is implied; but it remains for the most part inconspicuous, because language already hides in itself a developed way of conceiving" (p. 199).

While these insights challenge the myth that represents intelligence as an attribute of an autonomous individual, it is Richard H. Brown who provides the clearest explanation of how conceptual schemata that go back hundreds, even thousands of years in some cases, are the basis of thought--of even the most progressive and critical thinkers. Basically, he identifies three dimensions of metaphorical thinking, and I shall explain them in a manner that highlights my central concern: namely, the continuity between the root metaphors that gave conceptual direction and moral legitimacy to the Industrial Revolution that is now entering its digital phase of development and the educational reform proposals of critical pedagogical theorists.

According to Brown, root metaphors are the "meta-schemata" that frame the process of analogic thinking across a wide range of cultural experience (1978, p. 126). They are often based on the mythopoetic narratives of a cultural group, or on powerfully evocative experiences. Patriarchy and anthropocentrism are root metaphors that can be traced back to the Biblical account of creation. Mechanism is a root metaphor that had its roots in the transition from a Medieval to the modern world view. Other meta-schemata or root metaphors underlying modernity include linear progress, evolution, economism, and the autonomous individual. The way in which root metaphors carry forward earlier culturally specific patterns of thinking can be seen in how the root metaphor of mechanism, which Johannes Kepler used to explain the universe as a "celestial machine," continues to influence the current fields of medicine, architecture, education, brain research, and even the Human Genome Project. The difficulty in recognizing how thought and even the material expressions of culture are based on root

metaphors that reproduce past forms of cultural intelligence and moral norms can be seen in how the supposedly most rationally capable members of society were unable to recognize the many expressions of patriarchy within the relationships and curricula of the university.

When root metaphors are not recognized they largely dictate which analogs will be used to understand new phenomena. Thus, the process of analogic thinking--that is, fitting the new into the old schema, to recall Nietzsche's observation--reproduces the older conceptual patterns. When there are several competing ways of understanding a new phenomenon, the analogy that prevails becomes over time an iconic metaphor that is a taken-for-granted aspect of thought and communication. Examples of iconic metaphors include "data," the personal pronoun "I," "emancipation," "freedom," "equality," "domination," "environment," and so forth. Indeed, most of our thought and discourse, even material expressions of culture, are dependent upon the use of iconic metaphors that reproduce the analogies that prevailed at an earlier time due to the dominant status of a root metaphor. When there are competing root metaphors, such as between "ecology" and the collection of root metaphors underlying the Industrial Revolution, iconic metaphors such as "sustainability" have different meanings that reflect the differences in taken-for-granted root metaphors. The constitutive role of root metaphors in framing thought can be summarized by paraphrasing Nietzsche and Heidegger in the following way: language thinks us as we think within the conceptual categories that the language of our cultural group makes available. As thought is inherently metaphorical, there is always the possibility of identifying more adequate analogies, and even of recognizing aspects of cultural/personal experience that previously held root metaphors cannot account for.

In order to recognize the profound difference in the root metaphors that underlie an eco-justice pedagogy, it is first necessary to identify the root metaphors that are taken-for-granted by critical pedagogy theorists. Their root metaphors, as I suggested earlier, were the basis of the Industrial Revolution that is being continued today under the new metaphor of "globalization," which has replaced the older and highly criticized metaphor of "colonization." Contrary to their claims, the practice of a critical pedagogy does not lead to individual emancipation and social justice; rather it reinforces a subjectively centered individualism required by the consumer, technologically dependent society. While they are highly critical of the capitalist foundations of society, the root

metaphors that underlie their prescriptions for change create a double bind they fail to recognize.

The root metaphors that frame the educational reform proposals of critical pedagogy theorists such as Henry Giroux and Peter McLaren are clearly present in Paulo Freire's injunction that "to speak a true word is to transform the world" (1974, p. 75). The root metaphors are also recognizable, as least to readers who do not take them for granted, in Freire's idea of what is required to achieve the ideal of a permanent state of "critically transitive consciousness" (1973, p. 18). As he stated in Pedagogy of the Oppressed (1974):

Human existence cannot be silent, nor can it be nourished by false words, but only by true words, with which men transform the world. To exist humanly, is to name 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 naming. Men are not built in silence, but in word, in work, in action-reflection. (p. 76)

He concludes The Politics of Education (1985) with the statement that "we can only make history when we are continually critical of our very lives."

Even though Giroux argues for a cultural studies approach to critical pedagogy, and McLaren urges that "revolutionary multiculturalism" be made the central focus, a strong case can be made that these two leading theorists, as well as their followers, have not recognized that the root metaphors underlying Freire's vision of emancipation are shared by the corporations and politicians promoting globalization. The restatement of Freire's basic position on what is required to be human can be seen in the following quotation that summarizes the primary goal of critical pedagogy. In writing about the emancipatory goals of cultural studies, Giroux states that "pedagogy becomes, in this instance, the terrain through which students critically engage and challenge the diverse cultural discourses, practices, and popular media which they experience in their daily existence" (1997 a, 234). Giroux's adherence to Freire's doctrine of perpetual change through critical inquiry can also be seen in Giroux's definition of customs (traditions) as "a form of reactionary nostalgia rooted in the loss of memory," and that views "critical teaching as unpatriotic" (1997 b, pp. 153-154).

McLaren's recent identification with a "revolutionary multiculturalism" approach to critical pedagogy suggests that he may be moving to an awareness that Freire's formula

that "to exist, humanly," requires each generation to rename the world (that is, create their own culture) involves a fundamental double bind. Indeed, in the chapter titled "White Terror and Oppositional Agency," he writes that "we need to legitimize multiple traditions of knowledge" (1995, p. 137, italics in original). He further suggests that "curricularists need to unsettle their complacency with respect to Eurocentrism" (p. 138). But then he restates the Freirean Eurocentric vision of emancipation by claiming that "we need to occupy locations between our political unconsciousness and everyday praxis and struggle but at the same time guided by a universalist emancipatory world-view in the form of a provisional utopia or contingent fundamentalism" (p. 141, italics added). While what he means by a "contingent fundamentalism is unclear, his call for a "universalist emancipatory world-view" indicates that he possesses only the most superficial understanding of "multiple traditions of knowledge." The role of critical pedagogy in achieving a "revolutionary multiculturalism" is to develop a "sense of critical agency." As he explains it, "agency, in this case, refers to the ability of individuals to analyze subjectively, reflect upon subject positions they have assumed, and choose those which are the least oppressive to themselves, to others, and to society as a whole" (1997, p. 30).

For readers whose thinking is based on the same root metaphors that underlie the leading spokespersons for critical pedagogy, my questioning of the universal goal of educating each generation to emancipate themselves from the influences of previous generations is likely to appear as the expression of a reactionary thinker. To ensure that there is no basis for this conclusion, I shall restate that my primary goal is to clarify the continuities between the deep cultural patterns of thinking that critical pedagogy theorists share with the earlier and current phases of the Industrial Revolution. The following quotation from Kirkpatrick Sale's book Rebels Against the Future: The Luddites and Their War on the Industrial Revolution (1995), will help potential critics of my analysis recognize that the emancipated form of individualism required by the Industrial Revolution is nearly identical to the type of individualism that is the goal of critical pedagogy theorists. According to Sale,

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 of the practices that kept the individual from being a consumer had

to be done away with so that the cogs and wheels of an unfettered machine called 'the economy' could operate without interference, influenced merely by invisible hands and inevitable balances. p. 38

The communally centered practices that kept the individual from being dependent upon what could be produced through an industrial process, are also the practices that Freire and other critical pedagogy theorists view as the source of oppression and, thus, are to be overturned.

While the form of emancipation required by the Industrial Revolution lacks the "critical sense of agency" that Freire, Giroux, and McLaren call for, it should be pointed out that if their understanding of emancipation could be fully realized, which would involve being freed from the language that encodes the cultural group's understanding of relationships, their "emancipated individual" would have no more capability for engaging in critical thought than the emancipated and thus consumer dependent individual described by Sale.

The criticisms of capitalism that runs through the writings of critical pedagogy theorists, while basically correct, fails to consider the deep conceptual patterns that underlie the industrial mode of production and the messianic vision that it rests upon. Had they carried their analysis to this deeper level, and avoided the mistake of labeling the industrial mode of production and the incessant search for new markets as an expression of conservatism, they might have recognized the double bind of basing their prescriptions for emancipation on the same root metaphors that now serve as the conceptual underpinnings of economic globalization and a world monoculture. For example, the root metaphor (meta-schema) that represents change as moving in a linear, progressive direction is as fundamental to the current promoters of economic globalization as it is to the thinking of critical pedagogy theorists. Indeed, this assumption provides the moral legitimacy for their arguments that changes in the very fabric of cultural life should be guided by the critical reflection and moral insights of a cultural group's youngest members. It also provides legitimacy to a totalizing way of thinking that represents all customs (traditions) as oppressive and the source of injustice. In effect, the critical reflection of youth is to be the basis of final judgment, but this does not involve any form of accountability to the older or future generations. To recall Freire's warning, unless each generation renames the world the fullest expression of humanity will not be realized. And each generation of critical thinking youth, according

to the root metaphor the critical pedagogy thinkers take-for-granted, will represent a progressive step beyond the previous generation of critical thinkers.

The assumption that equates change with progress, which is held by most Western thinkers as well as by elites in other cultures who have been educated in Western universities, leads to viewing the loss of intergenerational knowledge and networks of mutual aid as a necessary part of becoming modern. But this Western assumption is increasingly being criticized by non-establishment intellectuals in Third World countries. The majority of the world's population, according to Gerald Berthoud, is being urged to accept the modern idea that "everything that can be made must be made, and then sold" and that this view of everyday reality is being "unshakably structured by the omnipotence of technoscientific truth and the laws of the market." (1992, p. 71) The social disorganization that results from displacing local traditions with the context-free traditions of a technologically ordered and consumer dependent lifestyle is highlighted in Berthoud's observation that

what must be universalized though development is a cultural complex centered around the notion that human life, if it is to be fully lived, cannot be constrained by limits of any kind.

To produce such a result in traditional societies, for whom the supposedly primordial principle of boundless expansion in technological and economic domains is generally alien, presupposes overcoming symbolic and moral 'obstacles', that is, ridding these societies of various inhibiting ideas and practices such as myths, ceremonies, rituals, mutual aid, networks of solidarity, and the like. p. 72

The conceptual schema that organizes thought in ways that view all forms of change as progressive, which the critical pedagogy theorists share with the proponents of economic and technological development, leads to a totally distorted view of tradition. And this distorted understanding leads, in turn, to not recognizing the complex nature of traditions within different cultures, and to not understanding that tradition is simply another word for cultural patterns that have been handed down over three to four generations. These patterns range from technologies that enable us to print books, grow and prepare food, to being judged by a jury of peers. These patterns, within our own culture as well as in non-Western cultures, may have been wrongly constituted in the first place, they may benefit certain groups over others and they may change too slowly; but there are also

traditions that we rely upon that can be lost before people are aware of the implications. The traditions of privacy that computers are now undermining are an example of the latter. The key point here is that the root metaphor that equates change with progress frames the thinking of critical pedagogy theorists in a way that fails to reconcile the authority they place in the critical reflection of students with cultural traditions that are sources of individualized empowerment, community self-sufficiency, and social justice. Students may not be fully understood, appreciate, or even recognize these traditions when their experience is largely shaped by the media, teachers, and their peer group. A double bind created by the taken-for-granted status that the root metaphor has in the thinking of critical pedagogy theorists is that they are part of an anti-tradition tradition of thinking that goes back hundreds of years--and is an example of a tradition that needs to be reconstituted in light of the ecological crisis and the loss of cultural diversity.

A second root metaphor that critical pedagogy theorists share with the tradition of thought that underlies the Industrial Revolution has its origins in the Biblical mythopoetic narrative of creation: that is, that "man" was created as superior and separate from the natural world. This root metaphor, which is called anthropocentrism in environmental literature, is especially prominent in western thinking. It was basic to the thinking of industrialists, economists, property owners, and critical pedagogy theorists. The latter, however, do not express their anthropocentric pattern of thinking by reducing nature to an exploitable resource. Rather, it is expressed in how they frame the problem of human emancipation in a way that ignores the ecological crisis. In the last couple of years both McLaren and Ira Shor have included the word "environment" in their list of concerns. But they have not taken the problem of overshooting the sustaining capacity of nature systems seriously enough to consider how their theory of continual and universal emancipation contributes to ecologically unsustainable practices within western and nonwestern cultures. As their reference to the environment appears as little more than a ritualistic gesture for the sake of political correctness, it is difficult to determine whether their lack of in-depth analysis is a result of an awareness that if they were to consider the educational reforms that contribute to the non-commoditized possibilities of communities, which vary from culture to culture, they would have to acknowledge that their deepest held assumptions are part of the problem.

The third root metaphor they share with the modernizing/industrial traditions of the West frames the individual as the basic social unit. Following the lead of Freire, the

importance of dialogue and participatory decision making have become more prominent in the writings of critical pedagogy theorists. While they give lip service to dialogue, anyone who disagrees with them is branded as an enemy. That their thinking is based on the assumption that represents the individual as the basic social unit can be seen in the way they view emancipation as the outcome of critical reflection. While critical reflection may be further stimulated through group interaction, and thus be participatory, the last stage in the process comes down to the subjective judgment of the individual--even if the decision is to go along with the consensus of the group.

Teacher directed participatory critical reflection is also problematic for reasons that go beyond the ability and inclination of most teachers to even identify, and put in historical perspective, the traditions essential to morally coherent communities as well as the traditions that degrade the environment and undermine community. Social groups, even those with a revolutionary agenda, rely upon a number of traditions: in their shared patterns of metacommunication and use of root metaphors that are basic to the ideology that guides analysis and the resulting prescriptions for social change. As critical pedagogy theorists represent all forms of authority as oppressive, and emancipation as a goal that cannot be limited in any way without limiting the subjective authority of the individual to rename the world, there is no basis in their thinking for recognizing forms of moral reciprocity not dependent upon the judgment of the individual. The perspective of individuals, who have been socialized to view themselves as autonomous, is the source of final authority. These autonomous individuals, like the individual described by Sale, experience themselves as free from the constraints of community norms and responsibility.

The root metaphors of progress, anthropocentrism, and subjectively centered individualism, along with the supporting assumption that language is a conduit in a sender/receiver model of communication, are fundamental to what Alvin Gouldner calls the "culture of critical discourse. Gouldner's explication of the grammar of this form of discourse is not democratic by virtue of the forms of knowledge that it excludes--which happen to be the same forms of knowledge that critical pedagogy theorists reject. According to Gouldner, the grammar governing critical discourse includes (1) justifying all assertions; (2) the mode of justification cannot invoke traditional forms of authority; (3) participants are free to reach their own conclusions based on the arguments and evidence produced (1979, p. 28). In effect, the grammar of critical discourse advantages

groups who possess an elaborated speech code and the power to dictate the rules governing what constitute legitimate speech. As Gouldner put it,

the culture of critical speech forbids reliance upon the speaker's person, authority, or status in society to justify his claims. As a result CCD de-authorizes all speech grounded in traditional societal authority, while it authorizes itself, the elaborated speech variant of the culture of critical discourse, as the standard of all 'serious' speech. p. 29

These traditional sources of authority include mythopoetic narratives that may be the foundation of a cultural group's moral codes, intergenerational knowledge that carries forward an understanding of the limits and possibilities of the bioregion, wisdom of elders and mentors, and forms of knowledge that come from direct experience of negotiating relationships in everyday life. All of these forms of knowledge may not meet the still evolving western standards of social justice. There are, however, many examples that reflect a deeper understanding of the interdependencies within human communities--and between humans and natural systems. The key point here is that the rules governing critical inquiry are elitist in that they do not allow for the voices of cultural groups that do not assume that change, especially theoretically based change, is always progressive in nature. As Freire and his North American followers should know, many of the indigenous cultures that rely upon the different forms of knowledge listed above also practice a form of decision making based on consensus--which was the model of democracy that influenced the organization of the American political system.

The Root Metaphor Underlying an Eco-Justice Pedagogy

The rapid decline in the viability of natural systems, along with the current rush to globalize the western consumer lifestyle, is already introducing environmental changes that bring into question the assumptions upon which the western mind-set is based. Indeed, the language based on the assumptions about progress, a human centered world, and individualism leads to such a distorted understanding that environmentally caused diseases, cleaning up oil spills, and efforts to reverse degraded ecosystems are, at least in North America, treated as economic activities that contribute to the gross domestic product. More important is the way in which earlier assumptions encoded in the metaphorical language lead to pursuing the very policies and developments that further exacerbate the crisis. The policies of the World Trade Organization and the

scientific efforts to further industrialize agriculture are two prime examples of the double bind associated with the language of progress.

As feminists discovered, changing the root metaphor of patriarchy was a long and difficult process--one that is still underway. The beginnings of a shift in root metaphors is now taking place within the environmental sciences, among a few heads of corporations who are beginning to realize that production processes must mirror the design patterns found in nature, and among theologians who are attempting to find scriptural authority for an environmental ethic. Ecology, the emerging root metaphor, can be traced back to the Greek word "oikos" which referred to the maintenance of relationships within the family household. Without going into the history of how the original analog was transformed into the scientific study of relationships within natural systems, I want to point out several reasons this metaphor can be expanded in ways that clarifies and legitimates an eco-justice pedagogy. The use of ecology as a root metaphor (which means it should guide the conceptualization of the widest possible range of cultural practices) foregrounds the relational and interdependent nature of our existence as cultural and biological beings. This includes our participation in a highly complex web of symbolic relationships deeply rooted in the past. We could neither think nor communicate if we were isolated from the language systems that sustain the patterns of cultural life, and which are the basis for their gradual transformation.

Our participation in the even more complex web of interacting systems that constitute the natural world involves a more basic form of dependency. The oxygen we breathe, the sources of nourishment, and even the autopoietic networks that interact at the genetic level to create the living system we know as our biological self, are interconnected across many scales of life producing systems. These cultural and biological processes lead to biographically distinct expressions of individualization--which we consider our self-concept, and conceptual and moral proclivities. These processes, which Humberto Maturana and Francisco Varela refer to as the "structural coupling of autopoietic systems"(1987, pp. 75-80), can also be understood as ecological systems--which serves as the root metaphor that foregrounds relationships, continuities, non-linear patterns of change, and a basic design principle of Nature that favors diversity.

An educational process based on this root metaphor must recognize that living systems involve both the replication (conservation) of patterns of organization as well as

changes introduced by internal and external perturbations. It also needs to recognize the importance of diverse cultural systems that develop in response to the differences in natural systems. Some cultures failed to adapt to changes in natural systems (or introduced environmentally destructive changes) and thus reduced their own chances of survival. Other cultures, however, have become repositories of knowledge of local plants, animals, and natural cycles that affect their sources of food, water, and other cultural necessities. In effect, this root metaphor foregrounds the different forms of interdependencies, as well as the need to exercise critical thought in ways that strengthen the ability of natural and cultural systems to renew themselves in ways that do not compromise the prospects of future generations.

When based on the root metaphor of an ecology, an eco-justice pedagogy has three main foci:

1. Environmental Racism and Class Discrimination. The disproportionate impact of toxic chemicals on the health of economically and ethnically marginalized groups is part of a cycle that encompasses more than the political process that determines where toxic waste sites and industries are to be located. In addition to class and racial biases, the cycle includes the phenomenal growth in the last fifty years in the use of synthetic chemicals (estimated at over 80,000), and a level of personal consumption based on rising rates of resource extraction and manufacturing--all of which have created monumental waste disposal problems. In short, the consumer/technology dependent lifestyle in the West, which is now being promoted in "undeveloped" regions of the world, increases the impact of contaminated environments on those groups least able to protect themselves.

An eco-justice oriented education needs to inform students about the politics of toxic waste disposal, which not only encompasses minority and working class communities but also crosses national boundaries in ways that spreads misery to Third World countries. Students need to learn how different groups are resisting the contamination of their local environments and workplace, and how the politics of environmental discrimination works. Attention should also be focused on the contaminated work environments that pose special health risks for poor workers in Third World countries where many of the goods consumed in the West are produced.

2. Recovery of the Non-Commodified Aspects of Community. According to Paul Hawkin, and Amory and L. Hunter Lovins, "industry moves, mines, extracts, shovels,

burns, wastes, pumps, and disposes of 4 million pounds of material in order to meet one average middle-class American family's needs for a year" (1999, p. 50). This amount of material flow is slightly less for Canadians, and may vary by half in other Western countries. The shared trendline, however, is toward increasing dependence on meeting life's daily needs through consumerism rather than through self-reliance within the family and networks of mutual support within communities. The critical distinction, though not always clear cut, is between the growth of commoditized knowledge, skills, and relationships which the industrialized system (even in the era of e-commerce) requires, and what remains of the non-commoditized individual, family, and community patterns of daily life. The relentless drive to commoditize more aspects of daily life, and thus to create new markets and thus new forms of dependencies, is a key factor in the cycle of production, product obsolescence and misuse, and environmental contamination that is contributing to the rapid changes we are witnessing in natural systems.

The implications for an eco-justice pedagogy include providing a critical understanding of the deep cultural assumptions that underlie the industrial and consumer dependent form of culture as well as an understanding of how the languaging patterns of different western cultures create the individual psychology that accepts consumer dependency and environmental degradation as a necessary trade-off for achieving personal conveniences and material success. But more is required of an eco-justice pedagogy than the development of critical awareness. There is a constructive side as well. Learning the principles of ecological design, and how they can be applied to buildings and technologies in the students' bioregion is critically important to moving away from the industrial model that still prevails. There is also a need to use the educational process to regenerate the non-commoditized skills, knowledge, and relationships that enables individuals, families, and communities to be more self-reliant--and thus to have a smaller ecological impact. Many readers might interpret this suggestion as the expression of a romantic nostalgia for earlier lifestyles that were actually characterized by poverty, debilitatingly hard work and shortened lives. Rather, what is being proposed as a way of reaching a better balance between self-sufficiency and consumerism (perhaps even reversing the degree of consumerism) is for a curriculum that helps students recognize the extent their daily lives depend upon commoditized relationships and activities. The curriculum should also help them recognize the patterns and activities within their own communities that are still largely

based on face-to-face, intergenerational sharing of knowledge and skills. These non-commoditized aspects of family and community life might range from dinner conversations made possible by a more balanced use of such modern technologies as television and computers to the existence of community theater and other performing arts, mentoring in the development of individual talents, gardening, chess and poetry clubs, sports, and community service activities.

Learning about (and thus valorizing) the non-commoditized traditions of ethnic minorities should also be part of an eco-justice curriculum. Many of these cultural groups have survived economically and politically repressive environments because of their ability to carry forward the intergenerational knowledge that enabled them to be less dependent upon the consumerism that more privileged groups took for granted. In suggesting that marginalized cultural groups still retain non-commoditized traditions that need to be reinforced, rather than be undermined by the emancipatory approach of critical pedagogy theorists, I am not suggesting that the curriculum should reinforce the inequitable patterns that keep some cultural groups living below the poverty line and in degraded environments that create greater health risks. Rather, the educational challenge is to contribute to their having more equal access to educational opportunity, political empowerment, and an improved material standard of living. What needs to be avoided is exposure to a curriculum that denigrates their heritage of intergenerational knowledge--which may include elder knowledge, patterns of mutual aid and solidarity that link together extended families and community networks, ceremonies, narratives, and other traditions essential to their self-identity and moral codes.

3. Responsibility to Future Generations. The prospects of future generations should also be a central focus of an eco-justice pedagogy. The lack of an intergenerational perspective that takes account of the justice issues facing unborn generations, which will be exacerbated by the increasing environmental demands of a growing world population, is particularly evident in the thinking of educational theorists such as Freire, Giroux, and McLaren. The root metaphors that frame their way of thinking represents emancipation and other forms of change as progressive in nature--thus there is no need to engage in self-limitation for the sake of future generations. For them, each generation must remain focused on the task of overcoming the domination of the previous generation. By ignoring that the life supporting characteristics of natural systems are in decline, they can maintain the myth that each generation will become more enlightened and self-

directing.

An eco-justice pedagogy contributes to self-limitation for the sake of future generations when it helps students recognize and participate in the non-commoditized activities of community. But it is not a form of self-limitation that undermines the student's well-being; rather it represents an expansion of relationships and opportunities to develop personal talents that can further enrich the community. An eco-justice curriculum that helps introduce students to the non-commoditized possibilities of community is only part of the reform that is needed. The prospects of future generations are also dependent upon today's students acquiring the conceptual basis for democratizing technology and science. The root metaphors that gave conceptual direction and moral legitimacy to the Industrial Revolution continue to frame the public's understanding of technology and science--which they view as the highest embodiment of progress. While modern technology and science have made many genuine contributions to improving the quality of life, the fact remains that they provide the basis for extending the industrial model into all areas of food production (which is leading to the narrowing of the genetic basis of the world's food supply), human reproduction, thought and communication, and education.

As technologies are altering the chemistry of life and changing cultural patterns in ways that are not predictable, the need for basing decisions on the public interest rather than the career interests and profit motive of the elites who create them, should be the paramount concern. The extrapolations of scientific discoveries and theories are also introducing changes in the symbolic foundations of different cultures, with consequences that are even more difficult to predict. Denmark, in particular, has shown leadership in democratizing technology and science that has direct curricular implications, and should ease the fear of educators that democratizing technology and science will undermine the autonomy traditionally associated with these fields of endeavor. But the democratizing process needs to be guided by an intergenerational perspective that takes into account future generations--which teachers need to help students understand.

More specifically, students should learn about the differences between traditional and modern technologies, how modern technologies influence our language and thought patterns, how industrial approaches to technology have transformed communities and deskilled the worker, and how technologies can incorporate the principles of ecological

design mentioned earlier (Van Der Ryn and Cowen, 1996; Hawkin, *et. al.*, 1999). Similarly, the history of western science, the cultural assumptions that underlie its current foci, and its impact as an ideology on the moral foundations of western and non-western cultures, need to be part of the students' understanding if they are to exercise communicative competence in what will be a highly contested discourse. Developments in technology and science are currently guided by the interests of elite groups who have little understanding of the culturally transforming effects--and even less concern with how the cultural changes their discoveries precipitate will impact the quality of life of future generations. Indeed, they rely upon the same myth of linear progress that is so central to the thinking of the critical pedagogy theorists.

An eco-justice pedagogy that helps ensure the prospects of future generations also requires a curriculum that enables students to recognize how the languaging processes sustain a taken-for-granted attitude toward cultural patterns. Without creating the formulaic negativity that is the main feature of critical pedagogy, teachers need to help students discriminate between past forms of intelligence encoded in the metaphorical constructions of the language that contribute to overshooting the sustaining capacity of the environment, and language that foregrounds the interdependencies within and between cultural and natural ecologies. This emphasis on how language frames understanding can be extended to the study of historical events as well as other areas of the curriculum. The point made earlier about language providing the means of communicating about relationships, and encoding the cultural group's understanding of the attributes of the participants in the relationships (and thus what constitutes moral behavior in relationship to the attributes), is particularly important to understanding how moral education occurs across the curriculum. If we were to identify the curricular reforms that are likely to have the greatest influence over the lifetime of the student, it would be the emphasis that an eco-justice pedagogy places on understanding that language is not a conduit for communicating objective knowledge, but rather carries forward culturally specific ways of thinking--and that the student is connected, often in unconscious ways, to this symbolic ecology.

To summarize: an eco-justice pedagogy is centered on understanding relationships within the larger households we call community and the natural environment. It differs from what is advocated by critical pedagogy theorists in that it avoids the formulaic educational reforms dictated by the root metaphors that co-evolved

with the Industrial Revolution--including the goal of emancipating students, regardless of their cultural group, from all traditions. An eco-justice pedagogy should be based on the recognition that while many traditions change too slowly, and others should not have been constituted in the first place, still others represent hard won achievements. Other traditions provide the basis of living less commoditized lives--and thus do not contribute to degrading the environment in ways that threaten the health of marginalized groups, including future generations. In being based on the root metaphor of an ecology, an eco-justice pedagogy involves the recognition that reflection needs to be centered on how the cultural and environmental patterns connect, and on the double binds that arise when changes are assumed to represent a linear form of progress.

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